

degrees that work.

COLLEGE CATALOG



2002 -04

**Pennsylvania College
of Technology**

PENNSTATE



www.pct.edu

Pennsylvania College of Technology, an affiliate of The Pennsylvania State University, is a coeducational, publicly supported institution and a fully accredited member of the Middle States Association of Colleges and Secondary Schools.

Penn College is a special mission affiliate of Penn State, committed to applied technology education.

Bachelor and associate degrees in over 100 fields are focused on applied technologies ranging from manufacturing, design, transportation, construction and natural resources to hospitality, health, business and communication. Business/industry connections, national corporate sponsors, small classes, industry-standard equipment and faculty with work experience contribute to strong graduate placement rates.

Pennsylvania College of Technology does not discriminate in admission by race, color, religion, national origin, sex, handicap, age, sexual orientation, political affiliation, status as a disabled or Vietnam era veteran, or any characteristic against which discrimination is prohibited by applicable law, and operates on a nondiscriminatory basis throughout the institution.

Announcement of this policy is in accordance with the State law including the Pennsylvania Human Relations Act and with Federal law, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the Americans with Disabilities Act of 1990.

Any student complaints of harassment or discrimination pertaining to education should be directed to the College's Title VI, IX, and Section 504 Coordinator, Sharon Waters, Pennsylvania College of Technology, One College Avenue, Williamsport, PA 17701-5799, phone (570) 327-4765, fax 570-321-5545 or to the Director of the Office of Civil Rights, Department of Education, Office of Civil Rights, Washington, D.C. 20201. For information on accommodations for persons with disabilities, contact the Coordinator of Disability Services, Pennsylvania College of Technology, One College Avenue, Williamsport, PA 17701-5799, phone (570) 326-3761 extension 7803, fax 570-327-4501.

This notification will be on file in Braille and on audio tape in the following offices at the College: Financial Aid, Room 201, Academic Center; Admissions Office, Room 104, Academic Center; Counseling and Career Services, Room 204, Alvin C. Bush Campus Center and the College Library, Room 158, Learning Resources Center. *Note: Admissions and Financial Aid Offices will move to the new Student and Administrative Services Center in January 2003.*

Pennsylvania College of Technology
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Williamsport, PA 17701-5799

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Access our online catalog at www.pct.edu
for the most current information.

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PHILOSOPHY AND MISSION STATEMENTS

Pennsylvania College of Technology is an affiliate of The Pennsylvania State University and is granted the benefits and responsibilities of the status of The Pennsylvania State University as a state-related institution and as an instrumentality of the Commonwealth of Pennsylvania.

Philosophy Statement

We believe in the dignity and worth of all individuals. We further believe that learning is a lifelong process and that all individuals should have opportunities for lifelong education. Education should help individuals realize their maximum potential academically, culturally and technically, while also providing for personal enrichment. To prosper in a complex and changing society, individuals must learn to think independently, value logical and tested conclusions, develop problem solving abilities, and function collaboratively. The successful application of learning contributes significantly to health and happiness and benefits the organizations and communities in which individuals live and work; the College is an integral part of society and must respond to identified needs and interests. In the delivery of educational services, there is no substitute for excellence.

Mission Statement

Pennsylvania College of Technology offers an array of academic programs – in a student-centered learning environment – at the certificate, associate and baccalaureate levels with a strong emphasis on technology. The College is a statewide-focused institution, with nationally recognized programs and a commitment to hands-on, experiential learning.

Pennsylvania College of Technology seeks to implement its philosophy by providing:

- Opportunities to develop intellectually, ethically, socially, culturally and personally.
- Quality academic programs with emphasis on pre-professional, technological, and service areas.
- Accessible full- and part-time educational opportunities and services that address a wide spectrum of individual needs and abilities through varied formats, schedules and geographic locations.
- Educational programming responsive to economic and employment realities.
- Enhanced learning opportunities through cooperation with industry, business, government, other educational institutions and through international experiences.
- Comprehensive majors that integrate communications, math, science, art, technology, humanities, interpersonal skills, problem solving, critical thinking, information literacy and health and safety.
- Opportunities to develop skills needed to enter and succeed in academic majors.
- Opportunities to increase skills, knowledge, and interest through lifelong learning.
- Assistance with career planning, employment preparation and advanced study.
- An environment that fosters lifelong learning, creativity, and respect for difference.

Providing excellence in instruction and appropriate educational opportunities is the College's highest priority.



WELCOME FROM THE PRESIDENT

That works!

I like to hear those words. They signify the achievement of desired results. They affirm success.

I am encouraged when I hear the phrase “degrees that work” associated with Pennsylvania College of Technology.

Placing graduates in a wide variety of career fields is strong evidence that Penn College's unique applied technology focus works, by meeting the needs of business and industry.

Students who enroll at Penn College are seeking an educational experience that will work for them. They want the end result of that experience to be a means of advancement, securing a lifestyle that meets their goals. I am confident that students with the desire to work toward such goals find what they are seeking at Penn College.

Our success in helping all of our students reach the goals they have set for themselves demonstrates that not only do our degrees “work” – so do our comprehensive services and systems.

In this College Catalog, we offer an overview of academic programs, and we clarify our expectations and processes – from admissions through commencement – that prepare students for success in college, in their communities, and in the world of work. We also name the business and industry leaders who, as members of our program advisory committees, lend their expertise and support to ensure that programs, facilities, equipment and services meet 21st century workplace needs.

I look forward to future opportunities to share with you news and information about Penn College's “degrees that work”.

Davie Jane Gilmour
President

Board of Directors

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MAJORS

Majors	Degree, Certificate, Credential	Page	Majors	Degree, Certificate, Credential	Page
Accounting (BA)	A.A.S.	89	Construction Equipment Operation	C.C.	164
Accounting (BSA)	B.S.	41	Construction Management (BCM)	B.S.	59
Advertising Art (AR)	A.A.A.	89	Culinary Arts Technology (CY)	A.A.S.	104
Air Conditioning/HVAC Technology (HV) (HP)	A.A.S.	122/123	Culinary Arts Technology (BCY)	B.S.	60
Air Conditioning/HVAC Technology (BHV)	B.S.	67	Data Comm. & Networking Concentration/Comp. Info. Tech. (BDC)	B.S.	56
Applied Health Studies (BAH)	B.S.	42	Dental Hygiene (DH)	A.A.S.	105
Applied Human Services (BHS)	B.S.	43	Dental Hygiene Health Policy & Administration Concentration (BHM)	B.S.	61
Architectural Technology (AT)	A.A.S.	90	Special Population Care Concentration (BHP)	B.S.	62
Art/Advertising Art(AR)	A.A.A.	89	Diagnostic Medical Sonography (Ultrasound)	C.C.	164
Art/Graphic Design (BGD)	B.S.	66	Diesel Technician (DC)	Certificate	156
Automated Manufacturing Technology (AF)	A.A.S.	91	Diesel Technology (DD)	A.A.S.	105
Automotive Service Sales & Marketing (AK)	A.A.S.	91	Diesel Technology/MACK Emphasis (MK)	A.A.S.	106
Automotive Service Technician (AM)	Certificate	153	Dietary Manager Technology (DI)	A.A.S.	107
Automotive Technology (AU)	A.A.S.	92	Dining Room Service	C.C.	164
Automotive Technology/Ford ASSET (FA)	A.A.S.	93	Drafting/Computer-Aided Drafting Technology (CD)	A.A.S.	101
Automotive Technology/Toyota Emphasis (TY)	A.A.S.	93	Drafting/Computer-Aided Product Design (BCD)	B.S.	55
Automotive Technology Management (BAU)	B.S.	44	Early Childhood Education (EC)	A.A.S.	108
Aviation Maintenance Technician (AC)	Certificate	153	Electric Power Generation Technology (PG)	A.A.S.	109
Aviation Maintenance Technology (BAV)	B.S.	45	Electrical Occupations (EO)	Certificate	157
Aviation Technology (AD)	A.A.S.	94	Electrical Technology (EL)	A.A.S.	110
Avionics Technology (See Electronics Technology - Aviation Emphasis)	A.A.S.	111	Electromechanical Maintenance Technology (MT)	A.A.S.	110
Baking & Pastry Arts (BK)	A.A.S.	95	Electronics Engineering Technology (BET)	B.S.	64
Banking & Finance (See Business Administration - Banking & Finance Concentration)	B.S.	48	Electronics Engineering Technology Emphasis/Elec. Tech. (EG)	A.A.S.	114
Biology (BL)	A.S.	145	Electronics Technology Aviation Emphasis (AV)	A.A.S.	111
Brick & Block Construction/Masonry (MN)	A.A.S.	98	Cisco Systems® Emphasis (CE)	A.A.S.	112
Broadcast Communications (BC)	A.A.A.	96	Communications/Fiber Optics Emphasis (CF)	A.A.S.	113
Building Automation Technology (BBT)	B.S.	47	Computer Automation Maintenance Emphasis (CM)	A.A.S.	114
Building Construction Technology (CB)	A.A.S.	97	Electronics Engineering Technology Emphasis (EG)	A.A.S.	114
Building Construction Technology/Masonry Emphasis (MN)	A.A.S.	98	Industrial Process Control Emphasis (IP)	A.A.S.	115
Building Design/Architectural Technology (AT)	A.A.S.	90	Semiconductor Processing Technology Emphasis (SC)	A.A.S.	116
Business Administration Banking & Finance Concentration (BBF)	B.S.	48	Emergency Medical Technician/Paramedic Technology (PP)	A.A.S.	135
Management Concentration (BBM)	B.S.	49	Environmental Technology (EV)	A.A.S.	117
Management Information Systems Concentration (BBS)	B.S.	50	Executive Emphasis/Office Technology (OP)	A.A.S.	133
Marketing Concentration (BBK)	B.S.	52	Financial Planning	C.C.	164
Small Business & Entrepreneurship Concentration (BBE)	B.S.	53	Floral Design/Interior Plantscape (FD)	A.A.S.	118
Business Management (BM)	A.A.S.	98	Ford ASSET/Automotive Technology (FA)	A.A.S.	93
Business Management/Travel & Tourism Emphasis (TV)	A.A.S.	99	Forest Technology (FR)	A.A.S.	119
Cabinetmaking & Millwork (CK)	Certificate	154	General Studies (GS)	A.A.	146
Cardiovascular Technology (See Applied Health Studies)		42	Nuclear Medicine Technology Articulation Emphasis	A.A.	148
Carpentry/Construction (CN)	Certificate	156	Graphic Communications Management (BGC)	B.S.	65
Civil Engineering Technology (CT)	A.A.S.	100	Graphic Communications Technology (GT)	A.A.S.	120
Civil Engineering Technology (BCT)	B.S.	54	Graphic Design (BGD)	B.S.	66
Collision Repair Technician (CL)	Certificate	155	Health Arts (HT)	A.A.S.	120
Collision Repair Technology (CR)	A.A.S.	101	Health Information Technology (HI)	A.A.S.	121
Communications/Fiber Optics Emphasis/Electronics Tech. (CF)	A.A.S.	113	Health Policy & Administration Concentration/Dental Hygiene (BHM)	B.S.	61
Computer-Aided Drafting Technology (CD)	A.A.S.	101	Heating/HVAC Technology (HV) (HP)	A.A.S.	122/123
Computer-Aided Product Design (BCD)	B.S.	55	Heating/HVAC Technology (BHV)	B.S.	67
Computer Applications Technology (CX)	Certificate	155	Heavy Construction Equipment Technician (HC)	Certificate	158
Computer-Automation Maintenance Emphasis/Elec. Tech. (CM)	A.A.S.	114	Heavy Construction Equipment Technology (HA)	A.A.S.	124
Computer Information Systems Networking & Technical Support (NT)	A.A.S.	102	Heavy Construction Equipment Technology/CAT Emphasis (CH)	A.A.S.	123
Programming & Database Processing (PD)	A.A.S.	103	Home Construction/Building Construction Technology (CB)	A.A.S.	97
Computer Information Technology Data Communications & Networking Concentration (BDC)	B.S.	56	Home Remodeling/Construction Carpentry (CN)	Certificate	156
Internetworking Application Development Concentration (BIA)	B.S.	57	Home Repair/Cabinetmaking & Millwork (CK)	Certificate	154
Construction Carpentry (CN)	Certificate	156	Hospitality Management (HM)	A.A.S.	125
			Human Services (HS)	A.A.S.	126

MAJORS

Majors	Degree, Certificate, Credential	Page
HVAC Technology (HV) (HP)	A.A.S.	122/123
HVAC Technology (BHV)	B.S.	67
Individual Studies (IS)	A.A.S.	127
Indoor Air Quality/HVAC Technology (HV) (HP)	A.A.S.	122/123
Indoor Air Quality/HVAC Technology (BHV)	B.S.	67
Industrial Process Control Emphasis/Electronics Technology (IP)	A.A.S.	115
Internetworking Application Development Concentration/ Computer Information Technology (BIA)	B.S.	57
Landscape/Nursery Technology (LN)	A.A.S.	127
Landscape/Nursery Tech./Turfgrass Management Emphasis (TM)	A.A.S.	128
Legal Assistant/Paralegal (LA)	A.A.S.	129
Legal Assistant/Paralegal Studies (BLA)	B.S.	68
Machinist General (MG)	Certificate	158
Management (See Business Administration - Management Concentration)	B.S.	49
Management Information Systems (See Business Administration - Management Information Systems Concentration)	B.S.	50
Manufacturing Engineering Technology (BAF)	B.S.	69
MACK Emphasis/Diesel Technology (MK)	A.A.S.	105
Marketing (See Business Administration - Marketing Concentration)	B.S.	52
Masonry Emphasis/Building Construction Technology (MN)	A.A.S.	98
Mass Communications (MC)	A.A.A.	130
Mechanical Systems/HVAC Technology (HV) (HP)	A.A.S.	122/123
Mechanical Systems/HVAC Technology (BHV)	B.S.	67
Medical Emphasis/Office Technology (OL)	A.A.S.	134
Medical Records (HI) (See Health Information Technology)		121
Minor in Accounting (MAC)	B.S. Minor	80
Minor in Architectural Technology (MAT)	B.S. Minor	80
Minor in Business Administration (MBS)	B.S. Minor	80
Minor in Communication Studies (MCN)	B.S. Minor	80
Minor in Computer Science (MCS)	B.S. Minor	80
Minor in Finance (MFN)	B.S. Minor	80
Minor in Financial Planning (MFP)	B.S. Minor	81
Minor in Graphic Communications Technology (MGC)	B.S. Minor	81
Minor in Information Systems (MIS)	B.S. Minor	81
Minor in International Business (MIB)	B.S. Minor	81
Minor in Legal Studies (MLS)	B.S. Minor	81
Minor in Management (MMG)	B.S. Minor	82
Minor in Mathematics (MMA)	B.S. Minor	82
Minor in Technical & Professional Communication (MTP)	B.S. Minor	82
Minor in Travel & Tourism (MTV)	B.S. Minor	82
Motor Control/Electrical Technology (EL)	A.A.S.	110
Motorsports Service Technician	C.C.	165
Nanofabrication Technology	C.C.	165
Networking & Technical Support/Computer Info. Systems (NT)	A.A.S.	102
Nuclear Medicine Technology Articulation Emph./General Studies	A.A.	148
Nurse/Health Care Paralegal Studies (LX)	Certificate	159
Nursing (RN) (BSN)	B.S.	70
Nursing, RN Preparation (NR)	A.A.S.	130
Nursing, Practical (NU)	Certificate	160
Occupational Therapy Assistant (OC) (Also See Applied Health Studies)	A.A.S.	131
Office Information Systems (OS)	A.A.S.	133
Office Technology		
Executive Emphasis (OP)	A.A.S.	133
Medical Emphasis (OL)	A.A.S.	134
Paralegal (LA) (See Legal Assistant/Paralegal)		68
Paramedic Technology (PP) (Also See Applied Health Studies)	A.A.S.	185
Physical Fitness Specialist (FS)	A.A.S.	136

Majors	Degree, Certificate, Credential	Page
Physician Assistant (BPA)	B.S.	71
Plastics & Polymer Engineering Technology (BPS)	B.S.	73
Plastics & Polymer Technology (PS)	A.A.S.	137
Plumbing (PH)	Certificate	159
Practical Nursing (NU)	Certificate	160
Pre-Engineering (ES)	A.S.	138
Professional Baking	C.C.	165
Professional Cooking	C.C.	165
Programmable Logic/Electrical Technology (EL)	A.A.S.	110
Programming & Database Processing/Computer Info. Systems (PD)	A.A.S.	103
Radiography (RD) (Also See Applied Health Studies)	A.A.S.	139
Refrigeration/HVAC Technology (HV) (HP)	A.A.S.	122/123
Refrigeration/HVAC Technology (BHV)	B.S.	67
Residential Construction Technology & Management (BRM)	B.S.	74
Sawmilling & Wood Handling	C.C.	165
Science/Biology (BL)	A.S.	145
Science/Pre-Engineering (ES)	A.S.	149
Semiconductor Processing Technology Emphasis/Elec. Tech. (SC)	A.A.S.	116
Small Business & Entrepreneurship (See Business Administration - Small Business & Entrepreneurship)	B.S.	53
Special Population Care Concentration/Dental Hygiene (BHP)	B.S.	62
Surveying Technology (SU)	A.A.S.	140
Technical & Professional Communication (BPC)	B.S.	75
Technology Management (BTM)	B.S.	77
Toolmaking Technology (TT)	A.A.S.	141
Toyota Emphasis/Automotive Technology (TY)	A.A.S.	93
Travel & Tourism Emphasis/Business Management (TV)	A.A.S.	99
Tree Care	C.C.	165
Vocational Teacher Education (EVT)	E.	150
Welding (WE)	Certificate	161
Welding & Fabrication Engineering Technology (BWE)	B.S.	78
Welding Technology (WA)	A.A.S.	142

DEGREE, CERTIFICATE OR CREDENTIAL

A.S. — Associate of Science

A.A. — Associate of Arts

A.A.A. — Associate of Applied Arts

A.A.S. — Associate of Applied Science

B.S. — Bachelor of Science

C.C. — Competency Credential

E. — Endorsement

CORE CURRICULUM

Penn College has established a core curriculum for each of its credentials to ground and extend the competence students develop within their majors. The core corresponds with the College Philosophy which speaks to “personal enrichment...prosper in a complex and changing society...think independently, value logical and tested conclusions, develop problem-solving abilities, and function effectively with other people.” Through the courses that satisfy core requirements, students are challenged to integrate knowledge from a variety of disciplines and to extend their learning experience to areas beyond the major. The intended goals of the core curriculum are integrated with and are indirectly measured by students’ demonstrated competence in their major courses.

GOALS OF THE CORE CURRICULUM

- Structure written and verbal communication that is clear, coherent, unified, and focused
- Operate successfully in the workplace and in social, political, and decision-making environments using skills and knowledge developed from a comprehensive program of study
- Use current knowledge, access new information, integrate material from diverse fields, and work effectively with others to define and solve problems and adapt to change
- Professionally and ethically strive for excellence which contributes to the community, society, and the global environment
- Understand that personal and social productivity and creativity are integrally linked with maintaining physical and mental health and with a commitment to learning as a lifelong endeavor
- Use computers for word processing, organization of data, communication, research, and for quantitative and analytical purposes

BACCALAUREATE CORE

Communications: 9 credits – ENL 111, ENL 121 or 201, any SPC course

Mathematics: 6 credits

Science: 7 credits to include one lab science

Humanities/Social Science/Art/Foreign Language: total of 18-21 credits as defined within the major

Health and Fitness: 2 credits

Computer Information: CSC 110

Special-designation courses that may also satisfy other requirements: Cultural Diversity, Science/Technology/Society, Writing-Enriched course

ASSOCIATE CORE

Associate of Arts

Communications: 9 credits – ENL 111, ENL 121, SPC 101 or 201

Mathematics: 6 credits

Science: 7 credits to include one lab science

Humanities/Art/Social Science/Foreign Language: 12 credits

Health and Fitness: 2 credits

Computer Information: CSC 110

Additional requirement: Cultural Diversity elective

Associate of Science

Communications: 6 credits, including ENL 111

Mathematics: 6 credits, at a minimum level of Statistics or College Algebra

Science: 8 credits, a two-semester sequence of the same laboratory course

Humanities/Art/Social Science/Foreign Language: 12 credits

Health and Fitness: 2 credits

Computer Information: CSC 110

Associate of Applied Arts and Associate of Applied Science

Communications: 6 credits, including ENL 111

Mathematics: 3 credits

Science: 3 credits

Humanities/Social Science/Art /Foreign Language: 3 credits

Health and Fitness: 1 credit

Computer Information: CSC 110

CERTIFICATES

Majors leading to a Certificate in a Special Field of Study focus on occupational preparation and skill development. They range in length from two to four semesters. Core requirements include

Communications: 3 credits

Mathematics: 3 credits

DEGREES AND MAJORS

BACHELOR OF SCIENCE

Penn College offers four-year bachelor of science degrees. Bachelor of Science degrees may parallel or build upon the two-year majors, or they may stand as their own unique majors. While the associate degrees primarily emphasize practical applications, the bachelor curriculums complete a larger base of education by adding advanced practical applications, broader liberal arts study, systematic problem solving, cultural diversity, senior-year projects and interdisciplinary courses that develop appreciation for the relationships among science, technology and society.

ASSOCIATE DEGREES

Associate degree majors help students prepare for employment or serve as the basis for additional education. Associate degree majors require a minimum of 60 credits.

The College awards four types of associate degrees:

The **Associate of Arts (A.A.)** degree is designed to parallel the first two years of a liberal arts education at a four-year college. Credits earned usually can be transferred as the first two years of a bachelor degree.

The **Associate of Science (A.S.)** degree is designed to parallel the first two years of a scientific or professional-related baccalaureate major. Credits earned usually can be transferred as the first two years of a bachelor degree.

The **Associate of Applied Arts (A.A.A.)** degree is offered in Advertising Art, Broadcast Communications and Mass Communications. These majors offer students the opportunity to gain the technical and professional skills needed for employment and to prepare for transfer to a four-year college.

The **Associate of Applied Science (A.A.S.)** degree offers students the opportunity to gain the technical and occupational skills needed for employment. Many four-year colleges accept all or a substantial portion of A.A.S. degree credits as part of a bachelor degree.

CERTIFICATE IN SPECIAL FIELD OF STUDY

These majors are occupational in nature and heavily skills-oriented. They are not primarily for transfer, but in certain cases can be transferred to some colleges. Certificate majors vary in length, but do not exceed two years of coursework.

A feature of these majors is the optional elective. As the name implies, an optional elective can be chosen to broaden the basic academic work required of all college students. Students are urged to make use of the opportunity to enrich their educational experience.

COMPETENCY CREDENTIAL

Purpose: The competency credential provides specialized training programs to respond to needs of individuals, business, and industry. The credential offers formal recognition for competence in an area of specialization. Each credential is equivalent to no more than one semester of full-time college work and requires nine to 18 credits.

An **Individual Competency Credential** is developed to meet a student's personal goals. Advisors work with the student to develop a planned sequence of courses.

Standard Competency Credentials have been developed to provide training in well-established areas for professional upgrading or retraining. Standard Competency Credentials are listed in this Catalog.

SCHOOLS AND MAJORS

BUSINESS & COMPUTER TECHNOLOGIES

School Office: ATHS, Rm. E257
Phone: (570) 326-3761, ext. 7530
Dean: Dr. Edward A. Henninger

Bachelor Degrees

Accounting (BSA)
Business Administration
 Banking & Finance Concentration (BBF)
 Management Concentration (BBM)
 Management Information Systems Concentration (BBS)
 Marketing Concentration (BBK)
 Small Business & Entrepreneurship Concentration (BBE)
Computer Information Technology
 Data Communications & Networking Concentration (BDC)
 Internetworking Application Development Concentration (BIA)
Legal Assistant/Paralegal Studies (BLA)
Technology Management (BTM)

Bachelor Degree Minors

Accounting	Information Systems
Business Administration	International Business
Computer Science	Legal Studies
Finance	Management
Financial Planning	Travel & Tourism

Associate Degrees and Certificates

Accounting (BA)
Business Management (BM)
 Travel & Tourism Emphasis (TV)
Computer Applications Technology (CX)
Computer Information Systems
 Networking & Technical Support (NT)
 Programming & Database Processing (PD)
Health Information Technology (HI)
Legal Assistant/Paralegal (LA)
Nurse/Health Care Paralegal Studies (LX)
Office Information Systems (OS)
Office Technology
 Executive Emphasis (OP)
 Medical Emphasis (OL)

Competency Credential

Financial Planning

Service Courses

Computer Science
Keyboarding

SCHOOLS & MAJORS

SCHOOLS AND MAJORS cont'd

CONSTRUCTION & DESIGN TECHNOLOGIES

School Office: BTC, Rm. 116
Phone: (570) 326-3761, ext. 7311
Dean: Tom Gregory

Bachelor Degrees

Building Automation Technology (BBT)
Computer-Aided Product Design (BCD)
Construction Management (BCM)
HVAC Technology (BHV)
Residential Construction Technology
& Management (BRM)

Bachelor Degree Minors

Architectural Technology

Associate Degrees and Certificates

Architectural Technology (AT)
Building Construction Technology (CB)
Masonry Construction (MN)
Cabinetmaking & Millwork (CK)
Computer-Aided Drafting Technology (CD)
Construction Carpentry (CN)
Electrical Occupations (EO)
Electrical Technology (EL)
Electromechanical Maintenance Technology (MT)
Heating, Ventilation & Air Conditioning
Technology (HVAC) (HV) (HP)
Plumbing (PH)

HEALTH SCIENCES

School Office: ATHS, Rm. W241
Phone: (570) 326-3761, ext. 7240
Dean: Dr. Deb Wilson

Bachelor Degrees

Applied Health Studies (BAH)
Dental Hygiene
Health Policy & Administration Concentration (BHM)
Special Population Care Concentration (BHP)
Nursing (BSN)
Physician Assistant (BPA)

Associate Degrees and Certificates

Dental Hygiene (DH)
Health Arts (HT)
Nursing (NR)
Occupational Therapy Assistant (OC)
Paramedic Technology (PP)
Physical Fitness Specialist (FS)
Practical Nursing (NU)
Radiography (RD)

Competency Credential

Diagnostic Medical
Sonography (Ultrasound)

Service Courses

Medical Terminology
Fitness & Lifetime Sports

HOSPITALITY

School Office: LEC, Rm. A125B
Phone: (570) 326-3761, ext. 4505
Dean: William Butler

Bachelor Degree

Culinary Arts Technology (BCY)

Associate Degrees and Certificates

Baking & Pastry Arts (BK)
Culinary Arts Technology (CY)
Dietary Manager Technology (DI)
Hospitality Management (HM)

Competency Credentials

Dining Room Service
Professional Baking
Professional Cooking

INDUSTRIAL & ENGINEERING TECHNOLOGIES

School Office: ATHS, Rm. E134
Phone: (570) 326-3761, ext. 7550
Dean: Dr. Lawrence Fryda

Bachelor Degrees

Civil Engineering Technology (BCT)
Electronics Engineering Technology (BET)
Manufacturing Engineering Technology (BAF)
Plastics & Polymer Engineering Technology (BPS)
Welding & Fabrication Engineering Technology (BWE)

Associate Degrees and Certificates

Automated Manufacturing Technology (AF)
Civil Engineering Technology (CT)
Electronics Technology
Cisco Systems® Emphasis (CE)
Communications/Fiber Optics Emphasis (CF)
Computer Automation Maintenance Emphasis (CM)
Electronics Engineering Technology Emphasis (EG)
Industrial Process Control Emphasis (IP)
Semiconductor Processing Technology Emphasis (SC)
Machinist General (MG)
Plastics & Polymer Technology (PS)
Surveying Technology (SU)
Toolmaking Technology (TT)
Welding (WE)
Welding Technology (WA)

Competency Credential

Nanofabrication Technology

INTEGRATED STUDIES

School Office: ACC, Rm. 306
Phone: (570) 326-3761, ext. 7768
Dean: Dr. Nicholas J. Vitterite

Bachelor Degrees

Applied Human Services (BHS)
Graphic Communications Management (BGC)
Graphic Design (BGD)
Technical & Professional Communication (BPC)

Bachelor Degree Minors

Communication Studies
Graphic Communications Technology
Mathematics
Technical & Professional Communication

Associate Degrees

Advertising Art (AR)
Biology (BL)
Broadcast Communications (BC)
Early Childhood Education (EC)
General Studies (GS)
Graphic Communications Technology (GT)
Human Services (HS)
Individual Studies (IS)
Mass Communications (MC)
Pre-Engineering (ES)

Service Courses

Art	Mathematics
Biology	Philosophy
Chemistry	Photography
Economics	Physics
Education	Political Science
English	Psychology
French	Reading
Geography	Science
Geology	Sociology
History	Spanish
Humanities	Speech

NATURAL RESOURCES MANAGEMENT

School Office: ESC, Rm. 105
Phone: (570) 320-8038
Dean: Dr. Wayne Longbrake

Associate Degrees and Certificates

Diesel Technician (DC)
Diesel Technology (DD)
Diesel Technology: MACK Emphasis (MK)
Electric Power Generation Technology (PG)
Environmental Technology (EV)
Floral Design/Interior Plantscape (FD)
Forest Technology (FR)
Heavy Construction Equipment Technician (HC)
Heavy Construction Equipment Technology (HA)
Heavy Construction Equipment Technology:
CAT Emphasis (CH)
Landscape/Nursery Technology (LN)
Turfgrass Management Emphasis (TM)

Competency Credentials

Construction Equipment Operation
Sawmilling & Wood Handling
Tree Care

TRANSPORTATION TECHNOLOGY

School Office: ATC, Rm. 133
Phone: (570) 326-3761, ext. 7275
Dean: Colin Williamson

Bachelor Degrees

Automotive Technology Management (BAU)
Aviation Maintenance Technology (BAV)

Associate Degrees and Certificates

Automotive Service Sales & Marketing (AK)
Automotive Service Technician (AM)
Automotive Technology (AU)
Automotive Technology/Ford ASSET (FA)
Automotive Technology/Toyota Emphasis (TY)
Aviation Maintenance Technician (AC)
Aviation Technology (AD)
Collision Repair Technician (CL)
Collision Repair Technology (CR)
Electronics Technology: Aviation Emphasis (AV)

Competency Credential

Motorsports Service Technician

PENNSYLVANIA COLLEGE OF TECHNOLOGY

Williamsport, Pennsylvania

Pennsylvania College of Technology offers students a rich tradition of excellence in technology-based education. Innovative education and majors that respond to real workplace needs have been offered here since the early part of this century. Our name has changed several times since those early days, but we have stayed true to one vision.

Williamsport Technical Institute

founded 1941

While 1941 was the year the Williamsport Technical Institute was formally established, programming actually had been in place since 1914, when a small high school industrial shop became home to adult education and training programs. Many of the first students to enroll were disabled veterans from World War I who needed immediate retraining.

In the 1920's, the focus shifted from industrial arts to vocational training. That shift helped combat the effects of the Depression in the 1930's. Cooperation between the school and local industry led to the development of a plan for attacking rising unemployment through retraining. "The Williamsport Plan" was copied throughout the United States and encompassed cooperative training of the Civilian Conservation Corps and the National Youth Administration.

World War II led to even more change in the 1940's. Training to meet defense industry needs was crucial; so the institute operated on a 24-hour-a-day schedule. Part of that training involved programs for individuals with handicaps, who were a big part of the war effort. Even before the "G.I. Bill" was passed in 1944, training also was being offered for returning World War II vets. The war production training and special training for disabled veterans returning from WWII led to the Institute's becoming one of the nation's largest providers of training and retraining for people with physical handicaps.

Williamsport Area Community College

founded 1965

The passage of the Community College Act of 1963 led to the establishment of Williamsport Area Community College, on the foundation of the former Williamsport Technical Institute. The College used the Technical Institute's programs and facilities as the starting point for growth and development. Area school districts served as local sponsors for the Community College. By the 1970's, service to those sponsoring districts included both credit and noncredit courses offered in Williamsport and at the new Earth Science Center near Allenwood, as well as at a variety of school district locations.

The 1980's brought more change. The Community College established a North Campus to serve needs of the residents of Pennsylvania's Northern Tier. Enrollment throughout the College was climbing steadily, with students coming from many areas outside the College's service area. While the physical plant grew and the enrollment expanded, local school districts became increasingly concerned about costs and the College faced eroding sponsor support. The City of Williamsport assumed the sponsor role on a temporary basis until 1989, when the College was named an affiliate of The Pennsylvania State University.

Pennsylvania College of Technology

founded 1989

As a Penn State affiliate, Penn College has realized its full potential as Pennsylvania's premier technical college. Continuing in a tradition of excellence, Penn College is a strong force in higher education in Pennsylvania, offering bachelor and associate degrees and certificates. Students from around the state, the nation, and the world are enjoying the benefits of state-of-the-art majors in traditional and emerging technologies.

Unique bachelor of science degree majors are providing new opportunities for students to build upon their technical background and advance into management and specialty positions. Regular, new additions to the Penn College portfolio not only meet existing workplace demands, but also prepare students for the careers of tomorrow.

ACADEMIC CALENDAR

FALL 2002 - SPRING 2003

August

- 5 Tuition Due Date
- 8 Summer Classes End
- 10 Summer Commencement
- 12 Drop/Add, Late Registration
- 13 Summer Grades Due
- 15 Convocation
- 16-18 Student Orientation
Staff Development
- 19 Classes Begin

September

- 2 Labor Day (no classes)

October

- 15 Mid-Term/8-Week Grades
Due by 12 Noon
- 18-20 Fall Break (no classes)
- 27 Fall Visitation Day

November

- 15 Last day for "W" grade
- 27-Dec 2 Thanksgiving Break (no classes)

December

- 9 Last day for 16-week classes
8-week classes continue
- 10 Finals Prep Day
- 11-17 Finals Week
- 17 Semester Ends
- 18-19 Staff Development
- 19 Grades Due by 10 a.m.
Winter Commencement
- 21-Jan 5 College Closed

January

- 6 College Re-opens
- 8 Drop/Add, Late Registration
Faculty return
- 9-10 Staff Development
- 11-12 Student Orientation
- 13 Classes Begin

March

- 7 Mid-Term Grades Due by 12 Noon
- 9-16 Spring Break (no classes)
- 17 8-Week Grades Due
- 23 Open House

April

- 17 Last day for "W" grade
- 18-21 April Break (no classes)

May

- 5 Last day 16-week classes
8-week classes continue
- 6 Finals Prep Day
- 7-13 Finals Week
- 13 Semester Ends
- 14-15 Staff Development
- 15 Grades Due 10 a.m.
- 17 Spring Commencement

FALL 2003 - SPRING 2004

August

- 4 Tuition Due Date
- 7 Summer Classes End
- 8 Summer Commencement
- 11 Drop/Add, Late Registration
- 12 Summer Grades Due 10 a.m.
- 14 Convocation
- 15-17 Student Orientation
Staff Development
- 18 Classes Begin

September

- 1 Labor Day (no classes)

October

- 14 Mid-Term/8-Week Grades
Due by 12 Noon
- 17-19 Fall Break (no classes)
- 26 Fall Visitation Day

November

- 14 Last day for "W" grade
- 26-Dec 1 Thanksgiving Break (no classes)

December

- 8 Last day for 16-week classes
- 9 Finals Prep Day
- 10-16 Finals Week
8-week classes continue
- 16 Semester Ends
- 17-18 Staff Development
- 18 Grades Due by 10 a.m.
Winter Commencement
- 20-Jan 4 College Closed

January

- 5 College Re-opens
- 7-9 Staff Development
Drop/Add, Late Registration
- 10-11 Student Orientation
- 12 Classes Begin

March

- 5 Mid-Term Grades Due by 12 Noon
- 7-14 Spring Break (no classes)
- 16 1st 8-Week Grades Due
- 21 Open House

April

- 9-12 April Break (no classes)
- 16 Last day for "W" grade

May

- 3 Last day 16-week classes
- 4 Finals Prep Day
- 5-11 Finals Week
8-week classes continue
- 11 Semester Ends
- 12-13 Staff Development
- 13 Grades Due 10 a.m.
- 15 Spring Commencement

Information



ADMISSION POLICY

It is the intention of Penn College to offer educational opportunities to anyone who has the interest, desire and ability to pursue advanced study. Therefore, courses of study are offered at the certificate, associate and bachelor degree levels. Due to the wide variety of majors, admissions criteria vary according to majors. At a minimum, applicants must have a high school diploma, or its equivalent. Some majors are restricted to persons who meet certain academic skills and prerequisites, who have attained levels of academic achievement and who have earned an acceptable score on the Scholastic Aptitude Test (SAT) or ACT. Questions regarding the admissions standards for specific majors should be directed to the Office of Admissions. **Degree seeking students must be enrolled by the close of business on the first day of any academic semester. Non-degree seeking students must be enrolled by the close of business on the last day of the first week of classes for any given academic semester.**

The College reserves the right to deny admission or readmission to any student if, in the opinion of College authorities, his/her admission is not in the best interest of the student or the College.

Pennsylvania College of Technology does not discriminate in admission by race, color, religion, national origin, sex, handicap, age, sexual orientation, political affiliation, status as a disabled or Vietnam era veteran, or any characteristic against which discrimination is prohibited by applicable law, and operates on a nondiscriminatory basis throughout the institution.

The College will provide opportunities to develop the basic skills necessary to enroll in degree and certificate courses to those who demonstrate such needs on the College's placement tests.

ACCEPTANCE TO THE COLLEGE

Acceptance to the College is offered when the applicant's file (*i.e., application for admission, application fee, transcripts/GED, and, when appropriate, testing material*) is completed in the Office of Admissions. Acceptances are offered on a rolling basis, throughout the year.

ACCEPTANCE INTO A MAJOR

Acceptance into a major is finalized upon an applicant's completion of placement testing.

Penn College's commitment to student learning/success is reflected in its admissions decisions. That commitment derives from the belief that enrolled students should be positioned to benefit from a Penn College education and to succeed in reaching their goals. Thus, the following circumstances might apply.

Restricted Admissions

Majors with restricted admissions preclude enrollment for all students who have not met certain criteria; for example, the completion of all required developmental courses. Curriculum pages detail those restrictions.

Selective Admissions

Majors with selective admissions admit students on the basis of ranked, accumulated point values awarded for performance in certain preset, weighted academic experiences. These experiences include, but are not limited to, related credit course work: e.g. Anatomy & Physiology I & II equating to points in Health Sciences admissions.

Developmental Semester

Students who score below required levels on all three College placement tests, (*mathematics, English, and reading*) must complete at least most of their required developmental work before they may schedule any regular courses. Students who still need developmental work in all three areas at the beginning of their semester must enroll in the Developmental Semester instead of enrolling in a regular Penn College major.

The Developmental Semester is meant to improve students' academic skills and their understanding of career majors offered by Penn College. During the Developmental Semester, students take four courses including Developmental Mathematics, Developmental English, Developmental Reading, and Orientation to College. After successfully completing this semester, students may enroll in courses required in a regular Penn College major.

Students who do not want to enroll in the full-time Developmental Semester may complete developmental requirements by enrolling in summer school, working with a tutor and qualifying to retest, or by attending College part-time until they complete at least most of their developmental requirements. All alternative plans must be approved, in advance, by Penn College.

Delayed Start

When placement test results signal a level of academic deficiency that the College is unable to address, enrollment may be denied.

Access our online catalog at www.pct.edu
for the most current information.

Admission

Admission Procedure

All graduates of accredited secondary schools or General Equivalency Diploma (GED) recipients are eligible for admission to the College as regular degree-seeking students.

Admission into a specific major is based upon evidence of scholastic readiness for the major.

1. Application and Application Fee

All applicants to degree and certificate majors must submit an “Application for Admission” form together with a non-refundable application fee. The Director of Admissions, upon written request from a high school guidance counselor, state agency, etc., has the authority to waive the fee when it can be determined that the fee causes financial hardship to an individual.

2. High School/GED Requirements

- High school students must submit a partial transcript during their senior year. An official final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study must be on file before a student can attend classes.
- High school graduates must submit an official final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study.
- General Equivalency Diploma recipients age 18 or older may be admitted to the College, provided that the applicant has earned a GED. Applicant must submit official GED scores.
- Anyone age 18 or older who has not met the requirements of sections a., b., or c. above may be considered for admission as a “nondegree student” provided he/she has the appropriate aptitudes and abilities to enter the College. “Nondegree students” are not eligible for state and federal financial aid.
- Early Admissions: Persons who have completed the 11th grade at an approved or accredited high school may be considered for admission as a full-time or part-time student during the senior year of high school provided the chief administrative officer of the high school submits a letter to the Office of Admissions indicating approval of the student’s early admission. That written approval, plus the applicant’s application fee and transcript, must be provided to the Office of Admissions before the application will be considered. If denied admission as an early admissions student, the applicant shall be automatically considered for admission at the end of his/her senior year. All fees will be the responsibility of the student.
- Accelerated Program: A high school student who has completed two years of high school beyond ninth grade may enroll in the College’s accelerated program in lieu of the senior year of high school. The program begins in the fall semester. When the student completes 30 or more semester hours with a 2.0 (“C”) grade point average (GPA) or above, a high school diploma would be awarded by the appropriate school district.

Students entering the Associate of Arts majors must have a 3.5 high school grade point average (GPA). For entrance into the Associate of Applied Science, Associate of Applied Arts, or Certificate majors, students must have a minimum of a 2.5 GPA with a minimum of two semesters with a GPA of 3.0 in anticipated major or related areas.

To be accepted, in addition to the normal admission requirements, students must have:

- 1) A recommendation from high school guidance counselor.
- 2) Approval of high school principal.
- 3) A signed permission form from parents/legal guardians.
- 4) Student/parent interview with the College’s Director of Admissions.

g. Dual Enrollment: Qualified full-time high school students may enroll part-time in College credit classes. College courses taken may be counted toward high school graduation with the school’s approval. Students must be in the 10th, 11th or 12th grade and have a 2.5 minimum high school GPA to be eligible.

h. Credit in Escrow: High school students who have completed two years beyond the ninth grade with a GPA of 2.5 may enroll part-time. They may take up to 11 credit hours, as determined by the Admissions Office, based upon the student’s ability and required high school time.

3. Placement Examination

To ensure that applicants have the requisite entry-level skills, all are required to take the College’s placement examinations. The College uses these examinations to assess applicants’ skills in math, English and reading. Based on the test results, students will be placed in the appropriate math, English and reading courses. The College reserves the right to recommend another major or require developmental courses if the test results indicate that an applicant does not have the required academic entry skills. Students who place into the low-score category during placement testing may not be admitted to Penn College until appropriate remediation has taken place.

Students who test into low score status in one placement test area but are not developmental in any other area will be permitted to attend Penn College. These students may be scheduled for 1-12 credits based upon personal interview, placement test results, high school transcripts and choice of major.

In instances where placement test scores indicate triple deficiencies, a student may matriculate only into the Developmental Semester courses.

4. Health Records Requirement

A student who may need special accommodations due to a physical or mental disability/handicap must submit his/her medical history on a health record card. (Health record cards are available from the College’s Nurse.) The health card is completed during placement testing. The card must be received before the student can begin classes. A disability or handicap will not be used to deny a person admission to the College.

5. Tuition Deposit and Tuition Payment

All applicants who have been accepted as degree-seeking or certificate-seeking students must submit a tuition deposit. The tuition deposit will be credited to the student’s first-semester tuition. If the student does not enroll and notifies the College in writing (by June 1 for the fall semester and November 1 for the spring semester), the College will refund 50 percent of the tuition deposit.

The tuition deposit will hold a space in class until the announced tuition payment deadline. Students who have not met their total financial obligations for the semester by the deadline will forfeit their class space. As a result, someone from the College’s waiting list may take their space in the major.

6. Baccalaureate Entrants

Those applying within two years of their graduation from high school submit SAT scores. The Admissions Office will discuss alternatives with entrants who have not completed SAT or ACT.

7. Additional Requirements for Certain Majors

In addition to the College’s general admission policies, applicants to certain majors shall complete other requirements prior to qualifying for acceptance. These additional requirements are listed on page 16.

Classification of Students

Full-Time: A full-time student is one who carries 12 or more credits.

Part-Time: A degree or certificate candidate who carries fewer than 12 credits per semester is enrolled as a part-time student.

Nondegree: A nondegree student is one who is not enrolled in a degree or certificate major. Nondegree students can select courses without regard to degree or certificate requirements assuming they have met the prerequisites for the course. However, nondegree students may register for no more than six (6) credits a semester. Nondegree status is specifically for students who wish to pursue coursework with neither the responsibilities nor the benefits of degree status. Nondegree students are not eligible for financial aid and are not required to pay the application fee. If and when non-degree students wish to transfer to degree-seeking status, the rules in effect for degree seeking will apply to them. The College recommends that nondegree status be reviewed upon completion of 15 credits.

Satisfactory Progress: As long as a postsecondary student is officially enrolled and officially permitted to continue his/her studies toward a degree or certificate at the College, the student will be considered to be making satisfactory progress. Students receiving financial aid must meet additional criteria as explained in the Financial Aid section of this catalog in order to continue to be eligible to receive financial aid.

Advisement Center

The Advisement Center offers a comprehensive array of services designed to assist students in attaining their goals. Services are available for all new and returning students, including evening, transfer and nondegree students. The Center provides support and direction for students as they make academic decisions. The goal is to provide access to proper advising and related services including:

- Scheduling and administration of all new student placement testing
- Administration of pre-enrollment advising sessions
- Clarification of academic policies and procedures
- Referrals to other departments and/or services on campus
- Assistance with nontraditional credit paperwork and processes
- Assistance with course substitution paperwork
- Assistance with students experiencing academic difficulty.

Developmental Education Courses

Good high school preparation in math, English and other academic subjects is important for success in college. Our open admissions policy permits most students to enroll in the majors of their choice. However, all entering students must exhibit competencies in the basic skills (*reading, mathematics and written expression*) necessary for success in their coursework. Students who have not demonstrated these skills on the College placement tests must take specific developmental courses before enrolling in other math and English courses required for a degree or certificate.

New students who have deficiencies will need to schedule at least one of their required developmental courses. Returning students will need to schedule all their remaining developmental courses by their second semester. Schedules for students who do not meet these requirements will not be accepted by the computerized scheduling routine. Questions or problems meeting these deadlines must be directed to the Dean of the academic school.

The College will award institutional credit for developmental studies courses (*courses numbered 001-009*). Developmental courses in RDG may be used as open or general electives if the course number is 100 or higher. Developmental courses with institutional credit may not replace any course requirement or elective. However, the grades earned in any developmental course will be included in the student's grade-point average.

Scheduling/Registration

Because the number of students who can register for any class is limited, it is advised that students schedule their classes early. It is in the student's best interest to have all financial arrangements made and the registration process complete before the announced Late Registration period to assure they have the schedule they need before classes begin.

STUDENTS who are not considered officially enrolled will not be on the instructor's rosters and are not to attend classes until they have a computer-generated schedule identifying their courses as "officially registered."

Course Selection and Graduation Requirements

A student is responsible for meeting all graduation requirements. Faculty advisors may assist in planning majors, but the final responsibility for meeting graduation requirements rests with each student.

In cooperation with their advisors, students should schedule and register for the required courses listed for their degrees. Deviations from these requirements are acceptable only if formally approved. Students intending to substitute a different course for a course required for graduation need to have an approved "Approval Form for Course Substitution/Equivalency" filed in the Registrar's Office. To avoid graduation problems, students should file this form at the time they schedule classes. This form is available in each school office.

College Costs

Tuition, Fees and Financial Obligations Application Fee

Applicants for status as full-time or part-time students in degree or certificate majors must include a nonrefundable application fee with their "Admission Application." You are required to pay this non-refundable fee only once (*unless you are re-enrolling after more than two years*).

Tuition Deposit

All applicants who have been accepted as full-time or part-time degree or certificate students must pay a deposit to hold a class reservation in the first semester for which they have applied.

If you enroll at the designated time, the deposit will be credited to your tuition for the first semester. If you do not enroll and notify the College by the predetermined deadline, the College will refund 50 percent of the tuition deposit.

Full-Time Students

State regulations define a full-time student as one enrolled for 12 or more credit-hours per semester. Tuition and related fees are based solely on the number of credits for which the student is enrolled, as described here.

Tuition and Related Fees

* Fees shown are pending Board approval. The College reserves the right to change tuition and other fees as required. For the latest information, please contact the Office of Admissions.

You must be **registered** as a Penn College student in order to receive College services including, but not limited to, instruction, participation in Meal Plans, College-owned student housing, etc. You are not registered as a Penn College student until you have paid, or made satisfactory arrangements to pay, your tuition and related fees.

Tuition and related fees are governed by your state of residence and are based on a per-credit-hour charge. To calculate your tuition and fees for one semester, multiply the number of credits for which you are enrolled by the total per-credit charge (*tuition plus capital fees, student activity fees, etc.*) under your appropriate residence category. (*The categories of residence are in-state resident and out-of-state resident. All questions of residency should be referred to the Dean of Student Affairs.*)

In-State Students: Tuition and related fees will total approximately \$7,860 per year in 2002-03.*

Out-of-State Students: Tuition and related fees will total approximately \$9,960 per year in 2002-03.*

Tuition and related fees are based on the following per credit hour charges. The exact amount you will pay depends upon the number of credits and the specific courses you take each semester.

Tuition, In-State:	\$242.00 per credit hour
Tuition, Out-of-State:	315.00 per credit hour
Capital Fee:	24.00 per credit hour
Laboratory Instruction Fee:	19.00 per credit hour
Student Activity Fee:	4.00 per credit hour
Computer Fee:	10.00 per credit hour
Curriculum Fees:	Depends on the instructional degree

See pages 12-13 for related costs.

Keep in mind these are estimated costs. Also, remember that tuition and fees do not include the cost of books, tools, supplies, housing, food or other living expenses. Actual expenses will vary according to your specific circumstances (*schedule of courses, living arrangements, etc.*). Most students who move to Williamsport to attend Penn College spend approximately \$15,000 per year to meet all of their college expenses.

PA Resident Classification

A student shall be classified as a resident of the Commonwealth of Pennsylvania, for the purpose of in-state tuition rates, if the student has established a domicile in Pennsylvania and whose presence in the state is not primarily for educational purposes. A student whose presence in the Commonwealth is primarily for educational purposes shall be presumed to be a non-Pennsylvania resident for tuition purposes. Domicile is a person's existing and intended, fixed, permanent and principal place of residence.

A student under the age of 21 is presumed to have the domicile of his/her parent(s) or legal guardian, unless the student has maintained continuous residence in Pennsylvania for purposes other than education for a period of at least 12 months prior to initial enrollment at Pennsylvania College of Technology and the student continues to maintain such separate residence.

A student who has resided in the Commonwealth of Pennsylvania for other than educational purposes for at least a period of 12 months immediately preceding his/her initial enrollment at Pennsylvania College of Technology is presumed to have a Pennsylvania domicile.

A student requesting classification as a Pennsylvania resident for tuition purposes must be a citizen of the United States or have indicated by formal action his/her intention of becoming a citizen or must have been admitted to the United States on an immigration visa. Students admitted to the United States on a tourist or a student (*nonimmigration*) visa are not eligible for reclassification as a Pennsylvania resident for tuition purposes unless the student has indicated by formal action his/her intentions to become a U.S. citizen.

Late Fees

Tuition bills indicate the date payment is due. Payments must be **received** (*not mailed or postmarked*) by this date.

If tuition bills are not paid by this date, the student will be charged a late fee and **will** lose his/her class selections. The student will have to attend late registration to schedule classes and pay his/her tuition bill, including a late registration fee.

Methods of Payment

The College shall not knowingly accept a partial payment from any student except as required for tuition deposits, financial aid plans or within the guidelines established by the College policy for deferred fee status.

Any student whose fee is in arrears after the first day of classes shall be subject to a \$30 deferred processing fee.

Penn College has two payment options for consideration by students and parents desiring an alternative to the traditional full tuition payment prior to the beginning of classes (*fall and spring semesters only*.) Both alternatives are designed to offer payment options for tuition, course fees, and on-campus housing only. Other costs such as books, meal plans, parking fees, and off-campus housing are not eligible for inclusion in either of these optional plans. Students participating in an installment plan may have their grades and transcripts held, and they will not be able to schedule for future semesters until their accounts are settled.

The **Penn College Deferred Payment Plan** is a College-operated plan that requires an enrollment fee of \$30 plus a minimum down payment of 40% the student's balance due. The student's balance must be fully paid within 45 days of the beginning of the semester. Students may enroll in the Deferred Payment Plan at the time of registration, when the student's course load and fees are known.

Tuition Management Services (TMS), a private company independent of Penn College, also offers tuition payment plans. These are pre-payment plans that allow students to begin making payments over a number of months prior to the beginning of classes. TMS offers semester and annual payment plans, with enrollment fees based on the type of plan chosen. As with the College's Deferred Payment Plan, a minimum of 40% of the student's balance due must be **received by the College** by the established due date for the semester. For further information about the TMS plans, students are referred to TMS informational materials available from the College's offices of Admissions and Financial Aid; or TMS may be contacted directly at their web site: www.afford.com, or by telephone at 1-800-722-4867.

Credit cards accepted: Penn College accepts VISA, MasterCard, and Discover for payments of tuition and fees.

Nullification or adjustment of financial aid awards shall not alter the student's obligation to complete installment payments to the College.

Accounts deemed to be delinquent at the end of a semester will be turned over to a collection agency and the student will be responsible for any and all collection costs and reasonable attorney fees, up to 66 percent above the principal and late fees. Individuals who have unpaid financial obligations to the College are ineligible to receive any service from the College (*for example: instruction, scheduling, registration, transcripts, etc.*) until the financial obligation is satisfied. Termination or withdrawal does not cancel the student's financial obligations to the College.

The College may apply any available balance(s) in a student's account(s) (*for example: a balance in his/her Meal Plan account*) to satisfy his/her obligation to the College.

Books and Supplies

Expenses for books, course supplies and tools will vary considerably from major to major. Estimates and pricing information are available in the College Store. The College Store works hard to keep prices as low as possible. *See page 41 for more information about the College Store.*

Related Costs

After being accepted into a college major, the school office will provide a list of materials required for that particular major. Students should not buy any tools or protective clothing for any course before attending the first class. Costs vary greatly, depending on major, and may include but are not limited to licensure and certification fees. The materials become the personal property of the students and may be used throughout their future careers.

School of Business & Computer Technologies

Bachelor Degrees

Accounting	NA
Business Administration	NA
Computer Information Technology	NA
Legal Assistant Studies	NA
Technology Management	NA

Associate Degrees & Certificates

Accounting	NA
Business Management	NA
Business Management/Travel & Tourism Emphasis	NA
Computer Applications Technology	NA
Computer Information Systems	NA
Health Information Technology	NA
Legal Assistant/Paralegal	NA
Nurse/Health Care Paralegal	NA
Office Information Systems	NA
Office Technology	NA

School of Construction & Design Technologies

Bachelor Degrees

Computer-Aided Product & Systems Design	NA
Construction Management	NA
HVAC Technology	\$850.00

Associate Degrees & Certificates

Architectural Technology	\$250.00
Building Construction Technology*	\$600.00
Cabinetmaking & Millwork	\$600.00
Computer-Aided Drafting Technology	NA
Construction Carpentry*	\$650.00
Electrical Occupations	\$550.00
Electrical Technology	\$550.00
HVAC Technology	\$860.00
Electromechanical Maintenance Technology	\$600.00
Plumbing	\$850.00
*Masonry costs	\$450.00

School of Health Sciences

(Health insurance is required by all Health Sciences majors)

Bachelor Degrees

Applied Health Studies	\$350.00-1,000.00
Dental Hygiene	\$600.00-1,675.00
Nursing	\$900.00-1,000.00
Physician Assistant	\$5,000.00-7,000.00
Applied Health Studies	\$720.00

Associate Degrees & Certificates

Dental Hygiene	\$1,330.00-2,095.00
Health Arts	\$1,010.00
Nursing	\$4,500.00-5,500.00
Occupational Therapy Assistant	\$1,375.00-1,935.00
Paramedic Technology	\$1,000.00-1,500.00
Practical Nursing	\$3,000.00-4,000.00
Radiography	\$1,510.00-1,985.00
Physical Fitness Specialist	\$500.00-1,000.00

School of Hospitality

Bachelor Degrees

Culinary Arts Technology	\$700.00
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Associate Degrees & Certificates

Baking & Pastry Arts	\$600.00
Culinary Arts Technology	\$600.00
Dietary Manager Technology	\$850.00
Hospitality Management	\$500.00

School of Industrial & Engineering Technologies

Bachelor Degrees

Civil Engineering Technology	\$150.00
Electronics Engineering Technology	\$350.00
Manufacturing Engineering Technology	\$600.00
Plastics & Polymer Engineering Technology	\$120.00
Welding & Fabrication Engineering Technology	\$300.00

Associate Degrees & Certificates

Automated Manufacturing Technology	\$600.00
Civil Engineering Technology	\$150.00
Electronics Technology (All emphases except Aviation Emphasis)	\$350.00
Machinist General	\$600.00
Plastics & Polymer Technology	\$120.00
Surveying Technology	\$150.00
Toolmaking Technology	\$600.00
Welding	\$300.00
Welding Technology	\$300.00

School of Integrated Studies

Bachelor Degrees

Applied Human Services	NA
Graphic Design	\$1,300.00
Printing & Publishing Technology	\$735.00
Technical & Professional Communication	\$3,500.00

Associate Degrees & Certificates

Advertising Art	\$1,002.00
Biology	NA
Broadcast Communications	\$495.00
Early Childhood Education	\$500.00
General Studies	NA
Human Services	NA
Individual Studies	NA
Mass Communications	\$479.00
Pre-Engineering	NA
Printing & Publishing Production	\$674.00

School of Natural Resources Management

Associate Degrees & Certificates

Diesel Technician	\$1,360.00/1,714.00
Diesel Technology	\$1,360.00/1,714.00
Diesel Technology: MACK Emphasis	\$1,360.00/1,714.00
Electric Power Generation Technology	\$1,360.00/1,714.00
Environmental Technology	NA
Floral Design/Interior Plantscape	\$50.00
Forest Technology	\$50.00
Heavy Construction Equipment Technician	\$1,115.00/1,223.00
Heavy Construction Equipment Technology	\$1,115.00/1,223.00
Heavy Construction Equip Tech: CAT Emphasis	\$1,115.00/1,223.00
Landscape/Nursery Technology	NA

School of Transportation Technology

Bachelor Degrees

Automotive Technology Management	\$950.98
Aviation Maintenance Technology	\$1,078.45

Associate Degrees & Certificates

Automotive Engineering Technology	\$850.00
Automotive Service Management	\$850.00
Automotive Service Technician	\$850.00
Automotive Technology	\$850.00
Automotive Technology/Ford ASSET	\$1,754.44
Automotive Technology/Toyota	\$850.00
Aviation Maintenance Technician	\$1,300.00
Aviation Technology	\$1,300.00
Collision Repair Technician	\$850.00
Collision Repair Technology	\$850.00
Electronics Technology: Aviation Emphasis	\$1,300.00

Housing

On-Campus Student Housing (Residence Life)

Penn College housing is ideally located on-campus, with *The Village at Penn College* on the north side of campus, *College West* on the west side, and *Campus View* to the south, near the Bush Campus Center.

Penn College residence halls are designed as apartment-style communities. There are a variety of living options with either two or four students assigned to an apartment. Each apartment consists of one or two bedrooms, a living room, a bathroom, several closets and a kitchen, which includes a full-sized refrigerator, sink and ample counter and shelf space. (*There is no stove or oven in The Village but a microwave is provided.*) Each apartment also is fully furnished and includes all utilities, basic cable television, local phone service, voice mail and direct access to the College computer network. Mail delivery and laundry facilities are conveniently located in the complexes. Penn College housing offers security by the Residence Life Staff and the College Police. There also are efficiency apartments in the College West complex.

Students must furnish their own pillows, blankets, linens, bedspreads, kitchen utensils (*pots, pans, dishes, glassware*), toiletries, and towels. Radios, televisions, CD/tape players, and computers are permitted, but must be used in consideration of roommates and other residents. Students may not keep firearms or other weapons in College-owned housing.

On-campus residents may select from a variety of different meal-plan options, with the opportunity of adding to the meal plan throughout the year. While on-campus residents at Penn College are not required to enroll in a meal plan, the All-You-Can Eat plans or the \$700 Declining Balance plan are highly recommended for resident students.

Off-Campus Housing

All off-campus housing is privately owned and is considered separate and independent of Penn College. Although College officials maintain working relationships with area landlords, the College does not own, operate, or supervise these properties. Information regarding off-campus housing is available through the Office of Admissions, Klump Academic Center, Rm. 104.

Meal Plans

Meal plans may be purchased at the beginning of each semester, within the first two (2) weeks of class. Consider your needs before selecting a meal plan. Meal Plans can be purchased with a check, cash, credit card or financial aid. For more information, call (570) 327-4767 or e-mail foodserv@pct.edu

Board Plans

We offer three board plans which guarantee a set amount of all-you-can-eat meals each week. These meals are designed to be used in our main dining room, the Susquehanna Room. Each plan also comes with flex dollars that students can use to purchase items from our other dining units.

Wildcat Warrior - \$1195

Includes 14 all-you-can-eat meals per week (*in the Susquehanna Room*), \$100 flex per semester, one meal equivalency per day and five guest meals per semester.

Resident Choice - \$950

Includes 10 all-you-can-eat meals per week (*in the Susquehanna Room*), \$100 flex per semester, one meal equivalency per day and five guest meals per semester.

Super Flex - \$700

Includes 5 all-you-can-eat meals per week (*in the Susquehanna Room*), \$300 flex per semester and five guest meals per semester. No equivalency.

Declining Balance Plans

Declining balance plans allow students to set aside funds to be used strictly for food while on campus. When food is purchased, the amount is automatically deducted from the individual's Meal Plan account.

Full-Time Favorite - \$700

Popular Preference - \$500

Commuter Choice - \$350

Vending

Vending machines are at convenient locations across campus. Vending items include beverages, snacks and sandwiches—for times when there is not time to get to a dining facility. Please report any equipment malfunction to Food Services, Lifelong Education Center, Rm. A137 or call (570) 326-3761, ext. 4767.

Financial Aid

Recognizing that the cost of education often is greater than the student and his/her family can afford without help, the Financial Aid Office helps students obtain financial assistance through a variety of aid programs:

- Grants
- Scholarships
- Loans
- College Work-Study Program
- Veteran's Benefits
- Vocational Rehabilitation Sponsorship
- Part-Time Employment
- ROTC-with Bucknell University

Every student is encouraged to thoroughly explore each of the above programs, and to contact the Financial Aid Office for assistance in obtaining and completing applications for aid.

Employment

Students interested in part-time employment other than the College Work-Study programs should contact Counseling and Career Services for further information.

Special Attention

Deadlines

Students who want the fullest consideration for all awards should have all needed application materials complete and on file in the Financial Aid Office as soon as possible. For the 2002-03 year, for example, completed applications for some forms of aid should have been filed by April 1, 2002. Applications received after this date will be processed and students filing late will be considered for aid, but only after other applications received by the deadline have been received and awards made.

An exception to the above deadline is made for the Stafford Student Loan Program and the parent PLUS Loan Program. Loan applications may be submitted at any time during the year, but should be filed early enough to allow for six to eight weeks' processing time prior to loan approval.

Need Analysis Forms

To determine a student's financial eligibility for awards, especially Supplemental Grants, Work-Study awards and Stafford Student Loans, a review of the family financial situation must be completed.

The College uses the Free Application for Federal Student Aid (FAFSA) for need analysis purposes. This form can be obtained from the College's Financial Aid Office and from high schools. Penn College does NOT require students to file the CSS Profile.

Financial Aid Office Policy on Satisfactory Academic Progress

In order for students to be eligible to receive financial aid, they must be maintaining satisfactory academic progress toward the completion of a degree or certificate. The standards by which progress is measured are established by the College. This Policy on Satisfactory Academic Progress has been approved by the Board of Directors. As an applicant for financial aid, you must meet the conditions of this policy in order to receive aid.

1. Full-time students may receive aid for 10 semesters in a four-year program, five semesters in a two-year program and three semesters in a one-year program. Part-time students may receive aid for 20 semesters in a four-year program, 10 semesters in a two-year program or six semesters in a one-year program.
2. Students enrolled in four-year or two-year programs will have academic progress measured at the end of each academic year. Students enrolled in one-year programs will have academic progress measured after each semester of attendance. All semesters of attendance will be considered, regardless of when the student first enrolled or first received federal aid.
3. Full-time students must successfully complete at least 24 credits if enrolled for a full academic year, or 12 credits if enrolled for just one semester. Part-time students must successfully complete at least 75 percent of the credits attempted. Students not meeting these credit requirements will be ineligible to receive federal aid until they have completed enough additional credits to bring them into compliance with this policy.
Also, non-credit courses, external transfer credits and credits earned through Advanced Placement or Credit for Life Experience will not be included in the number needed for satisfactory progress. Credits earned for repeated courses will only count in the semester in which the credits are applied toward graduation requirements. Remedial courses will count in determining the number of credits used to measure progress.
4. Progress will be measured in terms of credits earned and grade-point average. Only those courses for which the student receives a grade of A, B, C or D will count in the determination of satisfactory progress. Courses for which the student receives a grade of F, W, I, SP or T do **not** count toward the required 24 semester credits.
5. Students whose cumulative grade-point average falls below 2.0 will be placed on academic probation, and a decision on their continued enrollment will be made by the Academic Probation Committee. Students may continue to receive aid while on academic probation, but are subject to the credit requirements stated above and must have a grade-point average of at least 2.0 by the end of the second academic year (*fourth semester of attendance*.)
6. Any student who changes programs two or more times (*enters a third different program*) will be ineligible for aid pending further review by the Director of Financial Aid or designee.

7. A student determined ineligible for aid may appeal this determination by writing to the Director of Financial Aid or his/her designee, stating the basis for the appeal. Exceptions may be made based on extenuating circumstances including, but not necessarily limited to, documented illness, change of program or the required completion of remedial courses. The Director or designee will inform the student in writing of the decision, specifying the conditions, if any, under which an exception has been made, or explaining the reason(s) for denying the appeal and detailing the actions necessary for the student to regain eligibility. A student may request a review of this decision in a meeting of the student, the Director and the Dean of Student Services.
8. Financial aid eligibility will be reinstated when the student has either earned the credits or grade-point average required by this policy, or has successfully appealed to the Director of Financial Aid or his/her designee. The student will be notified in writing when eligibility has been reinstated.

Students must successfully complete at least 12 credits for each full-time semester and at least six credits for each part-time semester in which PHEAA Grants were received. Progress will be checked after the spring semester of each academic year. Appeals must be made in writing directly to PHEAA. Full-time eligibility is limited to eight semesters for four-year programs and four semesters for two-year programs. Part-time eligibility is limited to 16 semesters in four-year programs and eight semesters in two-year programs. Remedial credits in some instances do not count toward the credit requirements. Contact the Financial Aid Office if you have questions at 1-800-367-9222 or (570) 327-4766.

Veterans Information/Benefits

The College has been approved for the education and training of veterans. The Financial Aid Office provides counseling and assistance to veterans. All veterans must register in the Financial Aid Office in order to collect G.I. benefits or to initiate action concerning the Veterans' Administration. For continued eligibility, veterans must be in compliance with the policy on Satisfactory Academic Progress (See page 30.) *The College does not handle advance payment requests.*

Additional Information and Assistance with Applications

Additional information about all of the financial aid programs listed above is available from the Financial Aid Office. We advise you to review the College's Financial Aid Handbook, which provides more information about total cost of attendance and all of these programs. *For more information or to file a scholarship application on-line, please go to www.pct.edu/scholarships.*

Scholarship Awards

Students attending Penn College may be eligible for scholarship awards administered by Penn College or Penn College Foundation. These scholarships are available to students who meet specific eligibility criteria. For more information or to obtain a scholarship brochure and an application form, please contact the Financial Aid Office at Penn College.

Tuition and Related Fee Charges and Refunds Upon Termination From College

Tuition and Related Fee Charges

If a student finds it necessary to terminate from College for any reason, tuition and related fee charges will be assessed according to the following schedule:

	Tuition and Fees Assessed
Dropping prior to or on the first day of the semester	No Charge
Second day through third week of the semester	30 percent of tuition and related fees
<i>(Each short-term class is calculated separately)</i> Withdrawals after third week of the semester <i>(Student withdrawals result in a withdrawing grade on the transcript and all financial obligations)</i>	100 percent of tuition and related fees

Refunds on 16-week classes are determined by the end of the third week of the semester. Eight-week and other short-term classes are calculated separately.

Students who believe they are entitled to an exception to policy must appeal to the Dean of Student Affairs in writing to be considered. The students must do this. Parents may not appeal on behalf of the student except in unusual circumstances where the student is not physically able to represent himself.

Refunds

In order to be eligible for a refund, the student must have completed formal paperwork to drop from a course or the institution within the timeframe identified under Termination/Withdrawal from the College. (See page 30.)

Students terminated from course(s) and assigned an “F” or a “T” grade due to academic dishonesty or academic misconduct will be charged 100 percent tuition and related fees. This includes the first 20 percent of the semester when withdrawing students usually receive a partial refund.

After tuition and related fee charges have been recorded, any credit balance in the student’s account will be distributed according to the following schedule:

1. Financial Aid Awards and Stafford Student Loans will be adjusted to comply with state and federal regulations.
2. Monies paid through third party contractual agreements will be refunded to the granting agency.
3. Remaining balance will be refunded to the student.

Should a student’s account show an amount due to the College after all adjustments have been made, the student will remain responsible for payment in order to clear his/her account.

Federal Student Aid Withdrawal Policy

The law requires that, when you withdraw during a payment period or period of enrollment (*the College can define these periods for you and tell you which one applies to you*), the amount of SFA (*Student Financial Aid*) Program assistance that you have “earned” up to that point is determined by a specific formula. If you received (*or the College received on your behalf*) less assistance than the amount that you earned, you will be able to receive those additional funds. If you received more assistance than you earned, the excess funds must be returned.

The amount of assistance that you have earned is determined on a pro-rata basis. That is, if you completed 30 percent of the payment period or period of enrollment, you earn 30 percent of the assistance you were originally scheduled to receive. Once you have completed more

than 60 percent of the payment period or period of enrollment, you earn all of your assistance.

If you received excess funds that must be returned, the College can explain what portion of those funds must be returned.

Deceased Students

It is the policy of the College upon receiving (*from a representative of the deceased student*) official documentation of the death of a currently enrolled student, in which the death or the incident that resulted in death occurred prior to the 20 percent enrollment cutoff, that the tuition paid by the student be refunded in full. The amount of tuition refund will be prorated when the death or incident that resulted in death occurs after the 20 percent enrollment cutoff. Refunds will be made to: Third parties (*OVR, grants, scholarships, banks—Stafford Loan, employer*) sponsoring a portion of the student’s tuition and fees (*based on legal liability to third party*), or surviving spouse, parents or legal estate of student.

Official notification must be submitted to the Office of the Registrar, by a party representing the deceased, within 60 days after the end of the affected semester to qualify for a refund.

Special Admission Requirements

Selective Enrollment for School of Hospitality Majors

All students granted admission to the College are required to complete placement testing in three subject areas—math, reading, and English. Per College Policy, students who have remediation requirements in all three subject areas are required to enroll in a developmental semester before beginning major courses. School of Hospitality students who have test results that require remediation in two areas also will have restricted enrollment in their first semester until the required developmental courses are successfully completed. Due to the need to remediate two skills areas, these students will automatically require a minimum of five semesters to complete an AAS degree.

In their first semester, students with developmental requirements in two subject areas will be scheduled for two developmental classes (six credits), two additional classes in the academic core to prepare them for the rigor of college academic expectations (six credits), FHD 106-Introduction to the Hospitality Industry (one credit colloquia) and PSS001L (Project Success, a noncredit study skills course) for a total of thirteen credits. Successful completion of the developmental courses and Project Success are prerequisites for being assigned a full schedule in the major for the second semester. Students may not withdraw from any developmental class without written permission from the Dean of the School of Hospitality.

Health Sciences Requirements

1. Admissions to any Health Sciences major is competitive. Completion of minimum requirements does not guarantee acceptance into the majors.

The College reserves the right to accept the most qualified applicants. In some instances, early or conditional acceptances might be made; in these circumstances, applicants will not enter the major if stated conditions are not successfully met.

The School of Health Sciences, in conjunction with Admissions, has developed a selective admissions system that is used to help determine acceptances into majors. Numerical value is attached to categories and influencing factors as included, but not necessarily limited to, items stated below.

- High school and/or college grade-point average
- SAT or ACT scores for students applying within two years of high school graduation. (*Students earning SAT of 1050 or higher or ACT composite of at least 23 might be eligible for special major admissions*)

- High school rank
- Grades on selected coursework
- Completed Developmental coursework
- College coursework for the Physician Assistant major, the Bachelor of Sciences in Nursing major, and the Dental Hygiene completer major.
- Interview process for Physician Assistant major

Consult with Admissions or the office housing the major regarding specific questions about the selection process or criteria.

- Part-time options are available for some majors. Contact the Director of the specific major for details.
- Due to class-size limitations, the College does not guarantee continuous enrollment between related courses and Health Sciences courses: i.e., a student may complete the required related courses and have to wait a period of time until there is space available in a Health Science major. Completion of related courses does not guarantee acceptance into Health Sciences majors.
- Prior to beginning the clinical/pre-clinical/laboratory portions of the major, School of Health Sciences students must complete medical, dental and eye examinations by the physician and dentist of the individual student's choice. Periodic re-evaluations are required in some majors. Specific Directors of majors should be contacted for information relative to this requirement. Costs associated with the medical, dental and eye examinations are the responsibility of the individual student. The student's examinations must indicate care and treatment in progress, if needed, with an anticipated completion date. Students are required to have the recommended series of hepatitis B vaccines, and other vaccines required by programs and clinical sites, and are encouraged to begin the series early.
Findings of the medical and dental examinations must indicate that the student's health condition will allow for the performance of all required clinical/pre-clinical/laboratory skills, and the student can meet course and objectives of the major. The College reserves the right to require health clearances at any time within the parameters of the individual being able to meet objectives. Individual circumstances will be considered with allowances for reasonable accommodations, however accommodations will not negate the need for course objectives, objectives of the major, and outcomes to be met by the student.
- Additional costs may include, but are not necessarily limited to: uniforms, instruments, malpractice/liability insurance, CPR certification, inoculations, state and national examination fees, ACT 34 clearance investigations, health insurance and travel. Students in some majors might find it necessary to relocate living quarters on a periodic basis when doing field work/clinical rotations/projects in locales away from campus. Expenses incurred will be the responsibility of the student.
- When instruction takes place off campus, the student is responsible for his or her own transportation to and from the facility and the campus. When instruction takes places off campus for an extended period of time, the student is responsible for his or her own lodging and meals.
- All Health Sciences students in the major area of study must have health insurance. With the exception of Physical Fitness Specialist (FS) students, all Health Sciences students in their majors will have to have malpractice/liability insurance and must produce proof of such, as requested and before classes begin. FS students will need malpractice/liability insurance under special circumstances. The FS Department Head will need to be contacted about these circumstances.
- With the exception of Physical Fitness Specialist (FS) and Paramedic Technology (PP), all students accepted into any Health Sciences major prior to the start of classes, must become certified in cardiopulmonary resuscitation to the professional rescuer or health care provider level. The certification can be from the

American Red Cross or American Heart Association. FS and PP students will become certified during the program and before practicum.

- Some Health Sciences majors require students to review policies and procedures/clinical manuals prior to the start of classes. Contact the Director of specific majors for details.
- Health Sciences majors students are required to maintain a grade of at least "C" in major specific courses. See Academic Achievement in this catalog for additional information.
- Child-abuse clearance and criminal background checks will be required. Students desiring entrance into Health Science majors should be aware that clinical institutions and intern sites can bar them from their sites as a student if a criminal record exists or if a positive drug test is noted. (*By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.*) Inability to gain clinical or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.
- Students desiring entrance into a health-care profession or occupation should be aware that presence of a criminal record can result in licensing/certification/registration agencies refusing to issue the credential that will allow the graduate/practitioner to practice.

Penn College Selective Admissions System

Applicants should consult directly with the Office of Admissions or the Director of the major of interest for current information.

Dental Hygiene

All applicants to the dental hygiene program must remediate any developmental coursework requirements and/or Chemistry deficiency prior to consideration for admission. Students will **NOT** qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the dental hygiene major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points. The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with fewer than 10 college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptances. Acceptances are granted twice a year – January and June – for Fall start of DH classes.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student's term of enrollment.

Category 1: Applicants with 10 or more college credits at or above the 100 level.

Degrees/Credits (5 percent)

Bachelor or higher	4.0 points
10 or more PCT credits	3.0 points
Associate Degree or more than 59 credits	2.0 points
10-58 College credits	1.0 point

Math and Science GPA (60 percent) - Minimum 2.0 required

(BIO 115, 125, 201, CHM 100 or higher, DEN 107, 108, MTH 151 or higher)

OTHER GPA (20 percent) ENL111, PSY111, CSC110, SPC101

Point Courses (15 percent) - Only grades of “C” or higher

1 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred

BIO 115	DEN 107	HTH 100
BIO 125	DEN 108	MTH 153 or higher
BIO 201	ENL 111	PSY 111
CHM 108 or higher		

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

CATEGORY 2: Applicants with fewer than 10 college credits at or above the 100 level.

High School Rank

(Upper 1/3 of the class) 2.0 points

SAT Scores

SAT 1200 or higher 5.0 points

SAT 1050 - 1199 1.0 point

ACT Composite 23 or higher 1.0 point

Placement Test Results

Elementary Algebra score greater than 14 0.5 point

Intermediate Algebra score greater than 15 0.5 point

Writing score (ENL 111) 1.0 point

Reading level grade 14 or higher 1.0 point

Reading level 12-13 0.5 point

Point Courses – NOTE: A Minimum GPA of 2.0 is required to be considered.

0.5 point for each of the following courses:

BIO 115	DEN 107	HTH 100
BIO 125	DEN 108	MTH 153 or higher
BIO 201	ENL 111	PSY 111
CHM 108 or higher		

Nursing

All applicants to the Associate Degree Nursing major must remediate all developmental coursework requirements prior to consideration for admission. Applicants must also remediate any Chemistry deficiency prior to consideration for admission. Students will NOT qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the Nursing major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points. The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with fewer than 10 college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptance. Acceptances are granted twice a year – January and June – for Fall start of Nursing classes.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student’s term of enrollment.

CATEGORY 1: Applicants with 10 or more college credits at or above the 100 level.

DEGREES/CREDITS (5 percent)

Bachelor or higher 4.0 points

10 or more PCT credits 3.0 points

Associate Degree or more than 59 credits 2.0 points

10-58 College credits 1.0 point

MATH AND SCIENCE GPA (60 percent) – **MINIMUM 2.0 REQUIRED**

BIO 115	BIO 201	MTH 124 or higher
BIO 125	CHM 100 or higher	

OTHER GPA (20 percent) – All grades earned in the following courses will be used to calculate GPA.

CSC 110	ENL 121	PSY 203
ENL 111	PSY 111	SOC 111

POINT COURSES (15 percent) - ONLY GRADES OF “C” OR HIGHER

1 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred

BIO 115	CSC 110	MTH 124	MTH 158	PSY 203
BIO 125	ENL 111	MTH 125	MTH 160	SOC 111
BIO 201	ENL 121	MTH 151	MTH 180	
CHM 108	HTH 100	MTH 153	PSY 111	

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

CATEGORY 2: Applicants with fewer than 10 college credits at or above the 100 level.

HIGH SCHOOL RANK (Upper 1/3 of the class) 2.0 points

SAT/ACT SCORES

SAT 1200 or higher 5.0 points

SAT 1050 – 1199 1.0 point

ACT Composite 23 or higher 1.0 point

PLACEMENT TEST RESULTS

Elementary Algebra score greater than 14 0.5 point

Intermediate Algebra score greater than 15 0.5 point

Writing score (ENL 111) 1.0 point

Reading level grade 14 or higher 1.0 point

Reading level 12-13 0.5 point

POINT COURSES NOTE: A minimum GPA of 2.0 is required to be considered.

0.5 for each of the following courses:

BIO 115	CSC 110	MTH 124	MTH 158	PSY 203
BIO 125	ENL 111	MTH 125	MTH 160	SOC 111
BIO 201	ENL 121	MTH 151	MTH 180	
CHM 108	HTH 100	MTH 153	PSY 111	

Occupational Therapy Assistant

All applicants to the Occupational Therapy Assistant Program must remediate any developmental coursework requirements prior to consideration for admission. Students will NOT qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the occupational therapy assistant major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points. The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with fewer than 10 college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptances. Acceptances are granted twice a year – January and June – for Fall start of OT classes.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student’s term of enrollment.

Category 1: Applicants with 10 or more college credits at or above the 100 level.

DEGREES/CREDITS (5 percent)

Bachelor or higher 4.0 points

10 or more PCT credits 3.0 points

Associate Degree or more than 59 credits 2.0 points

10-58 transfer credits 1.0 point

MATH AND SCIENCE GPA (60 percent) – **Minimum 2.0 Required** (BIO 115,125, MTH 151 or higher)

OTHER GPA (20 percent)

CSC 110	MTR 100	PSY 203
ENL 111	PSY 111	SPC 101
	PSY 201	

POINT COURSES (15 percent) – Only grades of “C” or higher

1.0 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred

18 — SPECIAL ADMISSION REQUIREMENTS

BIO 115	ENL 111	PSY 201
BIO 125	HTH 100	PSY 203
CSC 110	MTH 158 or higher	SOC 111
	PSY 111	

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

Category 2: Applicants with fewer than 10 college credits at or above the 100 level.

HIGH SCHOOL RANK

(upper 1/3 of the class) 2.0 points

SAT SCORES

SAT 1200 or higher 5.0 points

SAT 1050 – 1199 1.0 point

ACT Composite 23 or higher 1.0 point

PLACEMENT TEST RESULTS

Elementary Algebra score greater than 14 0.5 point

Intermediate Algebra score greater than 15 0.5 point

Writing Score (ENL 111) 1.0 point

Reading Level grade 14 or higher 1.0 point

Reading Level 12 – 13 0.5 point

POINT COURSES NOTE: A Minimum GPA of 2.0 is required to be considered

0.5 point for each of the following courses:

BIO 115	ENL 111	PSY 111	SOC 111
BIO 125	HTH 100	PSY 201	
CSC 110	MTH 158	PSY 203	

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

* It is the student's responsibility to present appropriate proof of the credential by May 1.

CATEGORY 2: Applicants with fewer than 10 college credits at or above the 100 level.

HIGH SCHOOL RANK

(Upper 1/3 of the class) 2.0 points

CREDENTIALS

Current EMT-B National Registry 1.0 point *

Current EMT-I National Registry 2.0 points *

SAT SCORES

SAT 1200 or higher 5.0 points

SAT 1050 - 1199 1.0 point

ACT Composite 23 or higher 1.0 point

PLACEMENT TEST RESULTS

Elementary Algebra score greater than 14 0.5 point

Intermediate Algebra score greater than 15 0.5 point

Writing score (ENL 111) 1.0 point

Reading level grade 14 or higher 1.0 point

Reading level 12-13 0.5 point

POINT COURSES NOTE: A minimum GPA of 2.0 is required to be considered.

0.5 point for each of the following courses:

BIO 115	BIO 201	MTH 124 or higher
BIO 125	CHM 108 or higher	PSY 111
	ENL 111	

Paramedic Technology (EMT-Paramedics)

All applicants to the Paramedic program must remediate any developmental coursework requirements prior to consideration for admission. Students will **NOT** qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the Paramedic major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points.

The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with **fewer than 10** college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptances. Acceptances are granted twice a year – January and June – for Fall start of the program.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student's term of enrollment.

CATEGORY 1: Applicants with 10 or more college credits at or above the 100 level.

DEGREES/CREDITS/CREDENTIALS (5 percent)

Bachelor or higher 4.0 points

10 or more PCT credits 3.0 points

Associate Degree or more than 59 credits 2.0 points

10-58 College credits 1.0 point

Current NREMT-B Certification 1.0 point *

Current NREMT-I Certification 2.0 points *

MATH AND SCIENCE GPA (60 percent) - Minimum 2.0 required (BIO 115, 125, 201; CHM 100 or higher; PHS 103 or higher; MTH 150 or higher)

OTHER GPA (20 percent) – ENL 111; CSC 110

POINT COURSES (15 percent) - ONLY GRADES OF "C" OR HIGHER

1.0 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred:

BIO 113	HTH 100	MTR 102
BIO 115	HTH 115	MTR 103
BIO 123	HTH 125	MTR 104
BIO 125	HTH 230	PHS 103 or higher
BIO 201	HTH 325	PSY 111
CHM 108 or higher	MTH 124 or higher	
ENL 111	MTR 101	

* It is the student's responsibility to present proof of the credential by May 1.

Practical Nursing

All applicants to the Practical Nursing major must remediate all developmental coursework requirements prior to consideration for admission. Students will **NOT** qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the Practical Nursing major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points.

The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with **fewer than 10** college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptance. Acceptances are granted twice a year – January and June – for Fall start of Practical Nursing classes.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student's term of enrollment.

CATEGORY 1: Applicants with 10 or more college credits at or above the 100 level.

DEGREES/CREDITS (5 percent)

Bachelor or higher 4.0 points

10 or more PCT credits 3.0 points

Associate Degree or more than 59 credits 2.0 points

10-58 College credits 1.0 point

MATH AND SCIENCE GPA (60 percent) – Minimum 2.0 required

BIO 115	BIO 125	MTH 124 or higher
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OTHER GPA (20 percent) – All grades earned in the following courses will be used to calculate GPA.

ENL 111 PSY 111

POINT COURSES (15 percent) - ONLY GRADES OF "C" OR HIGHER

1 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred

BIO 115	ENL 111	MTH 124	MTH 151	MTH 158	MTH 180
BIO 125	HTH 100	MTH 125	MTH 153	MTH 160	PSY 111

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

CATEGORY 2: Applicants with fewer than 10 college credits at or above the 100 level.

HIGH SCHOOL RANK

(Upper 1/3 of the class) 2.0 points

SAT/ACT SCORES

SAT 1200 or higher 5.0 points

SAT 1050 – 1199 1.0 point

ACT Composite 23 or higher 1.0 point

PLACEMENT TEST RESULTS

Elementary Algebra score greater than 14 0.5 point

Intermediate Algebra score greater than 15 0.5 point

Writing score (ENL 111) 1.0 point

Reading level grade 14 or higher 1.0 point

Reading level 12-13 0.5 point

POINT COURSES NOTE: A minimum GPA of 2.0 is required to be considered.

0.5 for each of the following courses:

BIO 115	ENL 111	MTH 124	MTH 151	MTH 158	MTH 180
BIO 125	HTH 100	MTH 125	MTH 153	MTH 160	PSY 111

Physician Assistant

Selective Admissions: Acceptance into health science majors is based on selective admissions. The following describes the categories used to accept students into the Physician Assistant Major. The following describes the two categories and criteria used to gain entrance into the program. The first category is for students who apply directly from high school and the second is for students who apply as Pre-Physician assistant students or transfer students. Pre-Physician assistant and transfer students are evaluated on a point/percentage system.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student's term of enrollment.

The minimum requirements to be accepted into the Physician Assistant Major (BPA) from high school are:

SAT of 1050 or above with minimum of 550 in Math and 500 in Verbal OR ACT score of at least 23 (submission of scores must be within 2 years of taking SAT or ACT exams).

High school GPA of 3.0 (4.0 scale)/B average or greater with completion of college prep Biology and Chemistry and at least 3 years of high school math.

To advance to the Professional component of the PA Major, students enrolled through guaranteed admission as BPA students will need to fulfill the following requirements:

Complete the first years of the Pre-PA curriculum on schedule and maintain both overall GPA and Math-Science GPA of 3.0 in the Pre-PA curriculum.

Documentation of at least 300 hours of health care exposure, including 16 hours with a practicing physician assistant, by May 30th of the year the student would be enrolled in the Professional Phase curriculum.

Students must meet the Technical Standards requirement.

Deadline for high school students into the BPA is January 15. Applications received after this deadline will be reviewed on a space available basis.

Students, who did not meet the previous criteria, can be accepted into the Professional Phase by enrolling at Penn College as a Pre-Physician Assistant (PAA) or transferring credits from another institution. The PA Major will accept transfer students on a rolling, space-available basis. Interviews will be conducted in the fall and spring semesters as necessary. The following criteria apply:

Overall and Math-Science GPA of 3.0 (4.0 scale) based upon a minimum of 30 credits of Pre-PA curriculum including one year of college laboratory science in chemistry and biology and one year of Math prerequisites.

Maintaining overall and Math-Science GPA of 3.0 throughout the Pre-PA curriculum.

Documentation of at least 300 hours of health care exposure, including 16 hours with a practicing physician assistant, by May 30th of the year the student would be enrolled in the PA didactic curriculum.

Students must meet the Technical Standards requirement.

All pre-requisite courses must be completed by May 30th of the year the student would be enrolled in the Professional Phase curriculum.

Part-time students will be considered under transfer status.

Acceptance will be based upon a point system including academic performance, personal interviews, and amount of health care exposure.

POINT COURSES

1.0 point for courses taken at Penn College

0.9 points for transferred courses from Penn State

0.75 points for transferred courses from Bloomsburg University

0.5 points for each of the following courses transferred elsewhere

Points are assigned by grades achieved in the following courses.

A = 4 points

B = 3 points

C = 0 points

BIO 113	BIO 201	CHM 121	MTH 160	MTH 190	MTH 242
BIO 115	BIO 210	CHM 203	MTH 180	MTH 230	PSY 111
BIO 125	CHM 111	MTH 158	MTH 182	MTH 240	PSY 201

Priority transfer status will be given to Penn State students and Bloomsburg University students. To advance to the Professional component of the PA Major, students must maintain both overall GPA and Math-Science GPA of 3.0 in the Pre-PA curriculum.

Determination of entrance for PAA or transfer students includes the following:

Pre-Physician Assistant (PAA) or transfer students:

Math-Science Grade Point Average (50 percent) will be based upon the following courses as they apply to fulfilling the pre-requisite requirements. (Example: Math requirement is 6 credits at a level of MTH 158 or higher).

BIO 113 or higher	BIO 210
BIO 201	CHM 203/204
CHM 100/111, 121/123 or higher	BIO 125
BIO 115	MTH 158 or higher

Interviews (15 percent)

Point Courses (15 percent)

Health Care Experience (20 percent)

(Amount of previous health care exposure determines distribution of points)

Note: The College wants to make clear that admission to the PA Major is competitive. Fulfilling the minimum requirements in regards to health care experience, point courses, and Math-Science GPA's does not guarantee a student interview. The most qualified applicants will be asked for a personal interview.

Students who wish to transfer into the PA Major may receive guaranteed admission based upon GPA and interviews. Notification of acceptances will be sent within 3 weeks of interviews.

Radiography

All applicants to the radiography major must remediate any developmental coursework requirements prior to consideration for admission. Students will **NOT** qualify for ranking if they have less than a 2.0 Math/Science GPA and an overall GPA of 2.0 in coursework required for the radiography major.

Acceptance into health science majors is based on selective admissions. The following describes the two categories and the criteria used to gain points. The system is divided into two categories: Applicants with 10 or more college credits at or above the 100 level, and applicants with **fewer than 10** college credits. Applicants with fewer than 10 college credits will change categories once 10 college credits are completed. Points are used to determine acceptances. Acceptances are granted twice a year – January and June – for fall start of RAD classes.

The provisions within the selective admissions are not considered an irrevocable contract between the student and the College. The College reserves the right to change the requirements and regulations at any time within the student's term of enrollment.

CATEGORY 1: Applicants with 10 or more college credits at or above the 100 level.

DEGREES/CREDITS/HOSPITAL SHADOWING (5 percent)

Bachelor or higher	4.0 points
10 or more PCT credits	3.0 points
Associate Degree or more than 59 credits	2.0 points
10-58 College credits	1.0 point
16 hours of hospital shadowing	1.0 point

MATH AND SCIENCE GPA (60 percent) – Minimum 2.0 required

BIO 115, 125	MTH 180 or higher
CSC 110	PHS 112

OTHER GPA (20 percent)

CSC 110	PSY 111
ENL 111	SPC 201

POINT COURSES (15 percent) Only grades of “C” or higher

1 point for each of the following courses taken at Penn College

0.5 point for each of the following courses transferred

BIO 115	ENL 111	PHS 112
BIO 125	HTH 100	PSY 111
CSC 110	MTH 180 or higher	SPC 201

An adjustment factor will be applied to each category to stabilize the percentage weight among the categories.

CATEGORY 2: Applicants with fewer than 10 college credits at or above the 100 level.HIGH SCHOOL RANK

(Upper 1/3 of the class) 2.0 points

SAT SCORES

SAT 1200 or higher	5.0 points
SAT 1050 – 1199	1.0 point
ACT Composite 23 or higher	1.0 point

PLACEMENT TEST RESULTS

Elementary Algebra score greater than 16	0.5 point
Intermediate Algebra score greater than 16	0.5 point
Writing score (ENL 111)	1.0 point
Reading level grade 14 or higher	1.0 point
Reading level 12-13	4.0 points

POINT COURSES

NOTE: A minimum GPA of 2.0 is required to be considered)

0.5 point for each of the following courses:

BIO 115	ENL 111	PHS 112
BIO 125	HTH 100	PSY 111
CSC 110	MTH 180	SPC 201

SHADOWING

16 hours of hospital shadowing 1 point

Legal Assistant/Paralegal Requirements

The College reserves the right to accept the most qualified applicant. Applicants will be reviewed according to some of the following criteria:

1. High school diploma or GED
2. Minimum 2.0 high school GPA
3. Meeting with the School of Business and Computer Technologies representative
4. Submission of writing sample to be reviewed in conjunction with School standards

Also, remediation of English and reading deficiencies (*as determined by College placement tests*) is required prior to enrollment in the major. Students with deficiencies will be required to meet regularly with their advisor/counselor until all deficiencies are remediated.

Re-Enrollment

Former students who wish to reenroll must apply for readmission through the Office of Admissions. They may be required to submit a health record card. (*See Health Records Requirement.*)

1. A student who:
 - a. re-enrolls in the same major in which he/she was last enrolled, and
 - b. re-enrolls less than two years after he/she last attended the College, is allowed to meet graduation requirements in effect at the time the student was originally enrolled.
2. A student who:
 - a. re-enrolls in the same major in which he/she was last enrolled, and
 - b. re-enrolls two or more years after he/she last attended the College, must meet the most current graduation requirements. All coursework previously completed will be reviewed on a course-by-course basis to determine whether it meets current graduation requirements. All courses completed will remain on the student’s transcript. Only credits for courses which meet the current requirements will be used in calculating the student’s cumulative grade-point average.
3. If a student re-enrolls in a major different from the one in which he/she was last enrolled, each course previously taken will be evaluated to determine whether it meets the requirements of the new major. Only credits for courses which meet the requirements of the current major will be used in calculating the student’s cumulative grade-point average. However, all courses completed will remain on the student’s transcript. Students re-enrolling in a new major are required to meet the graduation requirements for the new major in effect at the time they re-enroll.
4. If a student re-enrolls more than three years after leaving the institution or wishes to enroll in a major where the math, English, and reading requirements are significantly different from the earlier major, the student will be required to take placement tests to assure readiness for reentry.

Special circumstances may be appealed to the Chief Academic Officer or his/her designee.

International Students**Admission of International Students**

We believe that the presence of international students on campus will enrich the educational environment for all students. The College is authorized under Federal law to enroll non-immigrant alien students on “F-1” student visas. Application and all supporting documents must be received in the Office of Admissions at least two weeks prior to the day of late registration for the term of entry.

The following are the requirements for admission of international applicants.

- I. It is the student’s responsibility to prove he/she has the competency to read, write and understand the English language. This requirement is for applicants whose native language is not English. This can be accomplished by providing any of the following:
 - A. Scores from TOEFL – Test of English as a Foreign Language. The applicant must earn a score of at least 500 (173 computer base) or better, or
 - B. Completion of an English composition course equivalent to ENL 111 with a “C” grade (2.0) or higher from an accredited U.S. college or university, or
 - C. Completion of one year of academic (not English preparatory) course work (24 credits) with a “C” grade (2.0) or higher. The coursework must be completed within a 12-month period at an accredited U.S. college or university, or

- D. SAT verbal score of 450 or higher, or
 - E. The student is from a country where English is an official language and the student's language of instruction in school was English.
- II. The Admissions Office will mail the "Financial Guarantee Form" to all applicants. This requires that applicants certify that they have adequate funds to attend college and will not become a public charge. Failure to provide this information may result in the denial of issuance of the I-20 form that is needed to obtain an F-1 visa.
 - III. After all documents referred above are received, plus the high school transcript, the application and the \$50 application fee, the Director of Admissions will make a decision regarding acceptance. If the student is accepted, an acceptance letter will be mailed, together with a request that the student submit a tuition deposit. If the applicant is not accepted, the student shall be notified of that decision, plus the reason(s) for that decision.
 - IV. The Director of Admissions will complete and mail an I-20 "Certificate of Eligibility for Nonimmigrant (F-1) Student Status" to the applicant after the tuition deposit is received and the signed Acceptance Form.
 - IV. All international students who are accepted must take the College's placement tests, unless exempted by high SAT scores or transfer of credits. Placement into the appropriate level of courses will be determined by the tests. International students must arrange to be on campus approximately one week prior to registration for the proposed term of entry. Failure to complete placement tests may result in denial of acceptance into the major.
 - V. Applicants who are transferring from a college within the U.S., need to complete the "Verification of Attendance - Transfer Form for International Students". This form documents their current status with the INS. The Form is returned to the International Programs Office. The I-20 is issued by the Admissions Office after the Form is received. The International Programs Office sends a copy of the I-20 issued by Penn College to the school from which the student transferred.
 - VI. It is the responsibility of international students to become familiar with the regulations of the Immigration and Naturalization Service and comply with the regulations.
 - VII. Students must be covered by health insurance (including repatriation and medical evacuation). Students must purchase the school's contracted policy unless sponsored by an organization/government that includes the coverage on the Financial Guarantee Form. The Health Insurance payment is added to their Tuition Bill each semester. If students do not pay, they will not be registered for classes. If students are on a deferred payment plan, their insurance will not be deferred.
 - VIII. Students must provide proof of immunizations for MMR and a TB test. The Immunization Form should be completed by students and submitted to the International Programs Office upon arrival. If the students do not have the MMR and TB tests, they will work with the Student Health Services Office to obtain the mandatory immunizations after arrival. If students have not received those immunizations by the end of the third week of classes, they will not be allowed to continue attending classes. If students are terminated, they are still responsible for satisfying any financial obligations to the college and they will be issued a "T" grade.
 - IX. If students wish to transfer credits from a foreign university, they must have their transcripts evaluated by a transcript evaluator recommended by Penn College. The evaluation needs to be the course-by-course report that includes the equivalent GPA. The student is responsible for those costs. Once the evaluation is completed, credit transfer is handled according to policy. Students should have course descriptions or syllabi for the courses they wish to transfer translated to English to assist the department in determining credit transfer.

International Student Services & Programs

International Students

The International Programs Office, located in the Klump Academic Center, Rm. 121A, provides international students a place to receive assistance with academic and personal goals. Students attending college on an F-1 visa are required to have their immigration documents processed and filed in this office. Health and repatriation insurance also are verified here.

The office is in touch with international students before their arrival to answer questions about obtaining a visa, travel to the college and preparation for their college experience. Upon arrival, the office provides an orientation for the international students to address specific issues related to their initial adjustment. Throughout the year the international office programs activities for the students that reflect the nature of the area and incorporate the community.

Because of language and cultural differences, differences in teaching style and the student-teacher relationship, coursework at Penn College may be challenging. Usage of the Tutoring Center and other Academic Support Services is encouraged. International students are welcome to stop in the office whether it is to discuss a problem, talk through a frustration or share a hello.

For more information, contact the International Student Advisor at (570) 320-5727 or contact via e-mail at intladm@pct.edu.

Outreach for K-12

Penn College participates in Tech Prep programs with high schools and area vocational technical schools from across the Commonwealth. Students who have enrolled in Tech Prep programs at the secondary level may be entitled to special admission consideration at Penn College.

Secondary Tech Prep students who placement test into the college level courses required for their major and who apply and pay their tuition deposit by October 31 are guaranteed admission into open admission majors or are given a preference over non-Tech Prep students if they tie on the health science point system.

Credit for Advanced Placement

Advanced Placement - Pre-Enrollment

Advanced placement is designed to recognize the scholastic achievement of students, attained prior to entering Penn College. Students who have completed advanced courses in high school, in an area vocational-technical school program or as part of military training, as well as those with educational experiences, may be eligible for advanced placement. Students receiving advanced placement may enroll in advanced courses in the subjects in which they have received the advanced placement, or they may elect courses in other subjects. This option creates the opportunity for students to begin their college work at a higher level.

Advanced placement is possible through testing and/or competency assessment.

Students seeking advanced placement through testing must submit their applications by July 15, if they plan to enroll in the fall semester; by November 15, if they plan to enroll in the spring semester; and by April 15, if they plan to enroll in the summer semester. (*No applications will be processed after these dates.*) Applying students will receive a schedule of advanced placement test offerings showing the date and times when tests will be given. They should confirm which test(s) they plan to take and return the form to the appropriate school office. All new students must also take the College's reading, English and math placement tests as early as possible so they can take developmental courses, if needed, in the summer before they begin their regular majors. A report on the evaluation of the advanced placement test or other assessment will be sent to each student and the information will be entered on his/her official College transcript. The full procedure for gaining advanced placement must be completed before the start of the semester.

Advanced placement may also be based on the competencies as evaluated by the high school instructor and confirmed by the School. Evaluations are sent to the high school instructor, reviewed and returned to the College; the assessments may require confirmation of competence by the School administrator via portfolio or test. There is no charge for this credit and it will appear on the student's transcript upon completion of 12 credits. If a student elects to take the course, the advanced placement record will be removed from the transcript upon notification by the School.

Credit-by-Exam

A student must be currently registered to take credit-by-exam and receive such credit. Students may apply to take any 100 or 200 level course by examination.

Application to take a course by examination must be made in writing to the appropriate Dean. Approval must then be given by the instructor(s) of the course involved and the Dean. Students are encouraged to use the credit-by-exam option prior to enrollment in the course. **Students who decide to challenge a course after enrolling in it must arrange for testing to take place prior to completion of 20 percent of the scheduled instruction for that course (e.g., prior to the end of the third week of instruction for a full semester course).** The current refund policy will apply.

If approval is granted, a fee of \$50 must be paid at the Bursar's Office prior to each examination. No examination will be prepared or administered until the student presents the \$50 receipt. The examination fee will be waived for students seeking credit for ENL 111 (English Composition I) or RDG 111 (College Reading, Reasoning, and Study Skills) as a result of outstanding performance in the respective developmental counterpart, i.e., ENL 001 (Basic English) or RDG 001 (Reading Improvement).

The examination is prepared, administered (*at the time set by the Dean*), and evaluated by the instructor(s) of the course. Students will be notified in writing by the Dean of the result of their exams. When a student passes the examination for the course, the course number, title and number of credits only will be entered on the student's official College transcript after the student has earned 12 credits at Penn College. (*No letter grades will be listed on the transcript.*) Credit-by-exam may not be used to remove any previously posted grade. An examination in a specific subject may be taken only once.

Credit for Work/Life Experience

The College recognizes that many individuals acquire rich academic and technical experiences through working and/or living in a particular situation. New enrollees and registered students who feel their work or living experiences warrant consideration for academic credit should apply in writing to the Dean responsible for the course(s) involved. The application must include evidence and rationale for requesting credit. This opportunity is available to only currently registered students.

The Dean will appoint a committee to assess the candidate's educational and work background. The student will be asked to document his/her work and life experiences and to show that the experiences are equal to a course or courses offered at the College. The committee also may interview the student and also may require the completion of practical exercises and/or tests where applicable. The committee will recommend the number of credits to be awarded. A fee of \$50 per course will be charged for the evaluation of credit. The committee review will not begin until the student presents a \$50 receipt from the Bursar's office.

The results of the evaluation of work/life experiences will be sent to the student. Credit earned through work/life experience will be shown on the student's official college transcript after the student has earned 12 credits at Penn College. Credit for work/life experience will not be used in calculating the student's cumulative grade point average and may not be used to remove any grade posted for the course(s).

Other Forms of Advanced Placement

College-level exam placement encompasses "Advanced Placement" exams administered by SAT or ACT as well as CLEP exams. The College establishes cutoff scores that determine the awarding of credit. It is the student's responsibility to request that the official scores be mailed to the College by the testing agency.

Transferring Credits

Transfer Students

Students from other colleges who wish to transfer here must follow the procedure below:

1. Complete steps listed under Admission Procedures.
2. Ask all college(s) previously attended to send an official transcript to the Office of Admissions. The College also may request a high school transcript. An official transcript must be sent directly to the College and not be "issued to the student."
3. Provide course descriptions or a college catalog to the Advisement Center for use in evaluating courses completed at another institution.
4. International Students submitting transcripts from a college outside the U.S. for transfer credits, also must submit a certified copy of their credential evaluation from World Education Services, Inc., located in New York. Transfer credits will not be awarded without the credential evaluation.

Course Transfer

Courses taken previously will be evaluated on course equivalency to determine relevancy and content required in the major. A copy of the evaluation for transfer will be provided to the student.

It is the student's responsibility to make certain all coursework has been evaluated for transfer credit prior to scheduling, to avoid duplication of coursework.

1. It is the student's responsibility to submit official college transcripts and course descriptions for courses not already evaluated. A review of course eligibility for transfer will be completed prior to scheduling.
2. The Office of Admissions will review and determine the eligibility of coursework less than 10 years old.
3. The academic school will evaluate coursework older than 10 years based on appropriate materials, transcript and course descriptions. Should there be a need to talk with the student, the academic school or the Advisement Center will contact the student.
4. The Office of Admissions, in conjunction with the Schools, will attach the courses approved for transfer to the student's academic record, and send notification of the transcript evaluation to the student.
5. It is the student's responsibility to make certain all courses have been evaluated prior to scheduling to avoid repeating any coursework. Once a student schedules and enrolls, coursework cannot be transferred if the student is enrolled in the course.

It is the student's responsibility to make certain all transcripts have been received by Penn College in time to avoid being scheduled for repeat coursework. The College refund policy will apply if coursework cannot be evaluated prior to the beginning of classes.

Transfer Credit — Associate Degree and Certificate Majors

Transfer credit includes: credit for courses earned at another institution, college credit earned before high school graduation, service credit, and credit earned through the College Level Examination Program (CLEP).

A maximum of 30 transfer credits may be applied toward an associate degree or certificate. Courses to be considered for transfer must have been completed with a grade of “C” (2.0) or better. However, if a student earns a cumulative “C” (2.0) average or better in sequential courses (*for example, English 1 and English 2*) an exception may be made based on the evaluation of the courses. Courses taken more than 10 years before the student enrolls here may be evaluated (*on a course-by-course basis*) to determine if they are equivalent to courses currently required in the student’s major. A copy of the evaluation of transfer credit will be sent to the student.

It is the student’s responsibility to make certain that all courses have been evaluated for transfer credit prior to scheduling, to avoid repeating coursework.

All transfer credit will appear on the student’s transcript after the student successfully completes one semester of academic work here. Transfer credit will appear on the transcript with credit value only. Transfer students will enroll without any cumulative grade point average. **A student must be enrolled in courses here for at least the last 12 credit hours of his/her major.**

Requirements for the evaluation of different forms of transfer credit are listed below:

1. Transfer From Another Institution

All credits earned at a previously attended institution(s) will be evaluated for transfer credit. The student must send the College Advisement Center an official catalog description of each course to be evaluated and a description of the grading codes (if the grade codes are not defined on the transcript) from each institution from which courses are to be evaluated. These materials must consist of either of the following: the institution’s catalog or a photocopy of the course descriptions and the grade codes description taken from the institution’s catalog.

2. College Credit Earned Before High School Graduation

College credit earned before high school graduation will be evaluated only if the college where the work was taken issues an official college transcript. Students who have earned college credit before graduation from high school must follow the procedure defined under “Transfer from Another Institution.”

Transfer Credit — Bachelor Degree Majors

Each bachelor of science degree program has specific procedures for incoming transfer students. Transfer protocols for baccalaureate majors are detailed on the curriculum pages in the Bachelor Degrees section.

Obtaining a Four-Year Degree

Bachelor Degree Requirements

The College will not offer admission to any baccalaureate degree for any student testing at the RDG 001 level. SAT or ACT scores are to be submitted as part of the application.

Transfer Focused Associate Degrees

The School of Integrated Studies offers one Associate of Arts degree—General Studies—which provides the foundation in liberal arts and general education courses required in many bachelor degrees. Students have considerable flexibility to choose courses for specific chosen majors. The school also offers two Associate of Science

degrees—Biology and Pre-Engineering—which provide the foundation in science and mathematics required for bachelor degrees in the sciences, engineering and medicine.

Priority Transfer to The Pennsylvania State University

Students who complete an associate degree at Penn College will be given priority consideration for baccalaureate degree admission to Penn State/University Park programs. Priority consideration does not guarantee admission as a junior at Penn State. Some Penn State degree majors have enrollment limitations and specific courses and grade point average requirements. Students interested in transferring to Penn State should contact a counselor or their instructional school office to plan selection of courses. Penn College and Penn State have completed course-by-course analysis of the transferability of individual courses. Academic advisors and counselors can assist students in choosing courses that maximize the number of credits transferring to specific Penn State majors.

Transfer to Other Four-Year Institutions

The Associate of Applied Science or Associate of Applied Arts majors are designed for transfer into baccalaureate programs. Individuals interested in such transfer should contact the four-year institution early in their majors to plan course selection effectively.

College Transfer/Graduate Information

The Counseling and Career Services Center also assists students who need advice about transferring to other educational institutions. The College has articulation agreements with numerous four-year colleges and information is available to indicate what courses will transfer to a four-year college or university. Although the College is affiliated with The Pennsylvania State University, students who plan to transfer to Penn State should make their plans early with a transfer counselor to insure that courses will transfer.

Students who earned a baccalaureate degree at Penn College and wish to further their education should contact Counseling and Career Services for further information.

Policies

Students’ Rights of Privacy and Access

College policy protects the rights of privacy and access regarding students’ educational records as articulated in the Family Educational Rights and Privacy Act of 1974 (FERPA). Unless directed by the courts, or it is determined a school official has “a need to know,” information other than “Directory Information” is not released without written consent of the student. *Directory Information is determined to be student’s name, address, telephone number, date and place of birth, enrollment status, electronic E-mail address, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and other similar information. Students who wish this information restricted must inform the Registrar in writing.*

Students should be aware they may restrict directory information from being released without their permission; however, this also will prevent the Registrar from releasing information to the media when they have graduated or been placed on the Dean’s List since that information includes the student’s address.

Students should be aware, the College will not release grade information to the student’s parents without the student’s written permission and no grade information will be released to anyone over the phone.

Student Right-to-Know

Campus Security Act

U.S. Department of Education under the Student Right-to-Know and Campus Security Act requires an institution to make readily available information regarding graduation rates and campus safety policies and procedures. Information regarding campus safety is available from the College Police. This information is also available in the College's Library and the Dean of Student Affairs Office. The College Police maintain a log of all reported crimes and the names and addresses of those who have been charged in those incidents. This log is available to the public during normal business hours in the police department.

Student Graduation and Retention Data

Persons interested in obtaining data on student graduation rates (*number of students who enroll at the College and proportion who actually complete their major or transfer to higher level studies*) should contact the Director of Strategic Planning and Research, Klump Academic Center, Rm. 110. These data also are available in the following: Admissions Office, Counseling and Career Services Center, Academic Support Services, the College Library and all academic school offices.

Student Conduct

On admission to the College you accept unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner which conforms with the generally accepted standard of adult behavior. It is expected that you will show courtesy and respect for the administrative officers, faculty and employees in your personal contacts. You also must understand and accept the necessity for various College regulations and comply with the directives of those authorized to enforce the regulations. If you conduct yourself in a manner contrary to the best interests of the College, you will be subject to such penalties as the circumstances justify, including suspension or expulsion. Additional information regarding student conduct on campus and student judicial procedures is available in the Student Guidebook. All students are expected to read and follow the policies in the guidebook.

A student may be suspended or dismissed for improper conduct, failure to comply with College regulations, academic dishonesty, habitual absences, lack of effort and interest, possession of, or being under the influence of alcoholic beverages or illegal drugs, or under other circumstances as determined by the Board of Directors.

Students whose conduct—such as academic dishonesty, plagiarism, disruption of class—violates academic integrity or the instructional process may be terminated from class(es) and be assigned “F” grades. Students who otherwise violate reasonably accepted standards of the College and community at large may be terminated from the College and can be assigned “T” grades.

Academic Dishonesty and Plagiarism

Academic dishonesty may take many forms, including that of deliberate plagiarism. Academically dishonest acts may include copying computer programs written by other students, creating fake laboratory data or other records and misrepresenting them as descriptions of actual observations, or any other form of intentional misrepresentation for the purpose of receiving a higher evaluation than is merited or to cause another student to receive a lower evaluation than merited. Penn College condemns such behavior. Offenders will be subject to disciplinary action according to College Policy No. IV 4.43 and College Procedure No. PR 4.43.

Intentional plagiarism is academically dishonest and unethical. Even unintentional plagiarism may provoke legal action against you by the author of the work plagiarized. Too often, writers and speakers do not understand the scope of plagiarism.

College Definition of Plagiarism

Plagiarism is the presenting of another's words, ideas or projects as

one's original work. To draw upon another's work; to copy out passages (*even as short as a sentence*) verbatim or with small changes; to use as original another's ideas, interpretations, striking terms or phrases; to paraphrase; or to summarize without acknowledging the source these require acknowledgement (*i.e., footnotes or other citations giving adequate description of the source of materials and clearly indicating all quotations either by quotation marks or by otherwise setting off the quoted passage*).

Further Amplification and Qualification of the Definition

The most common forms of student plagiarism, whether deliberate or not, are these:

1. Too much of the wording of a passage is quoted without being placed within quotation marks.
2. The research or thoughts of another are not credited.
3. The sources used are merely listed in a bibliography section and not specifically tied to information in the text.

In writing and speaking at levels below the most formal, plagiarism can be avoided by including into the text less-than-specific references to sources. Even such an indefinite reference as “in a magazine article I read last summer” would avoid a charge of plagiarism, although it might not provide convincing support for the point being made.

In very formal presentations, such as research papers and papers read in symposia, of which the sources might be expected to be checked or reviewed by some members of the audience, specific references to sources and a standard style of documentation are expected.

However, not all information from sources external to the writer or speaker need be credited, as in the cases of facts or common knowledge, facts readily attainable from a variety of reference sources, and well-known quotations. For example, a writer need not cite the source of George Washington's birthplace or of the name of the current British Prime Minister, for such facts are easily retrieved, noncontroversial, and do not represent the research efforts of a particular person or body. Similarly, quotations that are expected to be recognized by an audience need not be credited—for example, “All the world's a stage,” and “Love your neighbor as yourself.” Quotations that are part of the current scene may require no quotation marks at all. For example, an audience during the years of the George Bush Presidency is expected to recognize “Read my lips” and the phrase, “kinder and gentler,” when they are worked into any discourse and to know they are slogans spoken by that president.

The question of how much wording from a source may be used in a paraphrase will bother conscientious students. Certainly words and phrases that are so common and natural to the content that they cannot be avoided in a paraphrase need not be placed between quotation marks. If, for example, in a paper discussing the dangers of jogging, a student were to wish to paraphrase a passage containing the sentence, “President Carter had to drop out of a footrace in Thurmont, Maryland,” the student would not be obliged to place within quotations marks the name of the person or the place or the common verbal phrase “drop out.” However, if the passage had stated that “the President paled, sagged and sank,” the use of any of those striking verbs especially selected by the original writer would require quotation marks. In either case, this reference to a footnote in history should be credited by some means.

Just as some examples presented above fit a narrow definition of plagiarism but are really exceptions to it, so too there are other forms of dishonest behavior on the part of writer or speaker that exist wholly outside the definition but are similarly examples of deliberate deception. They include the citing of or quoting from nonexistent sources, the knowingly inaccurate citing of sources when research notes have been lost or omitted, the submitting of work from another course as though it were generated in the later course. These, like the offenses of plagiarism, represent varying degrees of culpability and require a flexible application of discipline according to the judgment of the instructor. However, in a case of deliberate plagiarism the student is subject to the disciplinary policy of the College (Policy No. IV 4.43). Due process is granted the student under Procedure NO. PR 4.43 in the College Policy manual.

Penn College Computing Resources Acceptable Use Policy

The Penn College Acceptable Use Policy (AUP) promotes the efficient, ethical, and lawful use of Penn College's computing resources. The College's computing systems, networks and associated facilities are intended to support the College's mission and to enhance the educational environment. Penn College's policy regarding the appropriate use of College computing facilities and the ethics of personal behavior apply to the use of all forms of electronic communication.

Rights and Responsibilities

Faculty, staff, and students may use College-owned computing equipment for instructional, research, or administrative purposes. Access to and use of Penn College computer facilities, campus telephone and data networks, electronically stored data, software, and the Internet shall comply with federal laws, the laws of the Commonwealth of Pennsylvania, and the rules and regulations of the College. Misuse of these computer facilities, networks, software, and the Internet are violations of law and may be charged as such. By using Penn College's computing facilities, resources, networks, and the Internet, all users agree to the rules, regulations, and guidelines contained in this Acceptable Use Policy.

Computers and networks can provide access to resources on and off campus, as well as the ability to communicate with other users worldwide. Such open access is a privilege, and requires that individual users act responsibly. Users must respect the rights of other users, respect the integrity of the systems and related physical resources, and observe all relevant laws, regulations, and contractual obligations. The college's computers and networks are a shared resource, for use by all faculty, staff and students. Any computer or network use that inhibits or interferes with the use of this shared resource by others is not permitted. The College will routinely scan access logs, collect and analyze traffic data, and monitor network utilization to ensure reasonable use. Violations will result in immediate loss of computer and network privileges.

Students and employees may have rights of access to information about themselves contained in computer files, as specified in federal and state laws. Files may be subject to search under court order. In addition, system administrators may access user files as required to protect the integrity of the computer systems. Following organizational guidelines, system administrators may access or examine files or accounts that are suspected of unauthorized use or misuse, or that have been corrupted or damaged.

It is a violation of this policy to:

- (1) Intentionally and without authorization, access, alter, interfere with the operation of, damage or destroy all or part of any computer, computer system, computer network, computer software, computer program, or computer database.
- (2) Give or publish a password, identifying code, personal identification number or other confidential information about a computer, computer system, computer network or database.
- (3) Willfully exceed the limits of authorization and damage, modify, alter, destroy, copy, disclose, or take possession of a computer, computer system, computer network or any other College computing facility.
- (4) Willfully, fraudulently and without authorization gain or attempt to gain access to any computer, computer system, computer network, or to any software, program, documentation, data or property contained in any computer, computer system or computer network.
- (5) Use another person's name, password, identifying code or personal identification to access a computer system, network, or to send electronic mail.

College Provided Computer Resources

The following guidelines apply to anyone using computing resources provided by the College, including but not limited to computer labs, campus network, and Internet access:

1. Loading of third-party software on computer systems in the computer labs is forbidden, unless authorized by a member of the lab staff or a faculty member.
2. The transfer of copyrighted materials to or from any system, or via the College network without the express consent of the owner of the copyrighted material may be a violation of Federal Law, and is classified as a felony under State Law.
3. College developed or commercially obtained network resources may not be re-transmitted outside of the College. Examples include newsgroups and Library databases such as ProQuest.
4. You are responsible for all activities to and from your network account. It is your responsibility to protect your login and password. Do not allow someone else to share your network account for any reason. You should not disclose your password to anyone else, nor should you use the network account and password of anyone else.
5. Any attempt to circumvent system security, uncover security loopholes, guess other passwords or access codes, or in any way gain unauthorized access to local or network resources is strictly forbidden and violation is grounds for immediate expulsion from the College.
6. Under no circumstances will any individual be permitted to use their network connection or computing privileges for commercial purposes. You may not advertise any commercial products. Any commercial use of College facilities is explicitly prohibited by the College and is grounds for the loss of network privileges.
7. Inappropriate mass mailing is forbidden. This includes multiple mailings to newsgroups, mailing lists, or individuals, e.g. "spamming," "flooding," or "bombing."
8. Displaying obscene, lewd, or sexually harassing images or text in a public computer facility or location that can be in view of others is forbidden. The College environment is not the appropriate place for this kind of material.

Private Computers Connected to the College Network

The following guidelines are apply to anyone connecting their private computer to the College network via the College Housing network (ResNet) or in an office:

1. You, the owner of the computer, are responsible for the behavior of all users on your computer, and all network traffic to and from your computer, whether or not you knowingly generate the traffic.
2. A private computer connected to the network may not be used to provide access to the network for others who are not authorized to access the college systems. The private computer may not be used as a router or bridge between the college network and external networks, such as those of an Internet Service Provider.
3. Should the networking staff of the College have any reason to believe that a private computer connected to the College network is using network resources inappropriately, network traffic to and from that computer will be monitored. If justified, the system will be disconnected from the network, and action taken with the appropriate authorities.
4. Any residential student, with an authorized network account may use their RESNET connection for scholarly purposes, for official College business, and for personal use, so long as the usage: (1) does not violate any law or this policy, (2) does not involve extraordinarily high utilization of College resources, or substantially interfere with the performance of the College network, and (3) does not result in commercial gain or profit.
5. Due to the possibility of a breach in the College's computer network security, students are **not** permitted to connect a

computer to ResNet and an external Internet Service Provider **AT THE SAME TIME**. Students who prefer to use an external ISP must notify Computer Services prior to connecting their computer to the external ISP network

- Users are responsible for the security and integrity of their systems. In cases where a computer is "hacked into", it is recommended that the system be either shut down or be removed from the campus network as soon as possible in order to localize any potential damage and to stop the attack from spreading. *If you suspect electronic intrusion or hacking of your system and would like assistance, contact Computer Services (ext. 7329) immediately.*
- The following types of servers should never be connected to the College network: DNS, DHCP, BOOTP, WINS, or any other server that manages network addresses.

Ethical Use

It is important that members of the College community be aware of the intellectual rights involved in the unauthorized use and copying of computer software. Penn College endorses the following statement of Software and Intellectual Rights that was developed through EDUCOM, a non-profit consortium of colleges and universities committed to the use and management of information technology in higher education.

"Respect for intellectual labor and creativity is vital to academic discourse and enterprise. This principle applies to works of all authors and publishers in all media. It encompasses respect for the right to acknowledgment, right to privacy, and right to determine the form, manner, and terms of publication and distribution."

"Because electronic information is volatile and easily reproduced, respect for the work and personal expression of others is especially critical in computer environments. Violations of authorial integrity, including plagiarism, invasion of privacy, unauthorized access, and trade secret and copyright violations, may be grounds for sanctions against members of the academic community."

Computer facilities and files owned by others should be used or accessed only with the owner's permission. Viewing or using another person's computer files, programs or data without authorized permission is unethical behavior and will not be tolerated. Such behavior, if used for personal gain, is plagiarism. Ethical standards apply even when the material appears to be legally unprotected. Improper use of copyrighted material may be illegal. The unauthorized copying of any software that is licensed or protected by copyright is theft.

Electronic Mail

The College e-mail system is not a private secure communications medium. As such, e-mail users cannot expect privacy. By using the College e-mail system, each user acknowledges:

- The use of electronic mail is a privilege not a right. Electronic mail is for college communication, research, or campus business. Transmitting certain types of communications is expressly forbidden. This includes chain letters, pyramids, and other messages of a similar nature; the use of vulgar, obscene or sexually explicit language and messages; sending harassing or threatening material; sending derogatory, defamatory or sexual or other harassment via electronic mail; or the use of the electronic mail for discriminatory communication of any kind; or the use of e-mail for commercial or political purposes; or the use of e-mail in conjunction with or as part of any criminal activity.
- Under the Electronic Communications Privacy Act, tampering with electronic mail, interfering with or intercepting the delivery of mail, and the use of electronic mail for criminal purposes may be felony offenses, requiring the disclosure of messages to law enforcement or other third parties without notification.
- E-mail messages should be transmitted only to those individuals who have a need to receive them. Distribution lists should be

constructed and used carefully. E-mail distribution lists should be kept current and updated regularly. Spamming is strictly forbidden.

- All users of the College e-mail system waive any right to privacy in e-mail messages and consent to access and disclosure of e-mail messages by authorized College personnel. Accordingly, the College reserves the right to access and disclose the contents of e-mail messages on a need-to-know basis. Users should recognize that under some circumstances, as a result of investigations, subpoenas or lawsuits, the College might be required by law to disclose the contents of e-mail communications.

The College may adopt further rules and regulations to implement this policy provided that no such rules or regulations shall be inconsistent with policy set forth above.

Violation of e-mail policy or abuse of the College e-mail system is grounds for disciplinary action, including dismissal for employees and expulsion for students.

Reporting Violations of Computer Use Regulations

Violations of these regulations should be reported immediately to the Office of the Chief Technology Officer, Hager Lifelong Education Center, Room 202 (x7647). The College will make every effort to maintain confidentiality to the extent possible consistent with other obligations.

Disciplinary Action

Violations of these regulations will result in the appropriate disciplinary action, which may include loss of computing privileges, suspension, termination, or expulsion from the College, and legal action.

Pennsylvania Law

It is a violation of Pennsylvania law to access, alter, or damage any computer system, network, software or database, or any part thereof, with the intent to interrupt the normal functioning of an organization. It is also unlawful to knowingly and without authorization, disclose a password to any computer system, network, or to gain unauthorized access to a computer or to interfere with the operation of a computer, network, or to alter, without authorization, any computer software. Violations of these sections of the law are punishable with up to \$15,000 fine and seven years imprisonment. Disclosing a password to a computer system, network, etc., knowingly and without authorization, is a misdemeanor punishable by a fine up to \$10,000 and imprisonment of up to five years.

Attendance Policy

Students who are enrolled at the College but do not attend classes are financially responsible for all tuition and fees if they do not formally withdraw prior to the semester deadlines.

- Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. It is the instructor's responsibility to distribute all attendance requirements through syllabi information at the beginning of the semester. It is the student's responsibility to read and understand course-specific attendance requirements. It is the student's responsibility to make up all work missed to the satisfaction of the instructor.
- All faculty are required to record attendance daily through the first three weeks or 20 percent of the class. When attendance is a contractual responsibility of a sponsored student, faculty are required to continue taking and verifying attendance for that student. The student is responsible for providing attendance forms to the faculty on a weekly basis.
- If a student is enrolled in a class where attendance is specified as a requirement in the syllabus, the student may be withdrawn from the course in accordance with the syllabus but not before missing more than one week's worth of class time.

4. Students who are withdrawn from a class because of absenteeism receive a “W” grade and assume all financial responsibility for tuition and fees.
5. Appeal Process: Students who are withdrawn from a course by an instructor may appeal the decision through the Dean responsible for that course and the Chief Academic Officer or the Ad Hoc Academic Policy Group, consisting of the Chief Academic Officer, President of the Student Government Association, and the Chairperson of the Academic Standards and Issues Committee.

Academic Probation

Any degree or certificate candidate whose cumulative grade point average is below 2.0 will be placed on academic probation. A student on probation may be required to fulfill specified conditions for continuing enrollment.

A student may be terminated from the College if his/her *cumulative* grade point average is under 1.0 at the end of the first semester’s work, under 1.5 at the end of the second semester’s work, or under 1.8 at the end of the third semester of work. Progress for students in Health Sciences’ majors is dependent upon achievement of a 2.0 GPA in major specific courses. (*A semester’s work is generally defined as the courses listed for a semester in a given major, or 15 credits of coursework.*) Probation review will determine the semester status in special situations.

Probation review occurs at the end of each semester and specifies the conditions under which students with grade point averages below 2.0 will be permitted to continue at the College. The review may recommend the academic dismissal of students. Students who are academically dismissed may appeal the action to the Chief Academic Officer or his/her designee.

Aviation: Students in Aviation courses within the FAA approved Airframe and Powerplant curriculum must earn a “C” or better in all approved major courses in order to be eligible to progress in the program and to be allowed to take the FAA written examinations.

Health Sciences: Students in Health Sciences majors are subject to additional compliances with specific academic requirements. Progression for a Health Sciences student is dependent on achievement of at least a grade of “C” in major specific courses.

Financial Aid Office Policy on Satisfactory Academic Progress

In order for students to be eligible to receive financial aid, they must be maintaining satisfactory academic progress toward the completion of a degree or certificate. The standards by which progress is measured are established by the College. This Policy on Satisfactory Academic Progress has been approved by the Board of Directors. As an applicant for financial aid, you must meet the conditions of this policy in order to receive aid.

1. Full-time students may receive aid for 10 semesters in a four-year program, five semesters in a two-year program and three semesters in a one-year program. Part-time students may receive aid for 20 semesters in a four-year program, 10 semesters in a two-year program or six semesters in a one-year program.
2. Students enrolled in four-year or two-year programs will have academic progress measured at the end of each academic year. Students enrolled in one-year programs will have academic progress measured after each semester of attendance. All semesters of attendance will be considered, regardless of when the student first enrolled or first received federal aid.
3. Full-time students must successfully complete at least 24 credits if enrolled for a full academic year, or 12 credits if enrolled for just one semester. Part-time students must successfully complete at least 75 percent of the credits attempted. Students not meeting these credit requirements will be ineligible to receive federal aid

until they have completed enough additional credits to bring them into compliance with this policy.

Also, non-credit courses, external transfer credits and credits earned through Advanced Placement or Credit for Life Experience will not be included in the number needed for satisfactory progress. Credits earned for repeated courses will only count in the semester in which the credits are applied toward graduation requirements. Remedial courses will count in determining the number of credits used to measure progress.

4. Progress will be measured in terms of credits earned and grade-point average. Only those courses for which the student receives a grade of A, B, C or D will count in the determination of satisfactory progress. Courses for which the student receives a grade of F, W, I, SP or T do not count toward the required 24 semester credits.
5. Students whose cumulative grade-point average falls below 2.0 will be placed on academic probation, and a decision on their continued enrollment will be made by the Academic Probation Committee. Students may continue to receive aid while on academic probation, but are subject to the credit requirements stated above and must have a grade-point average of at least 2.0 by the end of the second academic year (*fourth semester of attendance.*)
6. Any student who changes programs two or more times (*enters a third different program*) will be ineligible for aid pending further review by the Director of Financial Aid or designee.
7. A student determined ineligible for aid may appeal this determination by writing to the Director of Financial Aid or his/her designee, stating the basis for the appeal. Exceptions may be made based on extenuating circumstances including, but not necessarily limited to, documented illness, change of program or the required completion of remedial courses. The Director or designee will inform the student in writing of the decision, specifying the conditions, if any, under which an exception has been made, or explaining the reason(s) for denying the appeal and detailing the actions necessary for the student to regain eligibility. A student may request a review of this decision in a meeting of the student, the Director and the Dean of Student Services.
8. Financial aid eligibility will be reinstated when the student has either earned the credits or grade-point average required by this policy, or has successfully appealed to the Director of Financial Aid or his/her designee. The student will be notified in writing when eligibility has been reinstated.

Students must successfully complete at least 12 credits for each full-time semester and at least six credits for each part-time semester in which PHEAA Grants were received. Progress will be checked after the spring semester of each academic year. Appeals must be made in writing directly to PHEAA. Full-time eligibility is limited to eight semesters for four-year programs and four semesters for two-year programs. Part-time eligibility is limited to 16 semesters in four-year programs and eight semesters in two-year programs. Remedial credits in some instances do not count toward the credit requirements. Contact the Financial Aid Office if you have questions at 1-800-367-9222 or (570) 327-4766.

Academic Information

Academic Year/Semester

The academic year is divided into fall, spring and summer semesters. The fall and spring semesters are 16 weeks in duration. Summer sessions vary in length. Students should contact the Financial Aid Office with questions regarding full-time status in summer school.

Finals Week

Finals week is part of the semester. For all courses meeting the entire semester, the finals week will be dedicated to the activities related to summative assessments.

Exams will be block-scheduled for three hours per course between 8 a.m. and 10 p.m. Any student with more than three activities on a given day may petition the Chief Academic Officer for an alternate evaluation time.

Students with questions about their finals or summary activity should discuss with the instructor of the class.

Change of Schedule

After a student is officially registered, changes to the schedule may be made through the process of adding and/or dropping within the established deadlines.

Drops/Withdrawals/Terminations

Drops

A student may drop a course up to the 20 percent period (*i.e. third week of the regular fall or spring semester; 16-week course*). The dropped course will be deleted from the student's schedule and not appear on the official transcript. Refunds for dropped courses will be applied according to College policy and federal regulations. The student's and advisor's signatures are required on dropped courses unless the student is subject to administrative removal.

Withdrawals

A student may withdraw from a course from the 20 percent period through the 80 percent of the regular semester. After that date the instructor must, on behalf of the student, request permission for a course withdrawal from the Chief Academic Officer through the appropriate school dean. The course will remain part of the student's schedule and will appear on the official transcript with the assigned grade of "W." There are no grade points or credits awarded for a class from which a student has withdrawn.

If a student decides to discontinue his/her enrollment at the College, he/she must complete the following:

1. Officially drop or withdraw, as appropriate, all classes for which he/she is registered by completing required forms and processing them with the Office of the Registrar.
2. Satisfactorily account for all property issued by the College.
3. Settle all College obligations.

Terminations

A student may be terminated by the College administration or faculty for one or more of the following reasons:

1. Failure to meet financial obligations.
2. Improper student conduct.
3. Failure to meet academic requirements.
4. Failure to demonstrate safe practices.
5. Academic dishonesty.
6. Failure to comply with student attendance policy.

If a student is terminated by the College, the courses for which he/she is currently registered will be assigned a "T" or "F" grade on the official transcript.

Adding a Course

A student may add a course during the first week of a 16-week semester. Signatures of the advisor and the student are required in adding a course. The approval of the instructor of the course is required if a course is added after the first week of the semester. The Chief Academic Officer must approve all adds after the third week of the semester.

Academic Overload

An academic/credit overload occurs when a student registers for more than 18 credits per semester. (*Certain majors where a 19-credit load is required are not considered overloads.*) Summer session overloads will exceed 12 credits scheduled during more than one session.

Students wishing to schedule an overload must obtain permission from the Assistant Dean or Dean of the major in which they are enrolled. A student must have earned a 3.0 cumulative grade point average or a 3.0 average the previous semester in order to qualify to schedule a credit overload.

Change of Major

A change of major may be made at any time during the first three weeks of a semester. Changes made after that time will be effective the following semester. Currently enrolled students who wish to change from one major to another complete a "Curriculum Change" profile, obtain required signatures and begin the process in the Registrar's Office or Advisement Center.

When a student changes his/her major, all credits earned in the prior major will be evaluated for transfer to the new major by the Registrar or the Advisement Center and confirmed by the academic school. All courses will continue to appear on the student's transcript. Only courses applicable to the new major will be used to calculate the student's new graduation grade point average. This grade point average will not appear on the transcript until a semester has been completed under the new major.

Repeating Courses

Students may repeat courses to improve their grade point averages. Students must pay for all repeated courses. If a course is repeated at this institution, the higher of the grades will be listed and used in the grade calculation. The lower grade will be changed to an "R" and will carry no value in the grade calculation.

If a student receives a "C" or better in a course at another institution which is equivalent to a course at this College in which he/she received a "D" or "F" grade here, the "D" or "F" grade will be changed to an "R" grade and the external course will be used to satisfy graduation requirements.

Course Limit

Students may take a course no more than three times, whether to improve a passing grade or to repeat a course in which grades of "W," "I," "F" or "T" were earned. If a student cannot complete a required course after three attempts, that student can be disenrolled from the major requiring the course and can be prohibited from enrolling in any other major requiring the uncompleted course.

Auditing a Course

Auditors are not required to prepare lessons or papers or take examinations, nor do they receive credit for the course. Students are charged full tuition for courses taken on an audit basis.

With the consent of the instructor and the Chief Academic Officer, student may enroll as an auditor in any course.

Students must provide the Registrar's Office with written permission to audit at the time the course is scheduled. **A student may not change from credit to audit status or from audit to credit status after the beginning of the semester.**

Grading System

The College uses the following system of grading (4.0 basis) to indicate the quality of a student's work:

Grade	Interpretation	Grade Points
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failing Work	0
T	Administrative Termination	—
W	Withdrawn	—
I	Incomplete	—
AU	Audit	—
SP	Satisfactory Progress	—
R	Repeated	—

Catalog profile uses indicators as shown below. They are for internal use and do not satisfy graduation requirements until satisfactory completion.

FC – Future Course

CP – Course in Progress

UT – External institution course has been approved, but official transcript is needed.

EXtrans – External course approved; official transcript received; credit posted

An instructor may assign an "I," Incomplete, grade to allow a student additional time to complete required coursework. That agreement is between the instructor and the student and the grade can be changed only by the instructor. The instructor may not allow the student more than one calendar year to complete the requirements.

"SP," Satisfactory Progress, is used for certain students in Developmental Studies courses. "SP;" Satisfactory Progress, will be awarded if students do not complete all course requirements but do meet the requirements for "SP" as established in the syllabus for a particular developmental course. Students earning an "SP" will register for the same course the following semester. Upon mastery of all course objectives, the student will earn a traditional letter grade (*in the semester in which the course requirements were met*).

"W" grades indicate withdrawal from the course. A student-initiated withdrawal may not supercede a "T" or "F" grade assigned for: (1) failure to meet financial obligations; (2) improper student conduct; (3) failure to demonstrate safe practices; (4) academic dishonesty.

Grade Reports

After the midpoint of each fall and spring, each 16-week course will receive a "P," "D," or "F" grade indicating progress to date. Mid-term grades are advisory in nature and do not become a part of the student's permanent record. They are sent to the student at the official address and are not issued outside the College.

Final semester grades will be mailed after the end of each semester, fall, spring and summer. The grade report will show all coursework completed for the current semester by the student. To protect the confidentiality of the student's record and in compliance with federal law, no grades will be given over the phone to anyone.

Cumulative Grade Point Average (GPA)

The cumulative grade point average (GPA) is derived by completing the following steps:

- Find the total number of registered credits (*exclude courses with grades of W, SP, R, I or AU*)

- Calculate the earned grade points. Multiply grade points by number of credits for each course. (*An A in ENL111 would yield 12 grade points, since an A=4 grade points and the course is worth 3 credits.*)
- Add all grade points
- Divide total grade points by total of all registered credits

If a student repeats a course at Penn College and receives a higher grade, only the higher grade is used in calculating the cumulative grade point average. If a student betters a grade received at Penn College by enrolling in the same course at another college, the original Penn College grade will be replaced with an "R" on the Penn College transcript, but neither grade will be included in the cumulative grade point average.

The transcript has two cumulative grade point averages. One is the major GPA, which calculates only the courses designated as "major" courses. The other grade point average is the graduation GPA that includes all courses taken while the student is enrolled in the most current major. Without a 2.000 in the graduation GPA, a student will not graduate.

NOTE: Students enrolled in Health Sciences majors will follow additional, definitive academic procedures set forth by the School of Health Sciences and programs. Additional information is available from the program director and the Dean of Health Sciences.

Graduation Requirements

A student is responsible for meeting all requirements for graduation.

Faculty advisors may assist in planning majors, but the final responsibility for meeting graduation requirements rests with each student. Any deviations from the standard courses must be documented in the Registrar's Office by an "Approval Form for Course Substitution or Equivalency" or other official document.

All entering students must exhibit competencies in the basic skills (*reading, computation and written expression*) necessary for success in their majors. Students who have not demonstrated these competencies on the College placement tests are required to complete specific courses in order to earn a degree or certificate from the College.

Students participate in the commencement ceremony (*December, May, August*) that concludes their final semester/completion of credits.

Bachelor Degree

Successful completion of the Bachelor of Science degree at Penn College requires a minimum of 120 credits. The standard range of credits for the B.S. graduate will be 120 to 136 credits, or 15 to 17 credits per semester for eight semesters. Extended range requirements may require up to 144 credits — allowable if a major contains a cooperative education or internship component. In addition, bachelor degree graduates must meet the following requirements:

- Complete course requirements in their specific major, as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Dean. Written approvals for substitutions should be submitted concurrent with scheduling. Only courses numbered 100 and above can be applied toward meeting graduation requirements for a bachelor degree.
- Complete 36 of the final 60 credits at Penn College.
- Complete all course requirements and earn at least a "C" (2.0 cumulative grade point average) for all courses taken at Penn College and at least a 2.0 cumulative grade point average in all major courses.
- Satisfy all core requirements as stated in a student's curriculum.
- Fulfill all financial obligations to the College. Diplomas will not be issued to students with holds on their grades.

Associate Degree

The successful completion of a two-year major — identified as an Associate Degree in this catalog — leads to an Associate of Science, Associate of Applied Science, an Associate of Arts, or an Associate of Applied Arts Degree. To be eligible for an Associate Degree, the student is expected to satisfy the following:

- Complete courses required in a specific major as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Dean. Written approval for substitutions should be submitted concurrent with scheduling. Only courses numbered 100 and above can be applied toward meeting graduation requirements for an associate degree.
- Complete a minimum of 30 credits in courses offered at Penn College. Credit earned by advanced placement, credit by examination, or work/life experience may be included in the 30 credit minimum. A student must be enrolled in courses at the College for at least 18 credits of the final 30 credits of a major.
- Earn at least a “C” average (*2.0 cumulative grade point average*) and complete all required courses with a grade of “D” or better.
- Satisfy all core requirements as stated in a student’s curriculum.
- Fulfill all financial obligations to the College. Diplomas will not be issued to students with holds on their grades.

Certificates

Certificates will be awarded for the successful completion of a major identified as a Certificate in this catalog. To be eligible for a Certificate, the student is expected to satisfy the following:

- Complete a recommended major as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Assistant Dean or Dean. Written approval for substitutions is processed concurrently with the scheduling process. Courses numbered 001-009 cannot be used to meet graduation requirements.
- Complete at least half of the credits required, including the last semester, in courses offered by the College. This includes credit received for advanced placement, credit by examination, or work/life experience. A student must be enrolled in courses at Penn College for at least 12 credits of the final 30 credits.
- Earn at least a “C” average (*2.0 cumulative grade point average*) in all courses and complete all required courses with a grade of “D” or better.
- Fulfill all financial obligations to the College. Diplomas will not be issued to students with holds on their grades.

Graduating with multiple degrees, out of major or with minors

Students can be enrolled in only one major. They can, however, petition to graduate with additional degrees or for any degree for which they have satisfied the requirements.

Baccalaureate students may earn a minor that will be printed on the diploma. Students may not receive a minor except during the semester in which they complete the major. A student may not enroll in a minor within the same (*associate/baccalaureate*) discipline. Minors must be declared after completing 15 credits and no later than registration for the final semester. A student may earn up to two minors.

Additional Information

If after completing the final semester, the student has not earned all the credits required for an associate degree or certificate, he/she may, with prior approval of the Chief Academic Officer be permitted to take two courses eight (8) credits maximum from another accredited college/institution to fulfill requirements for a degree or certificate from Penn College. Such work must be completed within two years after the last semester in which the student attended classes at Penn College. After two years, the student must reenroll. Only grades of “C” or better are acceptable for such transfer credit. (*Grades for transfer credits are not included in the student’s cumulative grade point average.*)

All exceptions to graduation requirements must be approved by the Chief Academic Officer or his/her designee.

Petitioning to Graduate

Students will be graduated from the College when they have successfully completed the requirements of their major.

To receive a printed diploma, the student must “Petition to Graduate” through the Registrar’s Office. This can be done in-person or by phone. Students will have the opportunity to approve the spelling of their name, confirm their major, confirm their minor (*if applicable*), indicate their intention to participate in Commencement and whether they would like their name listed in their local newspaper. By petitioning to graduate, the student receives additional information regarding Commencement rehearsals, caps and gowns and any dates related to Commencement activities.

It is the student’s responsibility to know and understand graduation requirements as well as deadlines. Students who fail to have all requirements satisfied would not be petitioned and students who have not petitioned by the advertised deadlines will not be allowed to participate in Commencement ceremonies, be eligible for Commencement awards, or have their name listed in the Commencement program.

Graduation Honors

Academic honors are awarded to certificate, associate and baccalaureate students whose cumulative grade point average warrants. That honor is announced at Commencement ceremonies and so noted on the diploma and transcript. Penn College recognizes the following academic honors for graduates:

Certificate Graduate Honors

Distinction—Blue—3.5 or above grade point average

Associate Degree Graduate Honors

Highest Honors—Gold—4.0 grade point average

High Honors—Silver—3.75-3.99 grade point average

Honors—White—3.5-3.74 grade point average

Bachelor Degree Graduate Honors

Summa Cum Laude—Gold—4.0 grade point average

Magna Cum Laude—Silver—3.75-3.99 grade point average

Cum Laude—White—3.5-3.74 grade point average

The Dean’s Honor List

The honor list is announced by the Chief Academic Officer at the completion of each semester. The list will include only those full-time students who have a semester grade point average of 3.5 or better. The Dean’s List will generate a letter to the student as well as releasing names to the students’ local newspapers for any full-time student who qualifies for fall, spring or summer.

Students enrolled as degree-seeking and part-time will be included in the semesterly Dean’s List. Part-time students who have earned twelve credits yielding a cumulative grade point average of 3.5 will receive initial Dean’s List recognition. Thereafter, upon completion of each additional set of twelve credits and based on the cumulative GPA, the student will be eligible for Dean’s List. The Dean’s List recognition will be granted for the semester(s) in which the twelve credit increment is completed.

Each student on the Dean’s List receives a letter from the dean and notice is sent to the hometown paper.

Withholding Grades/Diplomas

A student’s grades and records will not be released if the student has any outstanding loans or fines (*for example, parking fines or library fines*) at the College or if the student has outstanding obligations to the College for the return/replacement of items such as books, tools or equipment. Holds usually are for, but are not limited to, unmet financial obligations. When a hold is placed on a student’s grades, the student will be notified in writing of the hold and of the action needed

to release his/her grades or records. Students will not receive a diploma if there are holds on the transcript.

Transcripts

An unofficial transcript (*identical to the official transcript, but without the Registrar's signature*) shows all coursework completed by the student.

Official transcripts are those transcripts sent directly from the College to another institution, agency, or employer. All requests for transcripts must be submitted in writing to the Registrar's Office. The request must contain the following information: the student's name while attending the College, the student's address and Social Security number, the dates of enrollment, the name of the major(s) in which the student was enrolled, and a complete address to which the transcript is to be sent. If the transcript is sent to the student or to his/her address, it is considered an unofficial copy.

Terminations from the College

Student-Initiated

When a student elects to terminate from the College, he/she must officially notify the Registrar's Office. This process includes the following:

1. Officially drop all registered course(s), processing drops through the Registrar's Office.
2. Satisfactorily account for all property issued by the College.
3. Settle all outstanding College obligations.

Students who do not officially terminate from the College in this prescribed manner are responsible for all previous academic and financial commitments.

College Termination

The College reserves the right to terminate enrollment of any student if, in the opinion of the College, further association is not in the best interest of the student or the College.

Administrative Termination

The following may be cause for administrative termination:

1. Failure to meet financial responsibilities.
2. Improper student conduct.
3. Failure to meet academic requirements.
4. Failure to demonstrate safe practices.
5. Academic dishonesty.

Students who are administratively terminated and assigned "F" grades as a result of such termination may not complete student initiated drops as outlined here. Such administratively terminated students will receive the "F" grade and will not be eligible to receive a "W" grade. Additionally, in cases of "F" grades being administratively assigned for academic dishonesty or academic misconduct during the first three weeks of the semester, the "F" grade will show on the student's transcript and the student will not be eligible for any refund.

Withdrawing Grades

From the first day to the end of the third week of the semester (*20 percent of class on short-term classes*), dropping a course results in no grade or transcript record.

From the third week of the semester to the end of the 13th week of class (*prorated for short-term classes*), a student-initiated withdrawal receives a "W" grade, which does not impact the GPA but does appear on the transcript.

From the end of the 13th week to the last day of the course, students are not permitted to withdraw from a class. Exceptions may be granted only with the recommendation of the instructor, school dean, and the approval of the Chief Academic Officer.

Refunds

In order to be eligible for a refund, the student must have completed the formal termination/drop procedures.

Students terminated from course(s) and assigned an "F" grade due to academic dishonesty or academic misconduct will be charged 100 percent tuition and related fees. They will not be eligible for any tuition refund during the first three weeks of the semester.

If a student finds it necessary to terminate from the College for any reason, tuition and related fee charges will be assessed according to the following schedule:

Prior to or on the first day of the semester	No Charge
Second day through third week of the semester <i>(Each short-term course is calculated separately)</i>	30 percent of tuition and related fees
After third week of the semester <i>(Each short-term course is calculated separately.)</i>	100 percent of tuition and related fees

After tuition and related fee charges have been recorded, any credit balance in the student's account will be distributed according to this schedule:

1. Financial Aid Awards and Stafford Student Loans will be adjusted to comply with state and federal regulations.
2. Monies paid through third party contractual agreements will be refunded to the granting agency.
3. Remaining balance will be refunded to the student.

Should a student's account show an amount due to the College after all adjustments have been made, the student will remain responsible for payment in order to clear his/her account.

Opportunities for Students

Orientation

Student Orientation is held at the start of each semester and will help you enjoy a smooth transition to College life. Several days of workshops and social activities are designed to help students meet and interact prior to the start of classes. There also are special programs for parents and families.

Orientation Leaders are selected each year to assist with helping new students in their transition to college life. This group plans workshops, leads tours and serves as peer mentors to new, incoming students.

Cooperative Education

Cooperative Education (co-op) offers students the opportunity to participate in supervised periods of relevant and meaningful employment. While on co-op assignment, students work as regular employees of the co-op employer, receive supervision by a faculty co-ordinator, and earn academic credit for knowledge and/or skills acquired from their work experience. Co-op may be elected to replace or supplement required courses in most majors.

The following options are available to qualified students in most majors:

1. Alternating Plan: Students rotate periods of full-time work and full-time on-campus study.
2. Parallel Plan: Students work part-time and attend regular classes during the same semester or summer session.
3. Extended Plan: Students work full-time during a summer session followed by a parallel plan co-op during one or more following semesters.
4. Career Advancement Plan: Students attend College on a part-time basis while working either full- or part-time at their regular job. Designed for employed students who can learn from work assignments in addition to and beyond the normal scope of their employment.

Variations of the above options are possible, depending upon job and College requirements. Co-op placements are usually for a full semester - fall, spring or summer.

In order to participate in Cooperative Education, a student must have successfully completed a minimum of one full semester (12 credits) or its equivalent and must maintain a cumulative average of 2.0 or better. In addition, for students enrolled in associate or bachelor degree majors a 2.5 average in courses directly related to his/her major is recommended.

The Chief Academic Officer or his/her designee may waive these requirements in the following situations:

1. If the College determines that the student has acquired competencies—through previous training and/or experience—which are equivalent to those provided during one full semester of instruction at the College.
2. When the student's cumulative average falls below the level required and/or recommended due to special circumstances.

A student who is unable to meet and maintain either the behavioral or performance standards established for co-op employment may, with just cause, be withdrawn from co-op employment by either the employer or the College. Please refer to page 36 for further information about Work-based Learning and internships.

A student may withdraw or be withdrawn from co-op employment without penalty if—for any well-founded reason—the work site is deemed to be unsafe or if the level of work assigned does not meet the learning objectives established by the student and the College.

Specific information can be obtained directly from the student's school or by contacting the Office of Counseling and Career Services phone: (570) 327-4502 or (570) 326-3761, ext. 7633, Bush Campus Center, Rm. 204.

Counseling and Career Services

The Counseling and Career Services Center is located in the Bush Campus Center, Rm. 204. Counseling and Career Services houses a wide variety of occupational and educational information, including computerized career search programs, books, videos and other career library resources. Staff members are available to work with individuals as they use these materials and to provide direction for those who need assistance in career decision making. Other services include programs in midterm academic intervention, provision of career assessment inventories, resume writing, interviewing skills, and job search strategies. Ongoing student development workshops and support groups are offered throughout the year.

Each student ultimately is responsible for his or her academic progress and the eventual completion of the major. Counselors are available to aid students in resolving many types of problems. Such problems may involve social, emotional, vocational, and personal concerns. Any need or concern that is perceived by the student as important will be viewed in the same way by the counselor. Information shared with a counselor will be held in confidence.

Successful Transitioning and Retention Track (START)

START is a full-year program for incoming freshman which is designed to provide support and retention services. This program follows the various transitions of a first-year student from entry to the College through the first two semesters. Through a variety of formats including a welcome reception, orientation activities, weekly seminars, Early Alert System and social/support gatherings, this program provides a freshmen experience designed to assist students with the successful completion of their first year of college.

Information for students undecided about their major: Confirmation of major/career START sessions are offered prior to students starting coursework. These sessions, particularly beneficial to undecided students, provide an opportunity for incoming students to complete career assessments and to work with counselors to confirm a

choice of major. For more information about participating in a START confirmation of major session, contact Counseling and Career Services at (570) 327-4765.

Work-Based Learning

Work-based learning comprises Cooperative Education and Internships

- Cooperative Education provides opportunity for a student to learn skills required in their major on-the-job while working for an employer and can provide additional income to the student. Cooperative Education placements are developed on an individualized basis according to major, location and employer-student needs. Students are encouraged to plan early for participation in this program.
- Internship and practicum provides opportunity for a student to use the skills and training received in college courses in an actual work environment. Some majors require that a student complete an internship or practicum as part of the degree curriculum which is specified as a course number in the catalog. Both involve faculty and may require concurrent on-campus seminars. Internships can be paid or unpaid.

Students are encouraged to meet with the Assistant Director of Career Services in the Counseling and Career Center in Bush Campus Center, Rm. 204, and plan early for participation in a co-op experience that will meet and enhance their education and employment potential. Students in a curriculum requiring internship or practicum will work directly with faculty.

For more information about Cooperative Education, refer to page 35.

Cross-Registration With Lycoming College

The College participates in a cross-registration program with Lycoming College in Williamsport, PA. In order to cross-register for courses at Lycoming College, a student must obtain the permission of his/her advisor, the Chief Academic Officer, and the Registrars at both colleges. The form will be processed through the home school Registrar's Office. In order to participate in this program, students must:

1. be enrolled on a full-time basis in a degree or certificate major.
2. have completed at least 12 credits.
3. have completed no more than 70 credits, including transfer credit, cross-registration credit, and nontraditional credit.
4. have a current cumulative grade point average of 2.0 or better.

During the fall and spring semesters, students may register for two courses or one-half of their total semester credits (*whichever is greater*) through cross-registration. During any summer session, students participating in cross-registration must register for at least three credits at Penn College and may register for only one cross-registration course.

Students may cross-register only for courses not offered at Penn College or for courses unavailable before the student's scheduled date of graduation. Students participating in cross-registration will be responsible for paying any special laboratory fees or charges required for the course. It also is the responsibility of the student to obtain all signatures on forms.

Grades earned through participation in cross-registration will be recorded on the student's transcript. Courses completed with a passing grade ("D" or better) will be credited toward graduation. Grades earned in courses taken at Lycoming College will be included in the student's semester and cumulative averages. Students who cross-register are responsible for complying with the academic calendar of the institution offering the course(s) they take. Cross-registration students should inform their advisors of any difficulties with, or plans to drop Lycoming College courses. Students may obtain information on cross-registration procedures from their advisors or the Registrar's Office. All exceptions to the above requirements must be approved by the Chief Academic Officer or his/her designee.

U. S. Army Reserve Officers Training Corps Program (ROTC)

ROTC, or Military Science, is a four-year program for full-time students pursuing a Baccalaureate degree. It is divided into basic courses in the freshman and sophomore years and advanced courses in the junior and senior years. Penn College offers the program jointly with nearby Bucknell University. Classes are taught at Penn College, if enrollment warrants.

The program is designed to prepare college graduates for commission as officers in the U.S. Army. Program goals are to strengthen responsibility and integrity and develop leadership skills and the moral courage to apply those skills.

Freshman and sophomores may enroll in the program on a trial basis with no commitment to either the program or to the military. Students may choose to leave the program or continue with advanced courses to earn officers' commissions. Although the program is designed to start with new freshmen each fall, it is possible to make special arrangements to enter the program as late as the second semester of the sophomore year. Students with prior military service may skip the basic course and enter directly into the advanced course.

Students enrolled in the advanced courses receive a subsistence of \$200 per month. Students also receive books, uniforms and equipment at no cost. Freshmen and sophomores who apply prior to December may compete for U.S. Army ROTC merit scholarships that can pay up to full tuition with an additional \$450 each year for books.

Program requirements include a six-week summer camp between the junior and senior years. Students receive a salary for the camp experience and are reimbursed for travel, lodging and meal costs. Students also must complete one university course in the areas of written communications, math reasoning, computer literacy and military history.

Basic course classes meet once weekly for 60 minutes; advanced course classes meet twice weekly for a total of three hours. Students are also required to participate in physical fitness training sessions (*one hour each, number varies with class*), and 12 hours of laboratory time throughout the semester. There also is one weekend field trip each semester.

Upon graduation, students can be commissioned either in the Army as a full-time officer or in the Army Reserve or National Guard as a part-time officer. For more information, call or write the Department of Military Science, Bucknell University, Lewisburg, PA 17837, (570) 577-1246.

Study Abroad

Students have the opportunity to study overseas while earning credits toward a Penn College degree. Penn College offers several study abroad opportunities.

Germany

The program in Germany is a semester exchange program located in Wuerzburg, a city in Bavaria.

Students can study international management, German language courses, and other specially designed independent research projects. The program is intended to attract students with a business major or concentration in business. Any student is welcome to apply to the program, but there are some business prerequisites. Students are encouraged to participate in this program their junior or senior years, but they can also apply for their sophomore year. Students should have a 3.0 grade-point average.

Students pay Penn College tuition for 15 credits and take their courses at FH Wuerzburg. Financial aid does transfer. No prior German language ability is required; however, students are expected to attend a two-week "survival" German course upon arrival.

A Fachhochschule is considered a technical college in Germany. The total student population of 4,100 is comprised of about 123 foreign students.

Wuerzburg is in the north-central part of Bavaria and has about 127,000 inhabitants. The town is a cultural center with an active marketplace, a castle, a palace and other historical sites. The landscape is rolling hills and forests and is a reknown grape-producing area. Wuerzburg is about 2 hours by train from Munich.

Australia

Through a partnership with Central Queensland University in Rockhampton, Australia, Penn College students can take classes in the fields of business, health and sciences, communications, construction and engineering, or take general elective credits. Programs last for a semester. Students must have a 3.0 GPA and must have completed 12 months of study at Penn College.

CQU has a total enrollment of 16,000 with more than 2,000 being international students.

Rockhampton is on the east coast of Australia, about 650 kilometers north of Brisbane. It enjoys mild winters and hot summers, with December and January being the hottest months. Situated between the reef and the outback, the area offers a variety of outdoor activities. The most popular are sailing, scuba diving, wind surfing, horse riding, swimming, baseball, football, and golf.

London

An internship in London is available through an agreement between Penn College and the Centers for Academic Programs Abroad (CAPA). Internships can be arranged for a semester term or for an eight-week program during the summer. CAPA handles the accommodations and internship placement. In addition, CAPA provides an orientation, transportation pass in London, and monitors the internship and site.

Other programs

In the past, Penn College arranged two short-term, educational tours to Italy and Costa Rica. The programs offered general elective courses in the sciences and the arts.

Design your own Program

Students have the opportunity to participate in a variety of other programs throughout the world for summer, semester or yearlong durations. General elective courses in the humanities and social sciences are most commonly taken, although classes tailored to degree programs are offered for some majors. Internships, volunteer experiences or work experiences overseas are becoming more popular as they enhance the resume and build skills. Stop by the International Programs Office to check out the possibilities and start the search.

Information

For more information on any of the above programs, visit the International Programs Office in the Klump Academic Center, Rm. 121A, e-mail: studyabroad@pct.edu; phone: 570/320-5257.

New Choices/New Options

The New Choices/New Options program provides career-development services for single parents, displaced homemakers, single pregnant women and individuals interested in nontraditional vocational-technical education. This program offers services to assist individuals in finding jobs or occupational training program that will enable them to support themselves and their families. Program services include vocational assessment, skills identification, referral services, career planning, job readiness and job-search skills, and job-placement assistance. Limited funds are available to participants for transportation, child care and tuition assistance.

For more information, contact Counseling and Career Services at (570) 327-4502 or (570) 326-3761, ext. 7633, or come to Bush Campus Center, Rm. 204.

Project Choice

Project Choice is a comprehensive career exploration program for adults that can assist each individual in building a new career path ... beginning with an awareness of the many choices that are available. This program provides:

1. An assessment of interests, abilities, skills and personality
2. Structured career exploration and career goal planning
3. Workshops on topics including goal setting, prioritizing, removing roadblocks and decision making
4. Information on training, financial aid and support services.

The program and services are free with day and evening sessions scheduled year round. Sessions run for approximately 30 hours.

TRIO Student Support Services Program

Student Support Services Program, a federally-funded TRIO program, is designed to help students earn a college degree. A recent study by the U.S. Department of Education showed that participants in TRIO Student Support Services programs have a higher grade point average and earn a greater number of credits per semester than non-participants. The TRIO Student Support Services Program at Penn College is here to help students through:

- Intensive services prior to and during the first year with additional services offered during later college years
- Advocacy, support and personal attention by the TRIO Student Support Services staff
- Creation of an individualized “Plan for Success”
- An assigned peer tutor, peer mentor or peer coach
- Special access to regional cultural activities
- Financial grant aid for eligible participants who actively participate

Eligibility requirements for the TRIO Student Support Services Program include that the student must be a U.S. citizen and also have low-income status, be considered a first generation college student, and/or a student with a physical or learning disability.

To see if you meet the requirements for eligibility for this program, please contact the TRIO Student Support Services Program office in the Klump Academic Center, Room 160, or call (570) 326-3761, ext. 7460.

Project Success

Any Penn College student may attend a free, 13-hour study skills program offered by Academic Support Services. Topics include: *time management, textbook reading, how to take notes, test preparation, learning styles, test taking and critical thinking skills*. Students learn study skills which will make them more effective, efficient students. Project Success is offered twice each semester. Students who complete Project Success usually earn higher GPAs than those who don't attend. For additional information, contact (570) 326-3761, ext. 7803.

P.L.A.C.E.

P.L.A.C.E., People Learning About the College Environment, is a four-day orientation program designed to facilitate a student's transition into college. Students attend workshops on such topics as time management, classroom communication, getting to know your instructor, financial aid, motivation, and other basic college survival tips. This program is offered free of charge prior to the beginning of each semester.

For additional information, contact (570) 326-3761, ext. 7803.

Supplemental Instruction

Supplemental Instruction (SI) is a free, voluntary program which targets particular courses that are typically very challenging for

students. The SI leader, who has had experience in the subject area, acts as a “model student” within the classroom. This SI leader attends classes, listens to lectures, takes notes, reads the text, etc. Three times a week, the SI leader conducts study sessions in which the students review the course content, predict exam questions, and learn study skills that help them be more effective in the class.

For additional information, contact (570) 326-3761, ext. 7266.

ACT101/College Opportunity Programming (COPing)

This program, funded under the Pennsylvania Department of Education, Equal Education Opportunity Legislative Act 101, is designed to assist underprepared, eligible students to succeed in college life. Eligibility is determined by students' academic and financial need.

Eligible students may enroll in the program to receive services to help them become academically successful. These services include one-on-one professional tutoring, academic and career guidance, small group tutoring and a variety of activities to enhance student success. Students meet individually with ACT 101 staff to assess their strengths and needs and set realistic goals.

The ACT 101 Program also includes a four-week summer program. Students attend noncredit reading, math, English and computer classes. It is a chance for students who have tested deficient in their placement tests to remediate deficiencies prior to the start of the fall semester. During the four-week program, students learn about the campus, the College, the staff, the faculty and one another. This pre-college session makes the first semester easier and more meaningful for students.

For additional information, contact the Act 101 Office, Klump Academic Center, Rm. 141. (570) 326-3761, ext. 7266.

Disability Services

Pennsylvania College of Technology, in compliance with federal guidelines, is committed to assuring otherwise qualified students with disabilities full participation in the College's programs and activities available to students without disabilities. An otherwise qualified person with a disability is one who meets the academic and technical standards required for admission or participation in the institution's educational programs or activities.

Disability Services coordinates accommodations for students with documented disabilities upon student request. Documentation of the disability is required and must come from a qualified professional. Penn College seeks to provide reasonable academic accommodations and access to additional nondisability services that promote a supportive learning environment while giving students the opportunity to achieve their educational objectives. The College promotes self-advocacy; therefore, enrolled students are required to initiate contact with Disability Services staff through an assessment interview prior to receiving accommodations for every semester. Students who have self-disclosed a disability may request special accommodations for placement testing.

For additional information, contact (570) 326-3761, ext. 7803.

Tutoring Center

Penn College's Tutoring Center provides tutorial support from student and professional tutors in English, mathematics and a variety of other subject areas. Services include walk-in (*no appointment necessary*) tutoring in the Center for most English and math courses offered at the College, as well as by appointment and/or walk-in tutoring for a variety of technical courses. In addition, tutoring is available at various “satellite” locations, both on the main campus and at the College's other campuses. In-class tutoring in developmental math classes and some technical courses is also offered. The Tutoring Center is open for math and English tutoring from 8:30 a.m. to 8 p.m., Monday through Thursday, from



8:30 a.m. to 2:30 p.m. Friday, and from 1 to 4 p.m. on Sunday. Hours for tutoring in other subjects are more limited and may vary (*schedules are available in the Tutoring Center*).

For additional information, contact (570) 326-3761, ext. 7242, or stop by the Tutoring Center in the Klump Academic Center, Rm. 145.

Summer Bridge

Summer Bridge is a five-week summer program designed to assist students before their first semester begins. It is a chance for students who have tested deficient in their placement tests to remediate deficiencies prior to the start of the fall semester.

Bridge services are provided to help students realize their personal and educational goals. Summer Bridge offers:

- orientation to college coursework & faculty expectations.
- four week coursework in reading, English and math.
- opportunity to retest in placement-test deficiencies
- instruction in study skills, computers and career options.
- familiarity with surrounding community through field trips and student activities.

Participants are chosen on the basis of motivation, aspiration, and academic need and potential.

For additional information, contact (570) 326-3761, ext. 7266, or stop by our office located in the Klump Academic Center, Rm. 141.

Placement Services

The Counseling and Career Services Center provides assistance to prospective graduates seeking employment information. The Center maintains eRecruiting, a web-based career services management program. Students must attend a required orientation in order to open an eRecruiting account. An account will provide students with access to job postings, company information, on-campus interviewing opportunities, and the ability to post a resume to the system. A comprehensive program of job search/readiness is offered and includes the following: resume writing, cover letter preparation, interviewing skills and others. Students and alumni are encouraged to register with the Counseling and Career Services Center by placing their current resume into the eRecruiting program.

The Counseling and Career Services Center schedules on-campus interviews for companies which come to the College to recruit prospective graduates. On-campus recruitment usually takes place from September through December and from February through April. Recruiting visits are announced in *PCToday* and through electronic mail. In addition, a Career Expo is held on campus each spring and fall to provide students with an opportunity to interview and network with employers seeking to fill positions.

Counseling and Career Services staff offer periodic seminars throughout the College year. These seminars are designed to assist prospective graduates in developing their job search skills. Students are provided information on effective letters of application and resumes. They learn how to access job information, use the Internet to enhance their job search, prepare for interviews and understand employment trends.

For additional information contact (570) 327-4765 or visit the Counseling and Career Services Center, Bush Campus Center, Room 204.

Health Services

Student Health Services is staffed Monday-Friday year round by full and part-time registered nurses and, in addition, doctors hours are available by appointment during the fall and spring semesters. First aid, health counseling and assistance in obtaining private health care is available. Costs for private health care are the student's responsibility. Student Health Services is located in Bush Campus Center, Rm. 150. All Campus Police are CPR/First Aid-certified and will respond to accidents in absence of the nurse.

Insurance

Penn College does not provide insurance for students or their property. Students are encouraged to carry their own (or be included on their parent's or family's) medical, property and, where appropriate, liability/malpractice insurance.

Note: Health Sciences students are required to have health insurance.

Library

The College Library is committed to meeting the learning and research needs of the Pennsylvania College of Technology community on the main campus and at other campus locations. The College Library, located in the Learning Resources Center on the Main Campus, houses a collection of over 100,000 books, periodicals, media, electronic resources and reserve material designed to complement and enrich class curriculum. In addition, the College Library houses the college archives. To facilitate the use of the collection, the library has a trained and friendly staff to educate and guide students in their use of the collection. All Penn College students, faculty and staff, as well as area residents and members of the Susquehanna Library Cooperative and the Associated College Libraries of Central Pennsylvania, are welcome and encouraged to use our resources.

Library Web Site — Students, staff and faculty can search our Web site from home or anywhere on campus with an Internet connection. Users may check their library account status, renew their materials, and request interlibrary loan materials on-line. The library offers on-line databases that index many periodical articles, many of them full-text. Connections to these services are available through the Penn College Library Web site.

Other Campus Sites — The Earth Science and Aviation facilities house library reading rooms. Each campus is networked to the Main Campus library.

Services available at the Library:

Reference — Contact the reference desk for general assistance with finding and using library resources. Consult a librarian for guidance regarding the resources and research strategies best suited for a particular assignment.

Library Instruction — The librarians offer classroom instruction in library research techniques. Research strategies and database searching concepts are introduced by the reference staff in both one-on-one and classroom settings.

Borrowing Materials — Books, music cassettes and CDs can be borrowed for four (4) weeks. Videocassettes can be borrowed for four (4) days. The circulation department also houses academic reserves, which are special materials set aside by instructors for classes.

Interlibrary Loan — Materials not available in the College Library may be borrowed from other libraries. In addition, students have borrowing privileges at the 22-member libraries of the Associated College Libraries of Central Pennsylvania and the Penn State University Libraries.

Electronic Resources — On-line and CD-ROM databases are available for the college community, including services such as Lexis-Nexis UNiVerse, ERIC, FirstSearch, ProQuest, and Medline.

Computer Lab — IBM-compatible, Windows-based computers are available for students trained in their use. Students needing assistance should use the computer labs in the ATHS or the Tutoring Center, ACC.

Library Hours:

Fall and Spring Semesters

Monday-Thursday	7:30 a.m.-11 p.m.
Friday	7:30 a.m.-6 p.m.
Saturday	11 a.m.-5 p.m.
Sunday	1-9 p.m.

Summer and holiday hours will be announced.

Information Technology Services

OFFICE OF INFORMATION TECHNOLOGY

Office of Information Technology is responsible for the development, maintenance and support of all computer-based technology at Penn College. Specifically, Office of Information Technology:

- *Provides an advanced computing environment with tools and applications for academic, administrative, professional and technical use
- *Delivers comprehensive and reliable information technology services to the Penn College community
- *Provides a highly functional infrastructure for personal computing and communications
- *Fosters a technological environment that supports a full range of computing resources for the Penn College community
- *Provides training and technical support to help staff, faculty and students make effective use of the information technology products and services available
- *Supports the various hardware configurations and software applications of the Penn College computing environment

COMPUTER SYSTEMS

Office and computer lab systems are a mix of Microsoft Windows-based Gateway and Apple Macintosh equipment; all systems are connected to the campus wide network and Internet to allow shared access to files and application servers, laser printing, access to the central mainframe computers and other electronic information resources, including the on-line library catalog.

STUDENT COMPUTING

A variety of open computer labs, computer instructional labs and computer instructional lecture classrooms are provided at all campus sites. All students have access to and can use these facilities and services. NOTE: Some labs are restricted to specific academic programs. Electronic mail, Internet services, word-processing and student home pages are just some of the more popular uses of our academic computing facilities. In addition to specialized instructional software, standard software packages are available for word processing, spreadsheets, database, presentation, e-mail, web browsing, graphics and numerous other applications. Office of Information Technology purchases, supports, upgrades and maintains the hardware and software for each lab facility and provides, in the open labs, Computer Lab Assistants to help students, staff and faculty. There are more than 35 computer labs located in buildings around Penn College's campus sites. Special accommodations for students with special needs, impairments of vision, mobility of manual dexterity are available. Some workstations are equipped with adjustable seating, special software and monitors for enlarged displays, alternative mice and other adaptive features. Coordination for the use of special accommodations is done by Disability Services.

Student Computing Services include:

- *Campus wide network and Internet access
- *Four open labs staffed with Computer Lab Assistants
- *E-mail accounts
- *Network server disk space
- *Opportunities for employment
- *Graphics and document scanning

NETWORK ACCOUNTS

Student network and e-mail accounts come with a great deal of responsibility. Students must login to the campus network computer systems to utilize specific student services. All user accounts are assigned a unique campus network username. Every student is assigned a first-time password. You will receive a letter from the Office of Admissions with a PIN number assigned to you. This PIN number serves as your password to logon to the college's network, to access your e-mail, and to access the SIS. It is important that you change your password and maintain its secrecy.

ELECTRONIC MAIL (e-mail)

All students are given a Penn College E-mail account which allows users to exchange and share messages with instructors, professors, other students, others across the campus network, the nation or across the world. Penn College E-mail accounts are used as a means for College Faculty and Administration to communicate with students. The supported student e-mail application for Penn College is Novell's Internet Messaging Service (NIMS). At the beginning of your first academic year you are automatically given an account. All e-mail users are assigned a unique electronic-mail address in the form of username@email.pct.edu where username is the same as the campus network account username.

DISK SPACE

Each student is provided with a limited amount of file-storage space on the file servers. This file storage space is limited to a specified size – the users "disk space quota." Currently, the standard disk space quota for student users is 100 MB. Users are expected to manage this storage space for the lifetime of their account, using removable media (e.g., zip disks, floppy diskettes) for storage of material beyond their quota. Student file-storage area is activated when an account is created. The standard quota of file-storage space is sufficient for most users' needs. However, if special projects require additional space, you may request more space from Office of Information Technology

STUDENT EMPLOYMENT

Office of Information Technology seeks enthusiastic, self-motivated students to join in providing technology-based support to the campus community. Student employees are an integral part of our organization and very involved in the day-to-day support provided to the College. Training opportunities are provided at both the beginning of the academic year and throughout the year for all student employees.

RESIDENTIAL NETWORKING ACCESS OR RESNET

Every dorm room in The Village, Campus View and College West residential facility has a network connection to the Penn College ResNet network. Each resident has the opportunity to connect his or her personal computer directly to ResNet providing full-time, high-speed access to the campus network and full-time, modem-speed access to the Internet.

To connect to ResNet you will need:

- *Personal computer
- *Windows 98/NT/2000/ME/XP or MAC OS8 or higher operating system
- *3COM 10/100 BASE-T Ethernet Card

Appropriate Use of Computing Resources and Facilities

The policy regarding ethical computing at Penn College promotes the efficient, ethical and lawful use of Penn College's computing resources. Appropriate uses of Penn College's computer resources and facilities include use for purposes of, or in support of, education and research, and use consistent with the acceptable usage policies of our Internet service provider. By using Penn College's computing facilities, resources, and accounts, computer users agree to the guidelines contained in the Penn College's policy regarding ethical computing. Violations of the policy regarding ethical computing will be adjudicated, as appropriate, by the Office of Information Technology. (See the catalog section on "Penn College Computing Resources Acceptable Use Policy" for more information)

College Store

The College Store at Penn College, located in the Bush Campus Center is here to serve the campus community. It is your source for academic supplies, textbooks, required tools, toolkits and Penn College clothing and gifts. We also stock an assortment of general reading materials, magazines, reference books, greeting cards and other items. We handle special order titles as well as special order supplies and tools to meet your needs. We also provide services specifically to make students' lives at Penn College easier.

www.penncollegebooks.com

You can order and reserve your textbooks online at our store's web page. We also have selections of clothing and gifts on the page as well.

Express Pay

Express Pay is a debit service that allows students and/or their families to deposit funds on account to be used by the student. Students are also able to leave a credit card on account. Students use their student ID when making purchases. We keep receipts on file, so the customer does not need to keep track of their receipts. Enrollment forms are located at our customer service desk.

Telephone Calling Cards

The College Store provides for sale long distance telephone Calling Cards not only in the store but also in vending machines in the resident halls.

Parking Permits

The College Store sells all student parking permits. Students do not have to fill out any paperwork. To purchase a parking permit you will need a current student ID and your car's license plate number.

Program Tool Kit

The College Store sells tool kits and individual tools for those programs that require them. Most kits are pre-order, with order forms being mailed to new students during the late Spring/early Summer.

Snap-On Tools

The College Store offers students Snap-On tools at a 50% discount off full retail price. Letters go out in April for students to order their required Tool Kits for their specific programs. We are the only authorized Snap-On educational reseller in the United States that offers this program directly to students.

Textbook Buy Back

On a daily basis, the College Store buys books from students at up to 25% of the current selling price. At the end of each semester, we buy books that are being used the following semester at up to 50% of the current retail price.

These are just some of the many services that we can provide to you. We welcome you to stop by the store to see all that we offer and to ask any questions. Our regular hours are:

Monday-Thursday, 8 a.m.-5 p.m.

Friday, 8 a.m.-3 p.m.

Saturday, 11 a.m.-3 p.m.

We are open extended hours during the start of each semester.

Student Life

Student Activities

Student activities provide opportunities to meet other students, faculty and staff in a friendly, relaxed environment. These activities also provide opportunities to gain leadership skills and to pursue special interests. Information on events and activities is announced in the Student Activities Calendar and *PCToday*, at the Campus Center Information Desk, on WPTC, College bulletin boards, *Stall Wall Weekly* and e-mail.

Athletics

Intercollegiate Athletics

Pennsylvania College of Technology is scheduled to compete in the following intercollegiate sports:

Fall Semester	Basketball (<i>men & women</i>) Bowling (<i>men & women</i>) Cross Country (<i>men & women</i>) Golf (<i>co-ed</i>) Men's Baseball Soccer (<i>men & women</i>) Volleyball (<i>women</i>)
Spring Semester	Archery (<i>men & women</i>) Men's Baseball Basketball (<i>men & women</i>) Team Tennis (<i>men & women</i>) Volleyball (<i>men</i>) Women's Softball

For additional information or if you are interested in participating in intercollegiate athletics, contact the Coordinator of Athletics at (570) 327-4763. Information regarding Title IV is available on request in the Athletic Office, Bush Campus Center, Rm. 300.

Note: Schedule is subject to change.

Intramural Athletics Program – Field House

The College offers a well-balanced Intramural Athletics program. The program includes team and individual sports and gives students the opportunity to participate in both competitive and noncompetitive activities. Open-gym activities allow students to participate in intramural activities at their leisure. The various structured intramural athletics programs may include the following activities: basketball, bowling, chess, flag football, indoor soccer, Shotokan karate, soccer, softball, table tennis, volleyball, weight training, tennis, Wiffle ball and roller hockey.

Intramural Activities also offers several special events during the year. Held at off-campus facilities, these activities are bowling and golf. Extramural Athletic opportunities with area colleges and leagues are scheduled as permitted. Anyone participating in intramural/extramural athletics does so at his/her own risk. All participants are strongly encouraged to have medical insurance.

Penn College Field House

Penn College Field House is located in the southwest corner of the campus, next to the tennis courts.

Fitness Center

The Fitness Center is located in the Bush Campus Center, Rm. 212. It houses both men's and women's locker rooms, saunas and a whirlpool, as well as an aerobics room, free-weight room, and exercise equipment room.

Student memberships for the Fitness Center are available. Memberships include use of locker-room facilities, showers, sauna, whirlpool, free-weight room, aerobics and exercise rooms, aerobic classes and towel services. Students who do not purchase memberships may use the center by paying a per-visit fee. Aerobic classes also will be offered to nonmembers for a fee.

Fitness Center Hours:

Monday-Friday, 7 a.m.-midnight

Saturday, 11 a.m.-11 p.m.

Sunday, 11 a.m.-11 p.m.

Note: Hours are subject to change.

For more information, call (570) 327-4763.

Student Organizations

New student organizations constantly are being formed. The following clubs and organizations currently are active:

African Student Association (ASA)
 Alpha Chi
 Alpha Omega Fellowship
 American Institute of Architectural Students (AIAS)
 American Society of Civil Engineers (ASCE)
 American Society of Heating, Refrigeration and Engineering (ASHRAE)
 American Welding Society
 Archery Club
 Aviation Club
 Bent Crank Flat Tire ATB Club
 BGLAD (Bis, Gays, Lesbians and Allies in Dialog)
 Campus Crusade for Christ
 College Motorsports Association
 Computer Club (ACM)
 Construction Management Association
 Diesel Power Club
 Early Educators
 Earth Smart
 Forestry Club
 Gamma Epsilon Tau (Printing & Publishing & Graphic Design)
 Horticulture Technicians Association
 Human Services Club
 Institute of Electrical & Electronic Engineers (IEEE)
 Instrument Society of America (ISA)
 Legal Assistant Association
 National Residence Hall Honorary (NRHH)
 Newman Club
 Occupational Therapy Assistant Club
 Penn College Accounting Society (PCAS)
 Penn College Construction Association
 Penn Players (theater)
 Phi Beta Lambda (Business)
 Phi Theta Kappa Honor Society
 Physician Assistant Club
 Refrigeration Service Engineers Society (RSES)
 Residence Hall Association (RHA)
 Service and Operation of Heavy Equipment Association
 Sigma Lambda Chi
 Society of Manufacturing Engineers
 Society of Plastic Engineering (Student Chapter)
 Student American Dental Hygienist Association
 Student Government Association
 Student Nurses Association
 Vocational Industrial Clubs of America (VICA)
 Wildcat Events Board (WEB)
 Wildcat Power Team
 Women in Technology

Publications

The *Student Guidebook* provides information on student life, regulations and student services, and serves as a convenient daily planner.

Student Activities Calendar provides a look at what's happening in the activity and academic areas. The calendar is produced each semester and includes a yearlong look at school holidays and academic deadlines.

Stall Wall Weekly lets you know what's going on every week. Conveniently located in all College rest rooms. You can't miss it.

Social/Cultural/Recreational Activities

A wide variety of activities are sponsored by the College. *These include:*

- The Wildcat Events Board provides a variety of educational and social activities throughout the year, including comedy nights, special events, dances, movies, co-curricular programs and other activities.
- The Office of Student Activities schedules lectures, bus trips and special activities, athletic and recreational activities, student development programs and leadership opportunities.
- Student organizations sponsor field trips, special activities and service projects for the College and community throughout the year. While some student organizations are affiliated with national organizations, others are formed to satisfy special interests. The student organizations work with the Student Government Association and Wildcat Events Board to provide a broad base of student activities. The student organization work area is in the Bush Campus Center, Rm. 124.
- The Game Room, located in the Campus Center, provides billiards, pinball and video games as entertainment.
- Penn's Inn is a student activity area that, by day, is the place to go for workshops, lectures, leadership events, meetings and special activities. By night, Penn's Inn transforms into a nightclub-like environment featuring entertainment, dances, coffee houses, comedy nights, concerts, movies and much more.
- TV Lounge is a great place to take a break from studying. Relax in front of the set, enjoy the big game or your favorite shows.
- Campus lounge areas provide chairs and study areas for quiet study, talk or relaxing.
- Student development and leadership programs give students the opportunity to develop valuable interpersonal skills while becoming involved in a team effort. These experiences will not only enhance student life, but also support the endeavors of individuals well beyond their college years. Information is available at the Campus Center Information Desk.

The College is not responsible for property theft or damage or injury that may occur. Participants do so at their own risk.

Student Government

Participation in the Student Government Association offers students the opportunity to develop leadership skills while contributing to the well-being of the College and the student body. In addition, the Student Government Association offers a number of services for students.

The goals of the Student Government Association are:

1. To advocate student needs and represent the student body in matters related to College policy and activities.
2. To promote opportunities for the educational, personal, social and cultural enrichment and growth of all students.
3. To demonstrate concern for educational quality and physical safety in the College's instructional fields of study.
4. To advocate effective communication among all levels of the College community.
5. To promote the College's reputation and encourage respect for the College's environment.

The SGA office is located in the Bush Campus Center, Rm. 122. Students interested in participating in SGA should contact an SGA officer or the Director of Student Activities at the Campus Center Information Desk.

Student Leadership Model

New students are encouraged to get involved in the College's Student Development Model. The model provides an opportunity for students to develop leadership skills to be used both on and off campus. A variety of experiences are provided through the model and include:

CLASS (*College Leadership Advancement SerieS*) is Penn College's comprehensive student development program, which provides fun and beneficial opportunities for students to develop and enhance their leadership skills. CLASS is composed of two tiers: the Emerging CLASS and the Advanced CLASS. The Emerging CLASS provides a foundation in individual leadership techniques and group dynamics. It is for first-year and freshmen Penn College students only and meets during the Spring Semester. Students who have completed their first year at Penn College may participate in the Advanced CLASS, a more in-depth program that addresses personal leadership and professional development.

Student Awards Banquet is the year's concluding activity during which graduating seniors are recognized through an awards nomination process that includes a dinner, awards presentation and display of a permanent plaque listing the award winners for each year.

A Student Development Transcript is available to students who participate in campus leadership activities/organizations. It is an official nonacademic transcript that lists the leadership activities that a student has been involved in during his/her college experience.

For additional information, contact (570) 327-4763.

AN EDUCATION IN FINE DINING



Culinary Arts, Baking & Pastry Arts, Dietary Manager Technology and Hospitality Management

students gain valuable experience in this campus restaurant, which offers a fine dining experience and is open to the public.

Le Jeune Chef is open for
lunch (Monday - Friday)

and dinner (Wednesday - Saturday).

Wednesday breakfast and Sunday brunch
are served during the academic year.

Reservations are requested. Hours vary.

For more information, call (570) 327-4776

The Children's Learning Center & Kindergarten at Penn College



The Children's Learning Center provides a quality early childhood education program (including a private Kindergarten) for the children of students, faculty and staff.

The Children's Learning Center, located in Bush Campus Center, Rms. 151-157, is open weekdays from 7:30 a.m.-5:30 p.m. following a college calendar. Children may attend on a full-time or part-time basis. Meals are provided by College Food Services. Fees vary according to schedule and family eligibility for subsidized day care.

The Children's Learning Center serves as an observation and practicum site for Penn College students.

For more information,
call (570) 326-3761, ext. 7239.



Accredited by the
National Academy
of Early Childhood
Programs

Penn College Food Services

Hours are subject to change. Check each unit for schedule.

**During snow emergencies or school closings,
call (570) 327-4767 for information on Food Services facility hours.
www.pct.edu/foodserv**

The Bistro

Bush Campus Center, first floor

Hours:

11 a.m.-10 p.m. Monday-Friday

5-10 p.m. Saturday & Sunday

Enjoy lunch or dinner in our comfortable restaurant where food is cooked-to-order to ensure ultimate freshness. Booths available! Scrumptious food available including appetizers, gourmet pizzas, jumbo salads, charbroiled burgers, deli specialties, specialty sandwiches and desserts. We have weekly specials! Great food served to you in a casual, relaxed atmosphere.

The CoffeeHouse

Bush Campus Center, first floor

Hours:

7 a.m.-10 p.m. Monday-Thursday

7 a.m.-6 p.m. Friday

Enjoy a wide variety of coffee drinks, smoothies, gourmet hot chocolate, bottled beverages and desserts. In this relaxed comfortable atmosphere, coffee drinks are available such as: espresso, cappuccino, latte and flavored coffees. Try our delicious gourmet desserts selection. Good friends, gourmet coffee, delicious treats!

Nature's Cove

Schneebeli's Earth Science Campus

Hours:

7 a.m.-2:30 p.m. Monday-Thursday

7:30 a.m.-2 p.m. Friday

The snack bar at the Earth Science Center serves hot and cold sandwiches, hoagies, sodas, and snack items for eating in or taking out.

Wildcat Express

Bush Campus Center, first floor

Hours:

7 a.m.-11 p.m. Monday-Friday

11 a.m.-11 p.m. Saturday-Sunday

Grab-n-go items such as: prepared sandwiches, hot soups, hotdogs with chili or sauerkraut, fresh fruit and yogurt. Also, grocery items and toiletries for apartments or dorms are available.

Susquehanna Room

Hager Lifelong Education Center, first floor

Hours:

7 a.m.-7:30 p.m. Monday-Thursday

7 a.m.-5 p.m. Friday

11 a.m.-6 p.m. Saturday-Sunday

Our largest facility offers full menu service for breakfast, lunch or dinner. Choose from *Fresh Starts Salad Bar*, *Favorite Places* – waffles and french fry area, the *Jump Start Grill* or *Steamers* – hot entrees, or *Between the Bread* deli & soup station.

Penn Central

Hager Lifelong Education Center, first floor

Hours:

7 a.m.-1:30 p.m. &

5-11 p.m. Monday-Thursday

7 a.m.-1:30 p.m. Friday

Whether you make it your first stop or your last, grab a bite to go aboard Penn Central. We offer pre-made salads & sandwiches, pizza by the slice, breakfast items, fresh fruit and yogurt, gourmet coffees and much more!

Penn Pizza Delivery

call (570) 327-4534

Hours:

7-10:30 p.m. Monday-Thursday

A delivery service for meal-plan students living in on-campus housing. Enjoy pizza, wings, hoagies and soda delivered to your door.

West Side

College West Apartments

Clinton, first floor

Stocked with soda and a variety of snacks, West Side is your residence hall snack shop.

International Café

Klump Academic Center, first floor

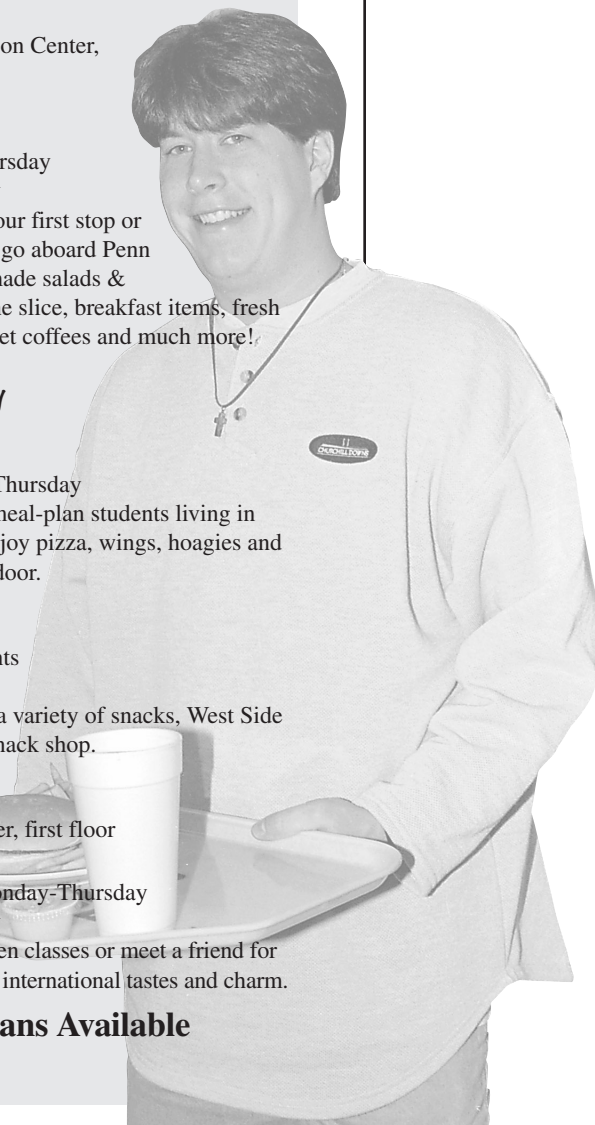
Hours:

7:30 a.m.-6:30 p.m. Monday-Thursday

7:30 a.m.-3 p.m. Friday

Grab a bite to eat between classes or meet a friend for lunch. A cozy café with international tastes and charm.

Meal Plans Available



Bachelor Degrees



How to Use the Curriculum Information That Follows

For each major that follows, beginning with page 41 to 165, the detail is intended to provide information and clarify the requirements.

Included for each major is the ideal sequence of courses, or the “curriculum sequence.” Students who follow this plan will complete the major in the traditional time; i.e., four years for BS degrees and two years for associate degrees. The curriculum sequence is designed to permit the completion of course prerequisites and to ensure access to courses not available every semester.

The College recognizes that not all students are able to move through the requirements exactly as they are presented. For some students, a lighter credit load is desirable or necessary; for other students, developmental course requirements delay the scheduling of some required courses. Either of these situations generally results in a student's being “out of sequence.” For students who are out of sequence, faculty advisors are a vital resource to ensure completion of graduation requirements. This catalog is another resource.

The course sequence, therefore, functions as a guide to completion of the major; it is not intended to be lockstep nor is it imposed – as it is presented – on all students. For some courses (*especially electives*), a student can choose the semester (*or a summer term*) for completion. For the major courses, however, prerequisites become a key consideration. There may, therefore, be limitations to how courses can be arranged. Close work with advisors is very important and is strongly encouraged. To identify prerequisites and corequisites, consult the Course Description section, beginning on page 169. The course descriptions also note when courses are available.

BACHELOR OF SCIENCE

Bachelor of Science degrees may parallel or build upon the two-year majors, or they may stand as their own unique majors. While the associate degrees primarily emphasize practical applications, the bachelor curriculums offer a broader educational experience by adding advanced practical applications, liberal arts study, systematic problem solving, cultural diversity, senior-year projects and interdisciplinary courses that develop appreciation for the relationships between science, technology and society.

EVENING DEGREES

Students can earn a Penn College degree following an evening format; completing a bachelor degree in eight years (*part-time*) and an associate degree in four years (*part-time*). All courses are sequenced and offered in the 6:30-9:30 p.m. time frame. Exceptions to this time frame are Dental Hygiene (BS) and Nursing (BS) which are offered at a time frame selected to meet the needs of these specific students.

The evening students have College services available to them early evenings during the first full week of each semester. These services include: College Police (*parking permits*), College Store (*books and supplies*), Counseling & Career Services, Registrar, Admissions, Financial Aid, Student Accounts/Bursar, Information Desk, Health Services, Disability Services and Advisement Center.

To successfully complete a major within the time prescribed, students must complete at least 15-18 credits per year — fall, spring, summer. The time frame does not take into consideration students who must remediate placement test deficiencies. To ensure proper movement through the degree, students are encouraged to schedule early and work carefully with an advisor.

The following bachelor degree majors are available for evening students:

- Accounting (BSA)**
- Applied Health Services (BAH)**
- Business Administration (BBE, BBF, BBM, BBS, BBK)**
- Computer Information Technology (BIA, BDC)**
- Dental Hygiene (BHP, BHM)**
- Legal Assistant/Paralegal Studies (BLA)**
- Nursing (BSN)**
- Technology Management (BTM)**

Access our online catalog at www.pct.edu
for the most current information.

Accounting (BSA)

Bachelor of Science Degree (B.S.)

The bachelor of science in Accounting (BSA) will prepare students with the skills necessary to meet accounting demands now and in the future. This major will provide extensive business background, excellent accounting preparation, development of communication skills, and awareness of ethics in business. The major will allow students to select from a variety of electives that will complement their area of interest, to include management, law, and finance courses.

The opportunity to focus on managerial accounting is unique and will meet the demands of students and employers. With the flexibility and options available, a graduate of the BSA will be well suited for the business world.

Career Opportunities: The bachelor of science in Accounting will offer students the opportunity to apply for accounting positions in all business environments - public accounting, industry, nonprofit, or “in their own account.” After gaining experience at a beginning level, the opportunities for advancement and additional responsibilities will be available. Types of jobs that require accounting and financial planning background include: appraising, banking, financial management, government service, insurance, investment analysis, law, public accounting, management accounting, management consulting, financial planning, marketing, purchasing, real estate, and small business. Salaries in entry-level accounting jobs can start anywhere from \$19,000 to \$25,000 and above depending on the job, location of the job, and the size of the business. This salary information pertains to the four-year degree graduates.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate all deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the BSA. Students must have earned a grade of “C” or better in courses transferred into the BSA. Major/courses may not automatically transfer to University Park or Capital College.

Program Goals: The purpose of the Bachelor of Science in Accounting is to prepare the student for a variety of accounting positions found in the business environment. Specifically this program should prepare the student to

- develop human relations skills and successfully apply those skills to a variety of business and accounting situations.
- recognize the importance of business ethics and its relationship to business and accounting situations.
- recognize the importance of accounting and financial planning in American business.
- understand how accounting and financial planning functions within the private and public sectors of business.
- develop ability to plan, organize, direct, and control accounting and non-accounting information within an organizational environment.
- understand the impact of operating, investing, and financing decisions on the business entity.

FIRST SEMESTER	Credits
ACC 113 Introduction to Financial Accounting	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
Humanities Elective	3
MTH 180 College Algebra and Trigonometry I	3
OFT 101 Keyboarding and Its Applications	1
	<u>16</u>

SECOND SEMESTER	Credits
ACC 123 Introduction to Managerial Accounting	3
ENL 121 English Composition II	3
MGT 115 Principles of Management	3
MKT 240 Principles of Marketing	3
MTH 160 Elementary Statistics with Computer Applications	4
Fitness and Lifetime Sports Elective	1
	<u>17</u>

THIRD SEMESTER	Credits
ACC 340 Intermediate Accounting I	3
ECO 111 Principles of Macroeconomics	3
ENL 201 Technical and Professional Communication	3
or	
MGT 230 Business Communications	3
MGT 231 Business Law I	3
Fitness and Lifetime Sports Elective	1
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
	<u>16</u>

FOURTH SEMESTER	Credits
ACC 345 Intermediate Accounting II	3
CSC 211 Business Computer Applications Using Spreadsheet	3
ECO 112 Principles of Microeconomics	3
FIN 305 Fundamentals of Financial Planning	3
Science Elective	3
	<u>15</u>

FIFTH SEMESTER	Credits
ACC 310 Cost Accounting	3
ACC 360 Intermediate Accounting III	3
MGT 355 Quantitative Methods for Business	3
FIN 320 Investments	3
SPC 301 Organizational Communication (CUL)	3
or	
SPC 302 Intercultural Communication (CUL)	3
	<u>15</u>

SIXTH SEMESTER	Credits
ACC 331 Income Taxation of Individuals	3
ACC 410 Advanced Cost Accounting	3
ACC 460 Advanced Accounting	3
FIN 220 Finance	3
Science Elective with lab	4
	<u>16</u>

SEVENTH SEMESTER	Credits
ACC 430 Corporation, Partnership, Estate and Trust Taxation	3
ACC 450 Auditing—Internal	3
Art Elective	3
Liberal Arts/Core Elective	3
MGT 216 International Business	3
	<u>15</u>

EIGHTH SEMESTER	Credits
ACC 495 Accounting Senior Project (WRT)	3
Science/Technology/Society Elective	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Open Elective	3
Open Elective	3
	<u>15</u>

SPC 301 or SPC 302 - Student must take at least one Writing Enriched Course and one Cultural Diversity Course.
Open Electives: Allows for internship possibilities.

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE)

Applied Health Studies (BAH)

Bachelor of Science Degree (B.S.)

The bachelor of science degree in Applied Health Studies is a 127-credit major for individuals who are certified, licensed, or registered in a health care profession (BAH), or for students interested in the occupational therapy assistant (BAO), paramedic (BAP), or radiography (BAR) major who also wish to earn the bachelor degree. Students interested in one of these health care fields will need to meet with the director of the program of interest to learn more about acceptance, curriculum sequence and schedules. Students who already are credentialed health care providers will need to contact the director of the applied health studies program for admissions information. The goal of this program is to prepare health care practitioners to function in a dynamic health care environment and to enable building on current knowledge and skills to assume positions of leadership. Credentialed (certified, licensed, registered or degreed) health care practitioners who meet admissions requirements of Pennsylvania College of Technology are eligible for this major.

The Applied Health Studies major also offers students the opportunity to earn a bachelor degree through Pennsylvania College of Technology and prepare for application to the Cardiovascular Technology program (CVT) at Geisinger Medical Center (BAC). Upon completion of the fourth semester of the program, the student will make preliminary application to the Geisinger CVT program. Review of the application will be completed by the selection committee of the cardiovascular program at Geisinger Medical Center and an admission status will be determined. This status is conditional, and final acceptance will be determined at the completion of the sixth semester. This program begins in January and is one calendar year long. In addition to the CVT course of study, the student will complete remaining requirements for the Bachelor of Science in Applied Health Studies with a cardiovascular technology concentration.

In addition, in the event a student plans to work toward a career in health care with training from a non-traditional program (e.g., hospital-based training program), and that institution/program has an articulation agreement with the School of Health Sciences, provisional acceptance into this major can be given. The student will take Penn College courses to prepare for entry into the articulation program. (Note: Provisional acceptance will not be allowed beyond 61 credits; proof of a credential [license, certification, registration] in the health care field must be presented before a student can proceed in the program. (THIS ENTRY OPTION WILL BE ALLOWED ONLY AFTER CAREFUL REVIEW OF THE APPLICANT'S FILE.)

As “the premier technical college” in the Commonwealth, Penn College seeks to realize its mission by recognizing, assigning value and granting credit for technical coursework. The School of Health Sciences responds to this mission and the increasing demand for multidisciplinary integration in health care through the Applied Health Studies degree. Students can avail themselves of the core knowledge, at an advanced level, that guides all health care practitioners. This degree will allow the student the opportunity to increase knowledge base in management and administrative issues, integrate and synthesize technical knowledge to assist in planning, problem solving and evaluating health-care delivery methods and systems, and expand knowledge and skills to establish a more marketable multiskilled background.

Career Opportunities: Graduates of this major will be credentialed health care practitioners. This degree can offer opportunities within disciplines and/or health care systems, to expand clinical roles and/or seek positions of management, administration, or education.

Recommended High School Subjects: A science-based academic program at the high school level is recommended for this major. However, an individually developed program of college level coursework can be designed to augment this area.

Remediation Strategies: All developmental needs must be remediated before entry into this major. Students who enter this major must have a GPA of at least 2.0.

Transfer Procedures: Health care workers who are certified, licensed, registered, or degreed in a health care area are eligible to be evaluated for entry into this major. Individual portfolios/credentials/transcripts will be evaluated by School of Health Sciences officials for transfer credit. Students interested in a health care training program at a non-traditional education site (e.g., hospital) can be considered for entry into this major as a “pre” or provisional acceptance student IF the institution/program has a formal articulation agreement with the School of Health Sciences. See the introductory paragraphs above for specific conditions, requirements, and restrictions for entry under this option.

Program Goals: The purpose of the baccalaureate degree major in Applied Health Studies is to prepare the student to adapt to live experiences; deal with changes in the health care environment; increase understanding of the health care process; and, grow as a professional. The major should prepare the student to

- evaluate and utilize techniques and skills for problem solving and decision-making
- value and formulate plans for continuing personal and professional growth and development.
- recognize and evaluate effective organizational, operational and management skills common in health care environments.
- evaluate the effectiveness of health care delivery in a varied and changing environment.
- evaluate and use professional literature and scientific studies.
- recognize and evaluate the roles of leadership in developing, organizing and managing programs relevant to the needs of health care.
- identify and assume personal accountability for ethical, political and legal concerns within the realm of health care practice.
- identify, integrate, and value the need for cultural sensitivity in health care practice.
- draft reports, case studies, grants, and/or proposals that include appropriate documentation and that demonstrate mastery of the full range of writing skills.
- integrate professional behaviors and communication into professional roles and serve as a role model for other health care professionals.
- understand and apply the fundamentals of funding sources and systems that affect health care.
- gain familiarity with the technologies available within the health care environments, recognizing uses and limitations, applications and sources.
- expand knowledge and skills in specific topics related to health care practice, as determined by the individual’s professional growth needs.

PRE. PROGRAM		Credits
	Transfer Requirement Elective	47
		<u>47</u>

FIFTH SEMESTER		Credits
ENL 111	English Composition I	3
	Non-Written Communications Elective	3
	Math Elective (MTH150 or higher)	3
	Science Elective with lab	4
	Humanities Elective	3
	Liberal Arts/Core Elective	3
		<u>19</u>

SIXTH SEMESTER		Credits
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Social Science Elective	3
	or	
	Humanities Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Art Elective	3
HTH 310	Health Issues and Transitions (WRT)(CUL)(STS)	3
HTH 325	Health Care Delivery Systems	3
		15

SEVENTH SEMESTER		Credits
HTH 330	Medical Ethics	2
PSC 231	American Government-National	3
	or	
PSC 241	State and Local Government	3
	Science Elective	3
	Math Elective (MTH150 or higher)	3
	Fitness and Lifetime Sports Elective	2
	Open Elective	6
		19

EIGHTH SEMESTER		Credits
HTH 447	Health and Human Services Public Policy Development	3
	or	
HTH 448	Health Care Public Policy Development	4
CSC 110	Introduction to Information Technology	3
	Directed Applied Health Studies Electives	15
	Humanities Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	or	
	Social Science Elective	3
HTH 495	Applied Health Studies Capstone	3
		27

Non-Written Communications Elective: SPC101, SPC201, SPC203, SPC301, SPC302

Special Admissions Requirements: Individuals entering this major will be credentialed health care providers or preparing for entry into an approved, articulated health care training program. The major is designed around 127 credits to include college core, major/program core; and at least 15 credits pertinent to the individual student’s goals. There must be at least 24 credits at the 300-400 level.

Applied Human Services (BHS)

Bachelor of Science Degree (B.S.)

The Applied Human Services baccalaureate is designed to prepare women and men for careers in a variety of human services fields: services for persons with developmental disabilities or mental illness, services for individuals who have been adjudicated in the criminal justice system, services for individuals and families in crisis, services for older individuals, and services for individuals with a chemical dependency. The major provides students with a solid grounding in the general theories and principles of assessing human needs and responding to those needs in the least restrictive environment.

Upon this generalist foundation, students may build a curriculum that emphasizes human service theory and practice targeted for specific populations or may emphasize the administration of human services, as opposed to direct care. Students will complete a general core of math, science, liberal arts, computer science and communications. This liberal arts core and the human services specialization reflect a recognition that strong written and oral communication skills are critical to ethical human service practice and successful tenure in the field, that practical experience is equally as important as theoretical knowledge to serve others competently, and that an understanding of how technology can assist human service recipients often equips providers with useful and marketable tools.

Career Opportunities: Social services caseworker, child protective services worker, drug and alcohol counselor, probation officer, residential services worker, youth development counselor, corrections officer, crisis-line worker, and shelter worker, among others.

Recommended High School Subjects: Three years of English, one year of biology, two or more years of algebra, a course in computer science, keyboarding, psychology and health.

Remediation Strategies: Students must remediate any reading (at the RDG 111 level) and English deficiencies by the end of the first semester and must remediate any math deficiency by the end of the first year in the program. Students who test into Reading Improvement (RDG 001) will be advised to complete that course before enrolling in the baccalaureate.

Transfer Procedures: Graduates of Penn College’s Human Services associate degree will transfer into the baccalaureate all major courses (defined as those with HSR, ENL, PSY, SOC, SPC designators) when those courses have been completed with grades of C or better. Graduate-transfers must meet the SPC 101 and the computer requirement. Internal and external transfers may carry parallel major courses into the baccalaureate when the grades are C or better. Transcripts should be submitted with the application for admission and will be evaluated by Admissions staff and by Integrated Studies staff. Courses completed 10 or more years before students enroll in the program will receive individual attention, as they are not automatically accepted; work experience will affect the acceptance of such courses.

Program Goals: In addition to meeting the goals established for the associate degree, graduates of the Applied Human Services program should be able to

- qualify for the following certifications: medications, CPR, and home health aide.
- draft reports, case studies, grants, and proposals that include appropriate documentation and that demonstrate mastery of the full range of writing skills.
- recognize and use professional behaviors in their dealings with clients, peers, supervisors, funding sources, and the public.
- apply the tenets of effective oral communication: critical listening, adaptation to diverse audiences, varied delivery techniques, and control of non-verbals.
- understand the funding streams that pervade this profession and be able to apply statistical analysis to the design and administration of budgets.
- recognize and respect the range of cultural, class, and economic factors that shape values and affect behavior.
- log site observations that represent the full range of human services and recognize the demands endemic to specific agencies and services.
- interact effectively in one-to-one and in group settings.
- choose and apply appropriate-to-the-situation counseling methodologies.
- develop the means to remain current by identifying, consulting, and citing the appropriate literature; by identifying and assuming the appropriate professional memberships (local, state, national); and by actively participating in appropriate organizations.
- gain familiarity with the technology available to human services providers and clients, recognizing its uses and limitations, its applications, and its sources.
- understand the role of Civil Service regulations within the profession and be prepared to qualify for Civil Service positions.

FIRST SEMESTER		Credits
HSR 115	Introduction to Human Services	3
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MTH 153	Topics in Mathematics	3
PSY 111	General Psychology	3
		<u>15</u>

SECOND SEMESTER		Credits
HSR 121	Helping Process and Crisis Intervention	3
ENL 121	English Composition II	3
MTH 160	Elementary Statistics with Computer Applications	4
PSY 201	Abnormal Psychology	3
SOC 111	Introduction to Sociology	3
		<u>16</u>

THIRD SEMESTER		Credits
HSR 125	Fundamentals of Counseling	3
	Human Services Application Elective	3
BIO 103	Human Anatomy and Physiology Survey	4
PSC 241	State and Local Government	3
PSY 203	Developmental Psychology	3
FIT 204	First Aid, Responding to Emergencies	2
		<u>18</u>

FOURTH SEMESTER		Credits
HSR 240	Management and Administration in Human Services	3
HSR 241	Group Processes	3
HSR 255	Human Services Internship I	3
	Human Services Application Elective	3
SPC 101	Fundamentals of Speech	3
SOC 231	Marriage and the Family	3
		<u>18</u>

SUMMER SESSION		Credits
	Writing Proficiency Test	—

FIFTH SEMESTER		Credits
HSR 311	Community and Organizational Change	3
SOC 313	Research Methods (WRT)	3
SOC 321	Ethnicity, Class, and Status in the United States (CUL)	3
	or	
SOC 323	Gender Issues in the United States (CUL)	3
	Human Services Application Elective - 300 Level	3
	Science Elective	3
		<u>15</u>

SIXTH SEMESTER		Credits
	Human Services Adaptive Technologies Elective	1
	Human Services Adaptive Technologies Elective	1
	Human Services Application Elective - 300 Level	3
	Specified Human Services Communication Elective	3
HIS 262	Technology and Society (WRT)(STS)	3
PHL 210	Ethics	3
	Open Elective	3
		<u>17</u>

SEVENTH SEMESTER		Credits
HSR 411	Legal Issues in Human Services	3
	Human Services Application Elective - 300 Level	3
HTH 447	Health and Human Services Public Policy Development	3
	Art Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Open Elective	3
		<u>18</u>

EIGHTH SEMESTER		Credits
HSR 455	Human Services Internship II	9
HSR 495	Human Services Capstone	3
		<u>12</u>

Specified Human Services Communication Elective: SPC201, SPC301, SPC302
 Note: Students must pass the writing proficiency test by the end of their fifth semester to take any 300-level HSR course other than HSR 311.
 Students who wish to focus upon Human Service Administration may choose ACC 113 as an open elective; MGT 340, MGT 410 and SOC 311 may satisfy an open elective and one HSR 300-level elective.
 Human Services Application Electives include courses numbered HSR 260 - HSR 299.
 Human Services Adaptive Technologies courses include courses numbered HSR 300 - HSR 305.

Automotive Technology Management (BAU)

Bachelor of Science Degree (B.S.)

Automotive Technology Management is a bachelor of science (BS) degree structured to meet the needs of the automotive service and manufacturing industries. The curriculum design provides the student with in-depth technical skills, breadth of technical knowledge and management skills as applied in the automotive industry. The major will emphasize skills in supervision and personnel management, financial analysis and accounting principles, sales promotion and marketing plan, problem-solving methods, organization and planning techniques, and a level of proficiency in communications and mathematics essential for a management career.

Career Opportunities: Management positions in customer relations, credit and finance, personnel, sales, marketing, inventory control and fleet manager.

Recommended High School Subjects: Two years of algebra, three years of English, one year of physical science.

Remediation Strategies: Students entering the baccalaureate degree will be expected to meet the College entrance standards for mathematics, communications and reading proficiency. Students who test at a deficiency in these areas will be required to remediate the identified areas.

Transfer Procedures: Students may transfer from other transportation associate degrees at Penn College or another college with equivalent courses and will have their transcripts evaluated by Penn College officials prior to acceptance into the major. No course for which a student received less than a "C" grade will be accepted for transfer. Courses taken that are less than 10 years old will be evaluated on course equivalency. Courses more than 10 years old will be evaluated to determine relevancy and content required in the major.

Automotive Service Excellence Certification (ASE) and/or Original

Equipment Manufacture (OEM) Certification coupled with two years of full-time transportation related maintenance work will be evaluated on an individual basis for credit toward any or all of the Directed Transportation Technology Electives as determined by the Automotive Department.

Program Goals: The bachelor of science degree in Automotive Technology Management is designed to prepare technical and/or technical management-oriented professionals for employment in automotive and automotive-related organizations. Besides requiring the completion of a field of specialization in transportation technology, this degree program is designed to encourage

- application of theories, concepts and principles found in humanities and the social and behavioral sciences, including thorough preparation in communication skills.
- application of concepts derived from and current skills developed in, a variety of technical and related disciplines.
- analysis, synthesis and evaluation of current topics and trends in the field of transportation technology.

FIRST SEMESTER		Credits
	Directed Transportation Technology Electives	12
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
	Directed Transportation Technology Electives	12
ENL 201	Technical and Professional Communication	3
SAF 110	Occupational Health and Safety	2
		17

THIRD SEMESTER		Credits
	Directed Transportation Technology Electives	10
CHM 100	Fundamentals of Chemistry	4
SOC 111	Introduction to Sociology	3
		17

FOURTH SEMESTER		Credits
	Directed Transportation Technology Electives	12
MTH 180	College Algebra and Trigonometry I	3
	Fitness and Lifetime Sports Elective	1
		16

FIFTH SEMESTER		Credits
AMT 310	Automotive Service Management (WRT)	3
ACC 113	Introduction to Financial Accounting	3
ECO 111	Principles of Macroeconomics	3
MGT 115	Principles of Management	3
SPC 101	Fundamentals of Speech	3
	Humanities/Social Science	3
	Cultural Diversity Elective	3
		18

SIXTH SEMESTER		Credits
AMT 312	Automotive Service Facilities and Production	3
AMT 334	Vehicle Propulsion Systems: Application and Design	3
MGT 249	Small Business Management	3
	or	
MGT 248	Supervision and Human Relations	3
	Math Elective (160 or higher)	3
	Science Elective	3
	Open Elective	3
		18

SEVENTH SEMESTER		Credits
AMT 314	Administration of Automotive Service Operations	3
AMT 345	Teaching Automotive Seminars	3
MGT 340	Human Resource Management	3
	Humanities - Science, Technology and Society Elective	3
	Open Elective	3
	Fitness and Lifetime Sports Elective	1
		16

EIGHTH SEMESTER		Credits
AMT 495	Senior Project	3
MGT 330	Managerial Decision Making	3
	or	
MGT 360	The Legal Environment of Business	3
PHL 210	Ethics	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Art Elective	3
		15

Humanities - Science, Technology and Society Elective: HIS262, HIS315, HUM301, PHL240

Directed Transportation Technology Electives include AMT, ABC, or DSM courses. A minimum of 24 credits must be completed in the same program area. Major courses other than AMT, ABC, or DSM will need advisor approval.

Aviation Maintenance Technology (BAV)

Bachelor of Science Degree (B.S.)

Aviation Maintenance is a bachelor of science (B.S.) degree structured to prepare a graduate for employment in repairing and maintaining modern aircraft. The major builds on the first two years of aircraft maintenance (A&P - Airframe and Powerplant emphasis) or on the experience of a practicing aircraft technician (A&P) with another 16 credits of general education. The third and fourth years concentrate on developing skills in electronics, computers, business and general education, with particular emphasis in avionics systems and troubleshooting. The baccalaureate coursework is designed to provide a broad base of technical knowledge in order to repair the integrated mechanical and electronic systems found on aircraft of today and tomorrow.

Career Opportunities: Aviation technician with major airlines, commuter airlines, fixed-base operators, aerospace subcontractors, aircraft manufacturers and the Federal Aviation Administration. With experience, graduates may advance to positions such as aircraft maintenance supervisor, accident investigator, aviation safety inspector, and to management positions with airlines, manufacturers and fixed-base operations.

Recommended High School Subjects: Two years of algebra, three years of English, one year of physical science.

Remediation Strategies: Students entering the baccalaureate degree will be expected to meet the College standards for mathematics, English, reading and keyboarding. Students identified as double and triple deficient will be required to remediate before admittance to the major. Single deficient students may be granted conditional admittance with approval from the Dean of the School of Transportation Technology. The student will be allowed to register for major courses, but must successfully remediate any deficiency during the first two semesters in the major. Failure to remediate within the first two semesters will result in termination from the major and possibly the College, if grades are poor.

Transfer Procedures: Students may transfer from other aviation related degrees and certificates at Penn College or another college with equivalent courses and will have their transcripts evaluated by Penn College officials prior to acceptance into the major. No course for which a student received less than a "C" grade will be accepted for transfer. Courses taken that are less than 10 years old will be evaluated on course equivalency. Courses more than 10 years old will be evaluated to determine relevancy and content required in the major.

Program Goals: The purpose of the bachelor of science degree in Aviation Maintenance Technology is to prepare students with an airframe and powerplant background and knowledge of avionics systems and skills in order to maintain sophisticated aircraft and the ability to advance into management positions.

A graduate of the Aviation Maintenance Technology major should be able to

- perform aircraft inspections.
- inspect troubleshoot and repair related systems.
- perform basic aircraft servicing.
- interpret repair manuals and troubleshooting charts.
- apply electronic principles in troubleshooting electrically operated systems.
- demonstrate knowledge of the theory and operation of aircraft systems and subsystems.
- understand and follow written repair and test procedures.
- describe the underlying scientific principles in aerodynamics theory and the basics of aircraft flight controls.

FIRST SEMESTER	Credits
AVC 104 Federal Air Regulations, Records and Publications	1.5
AVC 105 Flight Line Servicing and Corrosion Control	2.5
AVC 108 Aircraft Materials, Process, Fluid Lines and Fittings	3.0
AVC 115 Aircraft Basic Science	3.0
AVC 125 Engine Ignition Systems	2.0
AVC 132 Engine Fuel Metering	2.0
ENL 111 English Composition I	<u>3.0</u>
	17.0

SECOND SEMESTER	Credits
AVC 116 Turbine Engines	3.5
AVC 128 Engine Induction and Exhaust Systems	1.5
AVC 134 Propellers	3.0
AVC 137 Reciprocating Engine Installation and Operation	3.0
AVC 138 Reciprocating Engine Overhaul	4.0
AVC 144 Aircraft Drawings	1.5
Fitness and Lifetime Sports Elective	1.0
	<u>17.5</u>

THIRD SEMESTER	Credits
AVC 177 Engine Cooling, Lubrication and Inspection	2.0
AVC 178 Engine and Airframe Fuel and Fire Protection	1.5
AVC 182 Aircraft Instrument Systems	1.5
AVC 205 Aircraft Assembly and Flight Control Rigging	2.0
AVC 207 Airframe Covering, Finishes and Welding	3.0
CSC 110 Introduction to Information Technology	3.0
ENL 121 English Composition II	3.0
or	
ENL 201 Technical and Professional Communication	3.0
MTH 180 College Algebra and Trigonometry I	<u>3.0</u>
	19.0

FOURTH SEMESTER	Credits
AVC 208 Aircraft Landing Gear, Hydraulics, Pneumatics and Position Warning	5.5
AVC 213 Airframe Inspection	.5
AVC 214 Aircraft Atmosphere Control and Ice/Rain Control	2.0
AVC 309 Airframe Sheet Metal Structures	4.0
AVC 310 Non-Metallic Structures	1.5
AVC 312 Rotary Wing Aircraft	1.5
MTH 182 College Algebra and Trigonometry II	<u>3.0</u>
	18.0

FIFTH SEMESTER	Credits
EET 110 DC-AC Basics	3.0
EET 111 DC-AC Measurements	1.0
EET 112 Introduction to Solid State Devices	3.0
EET 113 Solid State Devices Applications	1.0
EET 114 Introduction to Digital Electronics	3.0
EET 115 Digital Circuits Applications	1.0
Science Elective	3.0
Humanities Elective	3.0
or	
Social Science Elective	3.0
or	
Art Elective	3.0
or	
Foreign Language Elective	<u>3.0</u>
	18.0

SIXTH SEMESTER	Credits
SPC 101 Fundamentals of Speech	3.0
Fitness and Lifetime Sports Elective	1.0
PHS 114 Physics with Technological Applications	4.0
Humanities Elective	3.0
or	
Social Science Elective	3.0
or	
Art Elective	3.0
or	
Foreign Language Elective	3.0
Humanities - Science, Technology and Society Elective	3.0
Open Elective	<u>3.0</u>
	17.0

SEVENTH SEMESTER	Credits
AVC 327 Aircraft Navigation and Communication Theory	4.0
AVC 328 Aircraft Navigation and Communication Applications	2.0
AVC 329 Aircraft Control Systems	2.0
Social Science Elective	3.0
Art Elective	3.0
SPC 301 Organizational Communication (CUL)	<u>3.0</u>
	17.0

EIGHTH SEMESTER	Credits
AVC 335 Aviation Microwave Pulse Theory	3.0
AVC 336 Aviation Microwave Pulse Applications	1.0
AVC 340 Avionics Integration	3.0
AVC 434 Long Range Navigation Systems	2.0
AVC 496 Senior Project (WRT)	3.0
Open Elective	<u>3.0</u>
	15.0

Humanities - Science, Technology and Society Elective: HIS262, HIS315, HUM301, PHL240

Building Automation Technology (BBT)

Bachelor of Science Degree (B.S.)

This two-plus-two bachelor of science curriculum in Building Automation Technology prepares students to work in the field of building automation, heating, ventilating, air conditioning and refrigeration control (HVACR) and building energy management. The major emphasizes the application of the fundamentals of mechanical systems, control system theory and the use of computer methods to control and integrate the operation of buildings in a productive, safe and efficient manner. The major also emphasizes control system programming and layout, networks used for building control, software programs to design and document control systems, building commissioning, the operation and control of chillers and boilers, and related mechanical and electrical equipment. Energy management in buildings and interoperable systems are also studied. Technical courses include hands-on lab components with work on industry standard and state of the art equipment. This major includes a three-month paid internship in building automation. Students with associate degrees in HVACR Technology (HV/HP), Electrical Technology (EL), Electromechanical Maintenance Technology (MT), and Electronics Technology (ET) may enter the major and take an additional two years plus a summer internship to complete this bachelor's degree.

Career Opportunities: Graduates of the Building Automation Engineering Technology bachelor's major will find jobs as building automation-engineering technicians, HVAC Temperature Controls Project Engineer, Controls-Focused Service Technician, Automation Design Engineer, Construction/Project Manager, Remote Site Operations Supervisor, Building Automation System Applications Engineer. Employment opportunities in building automation technology exist with HVAC controls companies, physical plant departments of college, university, hospital, government buildings and other not for profit institutions. Opportunities also are available in commercial and industrial facilities.

Recommended High School Subjects: High school Algebra I and II are necessary for this major. Most students will have completed College Algebra I and II prior to entering the BBT major. Four years of high school English are desirable. Three science courses, with Physics recommended, are suggested for this major.

Remediation Strategies: All students will have completed MTH 180 by the end of the 5th semester of the BBT major. Remediation applies to EO and transfer students.

Program Goals: The purpose of this major is to offer students with foundational skills in areas of electrical technology of HVAC technology the knowledge and skills to continue in an expanding career area related to building automation and controls technology. A graduate of the Building Automation Technology major should be able to:

- follow safety practices that apply to the installation and troubleshooting of HVACR systems, including knowledge of applicable codes and standards of the NEC, ASHRAE, OSHA, EPA and other applicable code making bodies.
- demonstrate basic HVACR processes and explain the function, layout, and operation of commercial HVACR systems.
- use test and balance procedures for commissioning commercial HVACR systems.
- explain the function, operating characteristics, and appropriate applications of basic control loops and control modes as found in direct digital, analog electronic, electric and pneumatic commercial control systems.
- using a typical building automatic control system, troubleshoot a commercial HVAC system to identify and correct control system malfunctions.
- read blueprints and manufacturer's technical instructions and use these to install a sensor, controller, and actuator plus any required relays and power supplies.
- given a sequence of control, lay out a control system logic diagram and program it into a DDC controller.

- analyze interoperability and energy management as they apply to vertically and horizontally integrated building control systems.
- apply basic theory to the operation of DC and AC circuits, including Ohms law, frequency, and true RMS voltage, impedance and power factor.
- interpret relay logic, control system diagrams and one-line diagrams, and use a multimeter to troubleshoot control systems and single- and three-phase power systems.
- describe the basic operation and application of magnetic motor starters, and variable speed drives to HVACR equipment.
- analyze the operation of electronic circuits and use troubleshooting techniques including work with the oscilloscope.
- use general-purpose software and specific building automation software to monitor and control a building HVACR system and building electrical systems.
- use CAD programs and spread sheet programs to layout control systems.
- explain the function of network devices and network protocols such as a bridge, router, gateway, hub, firewall, twisted pair, fiber, Ethernet, Arcnet, TCP/IP, BacNet, and Lon Talk.

FIRST SEMESTER		Credits
	Directed Building Automation Technology	12
	Electives	
CSC 110	Introduction to Information Technology	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>
SECOND SEMESTER		Credits
	Directed Building Automation Technology	10
	Electives	
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
		<u>14</u>
THIRD SEMESTER		Credits
	Directed Building Automation Technology	10
	Electives	
ENL 201	Technical and Professional Communication	3
PHS 103	Physics Survey	3
	or	
PHS 114	Physics with Technological Applications	4
		<u>16</u>
FOURTH SEMESTER		Credits
	Directed Building Automation Technology	10
	Electives	
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Foreign Language Elective	3
	or	
	Art Elective	3
		<u>13</u>
FIFTH SEMESTER		Credits
ACR 226	AC/R Systems and Equipment	3
PLH 226	Fundamentals of Heating Systems	3
	or	
ELT 239	Fundamentals of Electronics for BBT	5
BBT 209	Building Automation Industry	3
MTH 182	College Algebra and Trigonometry II	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Foreign Language Elective	3
	or	
	Art Elective	3
	Open Elective	3
		<u>18</u>

SIXTH SEMESTER		Credits
BBT 304	Direct Digital Control of HVACR Equipment	4
BBT 344	Electric, Pneumatic and Electronic Control Systems	4
	Science Elective	3
	Liberal Arts/Core Elective	3
	Social Science / Cultural Diversity Elective	3
		17

SUMMER SESSION II		Credits
BBT 310	Building Automation Industry Internship	1
		1

SEVENTH SEMESTER		Credits
BBT 406	Building Control Networks	3
BBT 414	Building Automation Programming	3
BBT 495	Senior Seminar-Lecture	1
SPC 101	Fundamentals of Speech	3
	Art Elective	3
	Humanities Elective	3
	Fitness and Lifetime Sports Elective	1
		17

EIGHTH SEMESTER		Credits
BBT 412	Building Commissioning and Recommissioning	3
BBT 415	Integrated Building Operation and Energy Management (WRT)(STS)	3
BBT 416	Central Mechanical Equipment Control and Building Electrical Systems	4
BBT 496	Senior Seminar-Lab	2
	Open Elective	3
		15

Directed Building Automation Technology electives include EET, ELT, ACR, and PLH courses. Major courses other than EET, ELT, ACR, and PLH courses will need advisor approval.
 HP/HV entering students must take PHS 114 as the science elective in the sixth semester.

Business Administration

Banking and Finance Concentration (BBF)

Bachelor of Science Degree (B.S.)

The bachelor of science degree in Business Administration will prepare students with the skills necessary to meet the business demands of the future. This major will provide each student with a solid business core that includes: an extensive background in the functional areas of marketing, finance, accounting and management; an understanding of the business environment to include the legal, economic, human resource, ethical and international aspects; technical skills in information systems and quantitative analysis; and the ability to communicate, integrate and synthesize. In addition, students will be able to select one of five alternative areas of concentration from among Management, Banking and Finance, Marketing, Small Business and Entrepreneurship, and Management Information Systems.

The degree will concentrate on four pillars of uniqueness: communications, international, business ethics and Total Quality Management (TQM). Students who complete the B.S. degree will have a firm foundation for job opportunities in all business environments because they will have the general knowledge employers are seeking in communications, international, TQM and

business ethics. The selection of an appropriate area of concentration will give graduates an edge in a particular business area while not diminishing the broad general business education they will need now and into the future.

Career Opportunities: Graduates will have the opportunity to apply for supervisory/management positions in business environments. Beginning as management trainees in most instances, graduates will be able to advance because of the preparation in general business practices. With extensive preparation in international business, graduates will be able to seek positions with multi-national corporations. Selecting directed electives to develop an area of expertise will make them more marketable in business firms relying on that specific area. Using communications, international, TQM and business ethics as the focus points of this degree will prepare a graduate who will be ready to enter the market with training otherwise found in an MBA graduate.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the B.S. Students should have English and mathematics courses in high school. In addition to traditional mathematics, some algebra is recommended. In addition to the regular remediation requirements, appropriate remediation will be available for students who have not met the College entrance requirements for algebra.

Program Goals: The purpose of the bachelor of science in Business Administration is to provide students with the skills necessary to meet the business demands of the future in a variety of organizational settings. Specifically, a graduate of this major should be able to

- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relation skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- recognize the importance of business ethics and its relationship to business operations.
- understand the international arena and its place in current business environments.
- know the components of continuous business process improvement.
- increase individual knowledge and understanding of self and others in the work environment.
- develop the ability to plan, organize, direct, and control within an organizational environment.
- understand how American business functions.
- develop specific business skills (e.g. accounting, finance, marketing, etc.) critical to effective and efficient management.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
MGT 110	Principles of Business	3
ENL 111	English Composition I	3
OFT 101	Keyboarding and Its Applications	1
	Liberal Arts/Core Elective	3
	Science Elective	3
		16

SECOND SEMESTER		Credits
MGT 115	Principles of Management	3
ENL 121	English Composition II	3
MTH 180	College Algebra and Trigonometry I	3
	Humanities Elective	3
	Science Elective with lab	4
		16

THIRD SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
ECO 111	Principles of Macroeconomics	3
MGT 230	Business Communications	3
CSC 211	Business Computer Applications Using Spreadsheet	3
SPC 101	Fundamentals of Speech	3
	Fitness and Lifetime Sports Elective	1
		16
FOURTH SEMESTER		Credits
	Directed Banking & Finance Elective	3
FIN 305	Fundamentals of Financial Planning	3
ECO 112	Principles of Microeconomics	3
MKT 240	Principles of Marketing	3
MTH 160	Elementary Statistics with Computer Applications	4
		16
FIFTH SEMESTER		Credits
MGT 330	Managerial Decision Making	3
MGT 355	Quantitative Methods for Business	3
MGT 370	Managerial Economics	3
FIN 150	Principles of Banking	3
FIN 220	Finance	3
		15
SIXTH SEMESTER		Credits
MGT 216	International Business	3
MGT 360	The Legal Environment of Business	3
MGT 340	Human Resource Management	3
FIN 320	Investments	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
		16
SEVENTH SEMESTER		Credits
FIN 370	Money and Banking	3
FIN 450	International Finance	3
MGT 315	Business Ethics (STS)	3
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Directed Banking & Finance Elective	3
		15
EIGHTH SEMESTER		Credits
MGT 497	Business Policy and Strategy	3
LAS 290	Risk Management and Insurance	3
	Open Elective	3
	Open Elective	3
	Art Elective	3
		15

Directed Banking & Finance Elective: ACC123, ACC331, FIN310, FIN420, FIN430, LAS290, MGT325, MKT253

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Business Administration Management Concentration (BBM) Bachelor of Science Degree (B.S.)

The bachelor of science degree in Business Administration will prepare students with the skills necessary to meet the business demands of the future. This major will provide each student with a solid business core that includes: an extensive background in the functional areas of marketing, finance, accounting and management; an understanding of the business environment to include the legal, economic, human resource, ethical and international aspects; technical skills in information systems and quantitative analysis; and the ability to communicate, integrate and synthesize. In addition, students will be able to select one of five alternative areas of concentration from among Management, Banking and Finance, Marketing, Small Business and Entrepreneurship, and Management Information Systems.

The degree will concentrate on four pillars of uniqueness: communications, international, business ethics and Total Quality Management (TQM). Students who complete the B.S. degree will have a firm foundation for job opportunities in all business environments because they will have the general knowledge employers are seeking in communications, international, TQM and business ethics. The selection of an appropriate area of concentration will give graduates an edge in a particular business area while not diminishing the broad general business education they will need now and into the future.

Career Opportunities: Graduates will have the opportunity to apply for supervisory/management positions in business environments. Beginning as management trainees in most instances, graduates will be able to advance because of the preparation in general business practices. With extensive preparation in international business, graduates will be able to seek positions with multi-national corporations. Selecting directed electives to develop an area of expertise will make them more marketable in business firms relying on that specific area. Using communications, international, TQM and business ethics as the focus points of this degree will prepare a graduate who will be ready to enter the market with training otherwise found in an MBA graduate.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the B.S. Students should have English and mathematics courses in high school. In addition to traditional mathematics, some algebra is recommended. In addition to the regular remediation requirements, appropriate remediation will be available for students who have not met the College entrance requirements for algebra.

Program Goals: The purpose of the Bachelor of Science in Business Administration is to provide students with the skills necessary to meet the business demands of the future in a variety of organizational settings. Specifically, a graduate of the major should be able to

- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relation skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- recognize the importance of business ethics and its relationship to business operations.
- understand the international arena and its place in current business environments.

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- know the components of continuous business process improvement.
- increase individual knowledge and understanding of self and others in the work environment.
- develop the ability to plan, organize, direct, and control within an organizational environment.
- understand how American business functions.
- develop specific business skills (e.g. accounting, finance, marketing, etc.) critical to effective and efficient management.

FIRST SEMESTER	Credits
CSC 110 Introduction to Information Technology	3
MGT 110 Principles of Business	3
ENL 111 English Composition I	3
OFT 101 Keyboarding and Its Applications	1
Liberal Arts/Core Elective	3
Science Elective	3
	<u>16</u>

SECOND SEMESTER	Credits
MGT 115 Principles of Management	3
ENL 121 English Composition II	3
MTH 180 College Algebra and Trigonometry I	3
Humanities Elective	3
Science Elective	4
	<u>16</u>

THIRD SEMESTER	Credits
ACC 113 Introduction to Financial Accounting	3
ECO 111 Principles of Macroeconomics	3
MGT 230 Business Communications	3
MGT 360 The Legal Environment of Business	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

FOURTH SEMESTER	Credits
ACC 123 Introduction to Managerial Accounting	3
CSC 211 Business Computer Applications Using Spreadsheet	3
ECO 112 Principles of Microeconomics	3
MKT 240 Principles of Marketing	3
MTH 160 Elementary Statistics with Computer Applications	4
	<u>16</u>

FIFTH SEMESTER	Credits
FIN 220 Finance	3
MGT 330 Managerial Decision Making	3
MGT 355 Quantitative Methods for Business	3
MGT 370 Managerial Economics	3
Directed Business Administration Elective	3
	<u>15</u>

SIXTH SEMESTER	Credits
MGT 216 International Business	3
MGT 315 Business Ethics (STS)	3
MGT 340 Human Resource Management	3
MKT 310 International Marketing	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SEVENTH SEMESTER	Credits
FIN 450 International Finance	3
MGT 410 Management of Organizational Behavior (WRT)(CUL)	3
Directed Business Administration Elective	3
Directed Business Administration Elective	3
Art Elective	3
	<u>15</u>

EIGHTH SEMESTER	Credits
MGT 497 Business Policy and Strategy	3
Directed Business Administration Elective	3
Directed Business Administration Elective	3
Open Elective	3
Open Elective	3
	<u>15</u>

Directed Business Administration Elective: ACC123, ACC280, ACC310, ACC331, ACC340, ACC345, ACC410, ACC430, CSC221, CSC300, FIN305, FIN310, FIN320, FIN370, FIN430, LAS290, LAS320, LAS430, MGT248, MGT249, MGT250, MGT320, MGT325, MGT351, MKT243, MKT253, MKT260, MKT320, OFT260

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Business Administration Management Information Systems Concentration (BBS)

Bachelor of Science Degree (B.S.)

The bachelor of science degree in Business Administration will prepare students with the skills necessary to meet the business demands of the future. This major will provide each student with a solid business core that includes: an extensive background in the functional areas of marketing, finance, accounting, and management; an understanding of the business environment to include the legal, economic, human resource, ethical, and international aspects; technical skills in information systems and quantitative analysis; and the ability to communicate, integrate, and synthesize. In addition, students will now be able to select one of five alternative areas of concentration from among Management, Banking and Finance, Marketing, Management Information Systems, and Small Business and Entrepreneurship.

We are living in the information age, a time when it is certainly true that knowledge is power. Organizations all over the world are focusing on information as a key resource. The new Concentration in Management Information Systems (MIS) prepares students for a leading role in this exciting new area. The MIS major gives students an understanding of the importance of information systems as a management tool in the planning, control and decision making activities of the organization. The program of study introduces students to the concepts and methods of analyzing, designing, planning, and managing simple or complex information systems. It emphasizes the managerial aspects of information systems by providing a solid base of business courses and computer science courses common to the School of Business and Computer Technologies.

Career Opportunities: Graduates will acquire the knowledge and skills to seek employment in the public and private sectors in such fields as systems analysis, information systems management, quality assurance, financial and market research, and production planning.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of “C” or better in courses transferred into the B.S. Students should have English and mathematics courses in high school. In addition to traditional mathematics, some algebra is recommended. In addition to the regular remediation requirements, appropriate remediation will be available for students who have not met the College entrance requirements for algebra.

Program Goals: Specifically, this major should prepare students to

- apply information literacy to personal, professional, and other related areas.
- recognize and develop the skills necessary for life long learning.
- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relations skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- understand the fundamentals of good communications and apply those fundamentals in written, oral, and visual delivery methods.
- recognize the importance of business ethics and its relationship to business operations.
- understand the international arena and its place in current business environments.
- know the components of TQM (total quality management) and how each relates to the business majors.
- increase individual knowledge and understanding of self and others in the work environment.
- develop the ability to plan, organize, direct, and control within an organizational environment.
- understand how American business functions.
- develop specific business skills (e.g., accounting, finance, marketing, etc.) critical to effective and efficient management.
- analyze business operations by using an information system that provides data when and as needed.
- recognize symptoms and understand they are the prelude to determining the cause and nature of possible business problems.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MGT 115	Principles of Management	3
MTH 180	College Algebra and Trigonometry I	3
OFT 101	Keyboarding and Its Applications	1
SPC 101	Fundamentals of Speech	3
		16

SECOND SEMESTER		Credits
MIS 110	Introduction to Management Information Systems	3
ACC 113	Introduction to Financial Accounting	3
CSC 211	Business Computer Applications Using Spreadsheet	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Science Elective	3
		18

THIRD SEMESTER		Credits
ACC 123	Introduction to Managerial Accounting	3
MIS 150	Business Programming I	3
CSC 221	Business Computer Applications Using Database	3
MGT 210	Electronic Commerce for Business	3
MGT 230	Business Communications	3
MKT 240	Principles of Marketing	3
		18

FOURTH SEMESTER		Credits
MIS 250	Business Programming II	3
ECO 111	Principles of Macroeconomics	3
	Liberal Arts/Core Elective	3
MTH 160	Elementary Statistics with Computer Applications	4
	Science Elective with lab	4
		17

FIFTH SEMESTER		Credits
MIS 230	Management of Telecommunications	3
MIS 310	Business Transaction Systems	3
ECO 112	Principles of Microeconomics	3
FIN 220	Finance	3
MGT 330	Managerial Decision Making	3
MGT 355	Quantitative Methods for Business	3
		18

SIXTH SEMESTER		Credits
MIS 303	Analysis and Logical Design	3
MGT 216	International Business	3
MGT 340	Human Resource Management	3
MGT 360	The Legal Environment of Business	3
MGT 370	Managerial Economics	3
	Fitness and Lifetime Sports Elective	1
		16

SEVENTH SEMESTER		Credits
MGT 315	Business Ethics (STS)	3
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Directed Management Information System Elective	3
	Directed Management Information System Elective	3
	Fitness and Lifetime Sports Elective	1
	Open Elective	3
		16

EIGHTH SEMESTER		Credits
MGT 497	Business Policy and Strategy	3
	Art Elective	3
	Directed Management Information System Elective	3
	Directed Management Information System Elective	3
	Humanities Elective	3
	Open Elective	3
		18

Directed Management Information System Elective: ACC285, CSC140, CSC201, CSC250, CSC302, LAS290, MGT110, MGT231, MGT241, MGT248, MGT249, MGT250, MGT325, MGT351, MGT447, MIS210, MIS235, MIS320, MIS325, MKT243, MKT310, MKT320

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Business Administration Marketing Concentration (BBK)

Bachelor of Science Degree (B.S.)

The bachelor of science degree in Business Administration will prepare students with the skills necessary to meet the business demands of the future. This major will provide each student with a solid business core that includes: an extensive background in the functional areas of marketing, finance, accounting and management; an understanding of the business environment to include the legal, economic, human resource, ethical and international aspects; technical skills in information systems and quantitative analysis; and the ability to communicate, integrate and synthesize. In addition, students will be able to select one of five alternative areas of concentration from among Management, Banking and Finance, Marketing, Small Business and Entrepreneurship, and Management Information Systems.

The degree will concentrate on four pillars of uniqueness: communications, international, business ethics and Total Quality Management (TQM). Students who complete the BS degree will have a firm foundation for job opportunities in all business environments because they will have the general knowledge employers are seeking in communications, international, TQM and business ethics. The selection of an appropriate area of concentration will give graduates an edge in a particular business area while not diminishing the broad general business education they will need now and into the future.

Career Opportunities: Graduates will have the opportunity to apply for supervisory/management positions in business environments. Beginning as management trainees in most instances, graduates will be able to advance because of the preparation in general business practices. With extensive preparation in international business, graduates will be able to seek positions with multi-national corporations. Selecting directed electives to develop an area of expertise will make them more marketable in business firms relying on that specific area. Using communications, international, TQM and business ethics as the focus points of this degree will prepare a graduate who will be ready to enter the market with training otherwise found in an MBA graduate.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the B.S. Students should have English and mathematics courses in high school. In addition to traditional mathematics, some algebra is recommended. In addition to the regular remediation requirements, appropriate remediation will be available for students who have not met the College entrance requirements for algebra.

Program Goals: The purpose of the Bachelor of Science in Business Administration is to provide students with the skills necessary to meet the business demands of the future in a variety of organizational settings. Specifically, a graduate of this major should be able to

- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relation skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- recognize the importance of business ethics and its relationship to business operations.
- understand the international arena and its place in current business environments.
- know the components of continuous business process improvement.

- increase individual knowledge and understanding of self and others in the work environment.
- develop the ability to plan, organize, direct, and control within an organizational environment.
- understand how American business functions.
- develop specific business skills (e.g. accounting, finance, marketing, etc.) critical to effective and efficient management.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
MGT 110	Principles of Business	3
ENL 111	English Composition I	3
OFT 101	Keyboarding and Its Applications	1
	Liberal Arts/Core Elective	3
	Science Elective	3
		16
SECOND SEMESTER		Credits
MGT 115	Principles of Management	3
ENL 121	English Composition II	3
MTH 180	College Algebra and Trigonometry I	3
	Humanities Elective	3
	Science Elective	4
		16
THIRD SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
ECO 111	Principles of Macroeconomics	3
MKT 240	Principles of Marketing	3
MGT 360	The Legal Environment of Business	3
SPC 101	Fundamentals of Speech	3
	Fitness and Lifetime Sports Elective	1
		16
FOURTH SEMESTER		Credits
	Directed Marketing Elective	3
CSC 150	Introduction to Web Page Development	3
ECO 112	Principles of Microeconomics	3
MKT 243	Sales	3
MTH 160	Elementary Statistics with Computer Applications	4
		16
FIFTH SEMESTER		Credits
FIN 220	Finance	3
MGT 330	Managerial Decision Making	3
MGT 355	Quantitative Methods for Business	3
MGT 370	Managerial Economics	3
MKT 260	Customer Relations	3
		15
SIXTH SEMESTER		Credits
MGT 216	International Business	3
MGT 315	Business Ethics (STS)	3
MGT 340	Human Resource Management	3
MKT 248	Retail Management	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
		16
SEVENTH SEMESTER		Credits
MKT 310	International Marketing	3
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Directed Marketing Elective	3
	Directed Marketing Elective	3
	Art Elective	3
		15

EIGHTH SEMESTER		Credits
MGT 497	Business Policy and Strategy	3
MKT 320	Marketing Research	3
	Directed Marketing Elective	3
	Open Elective	3
	Open Elective	3
		15

Directed Marketing Elective: ACC123, LAS290, MGT230, MGT250, MGT325, MKT253, OIS214

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Business Administration

Small Business and Entrepreneurship Concentration (BBE)

Bachelor of Science Degree (B.S.)

The bachelor of science degree in Business Administration will prepare students with the skills necessary to meet the business demands of the future. This major will provide each student with a solid business core that includes: an extensive background in the functional areas of marketing, finance, accounting and management; an understanding of the business environment to include the legal, economic, human resource, ethical and international aspects; technical skills in information systems and quantitative analysis; and the ability to communicate, integrate and synthesize. In addition, students will be able to select one of five alternative areas of concentration from among Management, Banking and Finance, Marketing, Small Business and Entrepreneurship, and Management Information Systems.

The degree will concentrate on four pillars of uniqueness: communications, international, business ethics and Total Quality Management (TQM). Students who complete the B.S. degree will have a firm foundation for job opportunities in all business environments because they will have the general knowledge employers are seeking in communications, international, TQM and business ethics. The selection of an appropriate area of concentration will give graduates an edge in a particular business area while not diminishing the broad general business education they will need now and into the future.

Career Opportunities: Graduates will have the opportunity to apply for supervisory/management positions in business environments. Beginning as management trainees in most instances, graduates will be able to advance because of the preparation in general business practices. With extensive preparation in international business, graduates will be able to seek positions with multi national corporations. Selecting directed electives to develop an area of expertise will make them more marketable in business firms relying on that specific area. Using communications, international, TQM and business ethics as the focus points of this degree will prepare a graduate who will be ready to enter the market with training otherwise found in an MBA graduate.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the B.S. Students should have English and mathematics courses in high

school. In addition to traditional mathematics, some algebra is recommended. In addition to the regular remediation requirements, appropriate remediation will be available for students who have not met the College entrance requirements for algebra.

Program Goals: The purpose of the Bachelor of Science in Business Administration is to provide students with the skills necessary to meet the business demands of the future in a variety of organizational settings. Specifically, a graduate of this program should be able to

- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relation skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- recognize the importance of business ethics and its relationship to business operations.
- understand the international arena and its place in current business environments.
- know the components of continuous business process improvement.
- increase individual knowledge and understanding of self and others in the work environment.
- develop the ability to plan, organize, direct, and control within an organizational environment.
- understand how American business functions.
- develop specific business skills (e.g. accounting, finance, marketing, etc.) critical to effective and efficient management.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
MGT 115	Principles of Management	3
ENL 111	English Composition I	3
MTH 113	Business Mathematics	3
OFT 101	Keyboarding and Its Applications	1
	Science Elective	3
		16

SECOND SEMESTER		Credits
CSC 211	Business Computer Applications Using Spreadsheet	3
ENL 121	English Composition II	3
MGT 249	Small Business Management	3
MTH 180	College Algebra and Trigonometry I	3
	Science Elective	4
		16

THIRD SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
CSC 221	Business Computer Applications Using Database	3
ECO 111	Principles of Macroeconomics	3
MKT 240	Principles of Marketing	3
SPC 101	Fundamentals of Speech	3
	Fitness and Lifetime Sports Elective	1
		16

FOURTH SEMESTER		Credits
ACC 123	Introduction to Managerial Accounting	3
ECO 112	Principles of Microeconomics	3
MGT 230	Business Communications	3
MKT 243	Sales	3
MTH 160	Elementary Statistics with Computer Applications	4
		16

FIFTH SEMESTER		Credits
FIN 220	Finance	3
MGT 210	Electronic Commerce for Business	3
MGT 330	Managerial Decision Making	3
MGT 355	Quantitative Methods for Business	3
MGT 360	The Legal Environment of Business	3
		15

SIXTH SEMESTER		Credits
MGT 216	International Business	3
MGT 315	Business Ethics (STS)	3
MGT 340	Human Resource Management	3
MGT 370	Managerial Economics	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

SEVENTH SEMESTER		Credits
MKT 320	Marketing Research	3
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Humanities Elective	3
	Directed Small Business & Entrepreneurship Elective	3
	Art Elective	3
		<hr/> 15

EIGHTH SEMESTER		Credits
LAS 430	Consumer Protection and Employee Benefits	3
MGT 447	Entrepreneurship	3
MGT 497	Business Policy and Strategy	3
	Open Elective	3
	Open Elective	3
		<hr/> 15

Directed Small Business & Entrepreneurship Elective: ACC280, CSC300, FIN305, FIN310, FIN320, FIN370, FIN430, LAS290, LAS320, MGT320, MGT325, MGT351, MKT260, OFT260

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Civil Engineering Technology (BCT)

Bachelor of Science Degree (B.S.)

This curriculum is designed to equip graduates to face the challenge of modern engineering practice. The major will emphasize applications based engineering studies involving the planning, analysis and design of civil engineering/surveying projects. Modern approaches to the planning, analysis and design of highways, structures, hydraulic systems and site development will be emphasized.

This technical instruction with modern instrumentation, hardware and software will be reinforced with foundation courses emphasizing written and oral communication, physics, chemistry, fluid mechanics, statics, dynamics, engineering economics, ethics and calculus, as well as subjects in the humanities, social sciences and the arts. All the instruction is presented with problem solving in mind and strong emphasis on applications and critical thinking.

The major is designed so that first-year students can enter the curriculum once prerequisites are satisfied. Students with associate degrees in Surveying or Civil Engineering Technology can also enter the curriculum as juniors, generally with no loss of credit hours previously earned.

Career Opportunities: Graduates can seek employment in a wide range of civil engineering specialties. These include the design of steel and concrete

structures, stormwater runoff and hydraulic design, soils testing and geotechnical design, construction inspection and highway design. To support these and other activities are people applying skills in surveying, map making and the synthesis of geographic information with other data types such as demographic, taxation, transportation and census data. Employment opportunities will exist with private consulting firms, design/construction businesses and government agencies including PennDOT, DER, USGS, the US Army Corps of Engineers and the uniformed services. Local municipality planning and engineering agencies will also offer opportunities for employment. People seeking self-employment opportunities will be aided by education leading to licensure as a Land Surveyor or a Professional Engineer.

Recommended High School Subjects: Strong preparation in mathematics; sciences with good communication skills. It is suggested that students thinking about entering this major be tested in mathematics early enough so that remedial precalculus coursework could be taken the summer before enrollment at Penn College. Coursework in computer usage, drafting and surveying at the high school level would be helpful but not necessary.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading. Students not ready for Calculus I at entry are strongly cautioned to remediate this deficiency prior to enrollment.

Transfer Procedures: This major will subscribe to the transfer standards established by the College. Individual transfer records will be reviewed by the Office of Admissions. Discrepancies and deviation from standards must be approved by the Office of Admissions and/or the Dean of the School of Industrial and Engineering Technologies.

Program Goals: The purpose of the bachelor of science in Civil Engineering Technology is to prepare the student for positions in the field of civil engineering. The major also provides an overview of the field and prepares students for the Fundamentals of Engineering exam, which is the first step in the process for registration as a Professional Engineer (PE) in the Commonwealth of Pennsylvania. Specifically, this major should prepare the student to

- distinguish between various types of surveys and select and use the proper instruments and methods for each type of survey. These will include control, construction, and topographic surveys.
- construct cartographic and topographic maps using recognized mapping procedures.
- apply basic criteria used to design and locate highways and estimate earthwork quantities for highway construction.
- determine and use the engineering properties of the basic construction materials such as steel, concrete, wood, and soil.
- calculate the loading condition, stresses and deflection for structural members.
- analyze and design steel components of a structure using the American Institute of Steel Construction (AISC) Specifications.
- analyze and design reinforced concrete beams, slabs, columns, footings and walls using the American Concrete Institute (ACI) Code.
- evaluate the subsurface conditions for a construction site and design shallow foundation systems, earth slopes, subsurface drainage and retained-earth components.
- demonstrate a working knowledge of the mechanics of compressible and incompressible fluid flow and their applications in piping systems, pumps, open channels, and reservoirs.
- predict the effects of rainfall runoff on engineering systems; design inlets, gutters, retention/detention basins and sedimentation control devices using accepted procedures.
- design water supply and wastewater systems including treatment, distribution and collection components.
- use aerial photographs in making engineering measurements.
- use common coordinate systems and Geographical Information System (GIS) databases to create feature and attribute tables and perform queries of the GIS.
- perform quantity takeoffs and cost estimates for bid preparation; perform project planning and scheduling activities to determine the critical sequence of operations.

- demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD), and perform basic drawing functions with CAD equipment to create engineering drawings.
- function as a contributing member of a planning and design team for a capstone project to include data gathering, design, drawing preparation, and written and oral communications regarding work accomplished.

FIRST SEMESTER	Credits
CAD 116 Introduction to 2D CAD	3
CET 113 Introductory Surveying	2
CET 114 Civil Drafting	2
CHM 111 General Chemistry I	4
CSC 110 Introduction to Information Technology	3
MTH 240 Calculus I	4
	<hr/> 18

SECOND SEMESTER	Credits
CET 122 Topographic Drawing and Cartography	3
CET 123 Plane Surveying	3
CSC 108 Introduction to Computer Programming Concepts	1
ENL 111 English Composition I	3
MTH 242 Calculus II	4
PHS 201 General Physics I	4
	<hr/> 18

THIRD SEMESTER	Credits
CET 233 Statics	3
CET 238 Origin, Distribution and Behavior of Soils (WRT)	3
ENL 201 Technical and Professional Communication	3
MTH 160 Elementary Statistics with Computer Applications	4
PHS 202 General Physics II	4
	<hr/> 17

FOURTH SEMESTER	Credits
CET 242 Fluid Mechanics	3
CET 243 Strength of Materials	3
CET 246 Materials of Construction	3
CET 348 Dynamics	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
	<hr/> 16

FIFTH SEMESTER	Credits
CET 234 Highway Engineering Technology	3
CET 235 Computer Applications in Civil Engineering	1
CET 237 Route Surveying	3
CET 311 Structural Analysis	3
CET 312 Hydraulics/Hydrology	3
CSC 255 Fortran Programming	3
Fitness and Lifetime Sports Elective	1
	<hr/> 17

SIXTH SEMESTER	Credits
CET 321 Structural Steel Design	3
CET 322 Water/Sewer Design	3
CET 344 Photogrammetry	3
ECO 111 Principles of Macroeconomics	3
MET 315 Engineering Economics	3
SOC 111 Introduction to Sociology	3
	<hr/> 18

SEVENTH SEMESTER	Credits
CET 411 Geotechnical Engineering Technology	3
CET 412 Reinforced Concrete Design	3
CET 413 Civil Engineering Estimating and Scheduling	3
CET 414 Geographic/Land Use Information Systems	3
Humanities/Social Science Cultural Diversity Elective	3
Open Elective	3
	<hr/> 18

EIGHTH SEMESTER	Credits
CET 495 Planning/Analysis for Capstone Project	2
CET 496 Design for Capstone Project	2
MET 321 Engineering Ethics and Legal Issues (WRT)(STS)	3
Art Elective	3
Humanities Elective	3
Open Elective	3
	<hr/> 16

NOTE: Approved transfer students may substitute PHS 115 for PHS 201, PHS 125 for PHS 202, EGS 201 for CET 233, and EGS 260 for CET 348.

Students desiring to meet current Pennsylvania licensure requirements for surveyors should take CET 239 and CET 247 as electives.

CET 496 - Cooperative education possibility.

The cultural diversity elective in the seventh semester should be selected from a 200 level or higher Humanities or Social Science.

Accreditation: Accredited by the Accreditation Board for Engineering and Technology, Technology Accreditation Commission, 111 Market Place, Suite 1050, Baltimore, MD 21202, Telephone (410) 347-7700.

Computer-Aided Product Design (BCD)

Bachelor of Science Degree (B.S.)

Graduates will work with engineers and technicians to solve technical design problems in the development and manufacturing of products and systems. The major will emphasize the use of new materials and manufacturing techniques, use of computer software applications, current practices in quality, productivity, manufacturing economics, and product performance. Environmental issues, safety, liability and health issues during the design and manufacturing will be addressed. Special considerations associated with foreign markets and cultural constraints will be integrated into learning activities. The major will allow the designer to balance function, aesthetics, legal issues, manufacturing parameters, market forces, cultural variables and engineering economics to develop projects and systems which are marketable.

Career Opportunities: Graduates will find jobs in the design of products and systems in industry and for service providers, agriculture and food processors and government agencies. Additional opportunities exist in research and development. Sales and marketing of new products and systems that require original design offer opportunity. Graduates will work as design technicians, design drafters, product designers, system designers and project leaders.

Additional opportunities exist in patent development, product research and development and a variety of jobs associated with market development. Specialty career paths may lie with loss management, safety and health issues, and environmental responses. Reverse engineering and adaptive redesign to meet the needs of foreign markets and cultures will demand a supply of design personnel. Most jobs will require the use of drafting and design skills, normally tied to computer manipulation of artificial intelligence application packages.

Recommended High School Subjects: Math, geometry, art and science courses are recommended but not required. Drafting and CAD skills are helpful. Computer experience is desirable.

Remediation Strategies: Students testing developmental in English, mathematics or reading are not eligible for admission into the major. The student is required to successfully remediate all deficiencies prior to admission into the major. However, students may enroll in the CD major and then transfer to the BCD major once all deficiencies are remediated. Since both the CD and BCD majors share a core during the first two years, students can complete the four-year degree without creating scheduling difficulties.

Transfer Procedures: This major provides a unique opportunity for students enrolled in the Computer Aided Drafting and Design (CD) major at the College to continue their education and expand job skills in the design of products and systems for industry. In addition, the first two years of the CD and the BCD majors share the same courses. This allows students to transfer between majors without loss of credits. Furthermore, students can elect to complete the CD major and begin employment while working on course requirements for the four-year degree.

The major also will accept graduates of the Tool Design Technology (TD) major, providing transfer of credit into the new major. Students who have completed a drafting, design, CAD or other closely related associate degree major from another institution might be eligible for admission.

Program Goals: The first two years of the Computer Aided Design major and the Computer Aided Drafting Technology major are virtually identical. A graduate of the Computer Aided Product and Systems Design major should be able to

- design products and systems that meet industrial standards.
- recommend materials, processes and equipment to solve manufacturing problems.
- integrate provisions for safety, health and the environment into products and systems.
- solve design problems using computer assisted design software.
- develop design solutions that reflect issues of economics, manufacturability, aesthetics, usability and quality.
- use engineering applications software to analyze designs and propose solutions.
- demonstrate math, science and writing competence in the solution of design problems and during communication to others.
- contribute to management and design teams in the solution of problems.
- use library, technical literature and database resources to solve design problems.
- organize and carry out engineering design projects under supervision.
- demonstrate knowledge of the organization and function of a manufacturing concern.
- demonstrate research and data collection skills necessary to obtain technical information.

FIRST SEMESTER	Credits
CAD 116 Introduction to 2D CAD	3
CCD 101 Technical Drawing I	3
CCD 102 Detailing I	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MTT 211 Manufacturing Materials and Processes	3
	<u>18</u>

SECOND SEMESTER	Credits
CAD 126 Advanced 2D CAD	3
CCD 121 Technical Drawing II	3
CCD 122 Detailing II	3
MTH 180 College Algebra and Trigonometry I	3
ENL 201 Technical and Professional Communication	3
ECO 111 Principles of Macroeconomics	3
	<u>18</u>

THIRD SEMESTER	Credits
CAD 237 3D CAD and Modeling	3
CCD 235 Design and Production Drawings	3
CCD 236 Civil and Structural Drawings	3
MTH 182 College Algebra and Trigonometry II	3
PHS 115 College Physics I	4
Fitness and Lifetime Sports Elective	1
	<u>17</u>

FOURTH SEMESTER	Credits
CAD 247 CAD Management and Customization	3
CCD 243 Tooling Design and Drawings	3
CCD 244 Electrical and Electronics Drawings	3
MTH 240 Calculus I	4
PHS 125 College Physics II	4
	<u>17</u>

FIFTH SEMESTER	Credits
DSG 321 Introduction to Product and Systems Design	3
DSG 323 Design Statics and Strength of Materials	3
MTH 242 Calculus II	4
QAL 101 Introduction to Quality Assurance	3
SOC 111 Introduction to Sociology	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SIXTH SEMESTER	Credits
DSG 322 Design for Manufacturability	3
DSG 324 Design Dynamics	3
MET 315 Engineering Economics	3
or	
Specified Technical/Math/Science Elective	3
HIS 262 Technology and Society (WRT)(STS)	3
SPC 101 Fundamentals of Speech	3
	<u>15</u>

SEVENTH SEMESTER	Credits
DSG 421 Product Design and Engineering Analysis	3
MET 318 Manufacturing Process and Organization	3
DSG 495 Senior Seminar-Lecture	1
Art Elective	3
Specified Technical/Math/Science Elective	3
Open Elective	3
	<u>16</u>

EIGHTH SEMESTER	Credits
DSG 422 Applied Product and Systems Design	3
CIM 428 Interdisciplinary CIM	3
or	
DSG 423 Design Colloquium	3
DSG 496 Senior Seminar-Lab	3
SOC 311 Sociology of Work and Culture (CUL)	3
Specified Technical/Math/Science Elective	3
Open Elective	3
	<u>18</u>

Specified Technical/Math/Science Elective: CHM100, CHM111, CIM150, CIM220, CIM221, CIM222, CIM227, EET110, MET311, MET321, MSC106, PPT115, PPT425, QAL237, SCI175, SCI280, TDT242, WEL100, WEL247

Computer Information Technology Data Communications and Networking Concentration (BDC)

Bachelor of Science Degree (B.S.)

The bachelor of science in Computer Information Technology will provide an opportunity for individuals who are interested in working in computer-related fields to earn a four-year degree in an emerging field of study in order to prepare them for computer-related jobs for the year 2000 and beyond. The major will have three major components: the bachelor degree core required by Pennsylvania College of Technology, an Information Technology core, and a technical concentration area. Students will be able to choose the area of concentration. The concentration areas available now are: Data Communications and Networking; Internetworking Application Development Concentration. Concentrations will be added to the degree as new techniques emerge and the needs are continually assessed. Students who complete the Computer Information Technology degree will be able to obtain positions in the general computer field, the field of networking and distributed systems, as end user support people, or as analysts in a large or small technological environment.

Career Opportunities: The bachelor of science in Computer Information Technology will offer students an opportunity to apply for positions in the field as technicians, systems analysts, network coordinators, information technology specialists, consultants, market representatives and related positions that will continue to emerge as the technology advances. As the industry panel agreed, there is no one specific title in the industry at this time that identifies the information technologist. Positions continue to emerge; titles are specific to the particular organization. Responsibilities directly relate to the academic and experiential requirements of the jobs.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics, and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the major.

Program Goals: The Data Communications and Networking major will prepare students for positions in the field as network administrators, technical support specialists, information technology specialists, consultants, and market representatives. Specifically graduates should be able to

- apply a suite of software tools useful for word process, spreadsheet, database, presentation graphics, database retrieval, and Internet and electronic mail.
- demonstrate the installation, maintenance and technical support of popular networking systems.
- apply a working knowledge of various popular network operating systems.
- apply hardware/software technology for effective use in a business environment.
- demonstrate troubleshooting, diagnostic techniques, and interpersonal communication skills.
- differentiate the underlying concepts of data communications.
- distinguish the latest LAN, WAN, MAN technologies.
- distinguish the important networking architectures and the networking operating systems.
- demonstrate the network design and management skills and an understanding of client/server systems.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
CSC 140	Problem Solving with Elementary Programming	3
EET 105	Microcomputer Maintenance	1
ENL 111	English Composition I	3
MGT 115	Principles of Management	3
MTH 180	College Algebra and Trigonometry I	3
OFT 101	Keyboarding and Its Applications	1
		17

SECOND SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
CSC 161	Computer Programming I	3
EET 204	Network Installation and Maintenance	3
EET 205	Network Maintenance Laboratory	1
ENL 121	English Composition II	3
or		
ENL 201	Technical and Professional Communication	3
MTH 182	College Algebra and Trigonometry II	3
		16

THIRD SEMESTER		Credits
CSC 250	Creating Web Applications	3
CSC 262	Computer Programming II	3
CSC 271	Network Administration	3
CSC 281	Computer Organization	3
	Fitness and Lifetime Sports Elective	1
SPC 101	Fundamentals of Speech	3
or		
SPC 201	Interpersonal Communication	3
		16

FOURTH SEMESTER		Credits
CSC 263	Data and Object Structures	3
CSC 272	Network Technical Support	3
CSC 273	Network Interconnection	3
CSC 282	Systems Programming	3
	Fitness and Lifetime Sports Elective	1
	Science Elective	3
		16

FIFTH SEMESTER		Credits
CSC 300	Computer Law, Ethics and Society (WRT)(STS)	3
CSC 374	Data Communications	3
CSC 383	Operating System Concepts	3
	Directed Business Elective	3
	Art Elective	3
		15

SIXTH SEMESTER		Credits
CSC 375	Telecommunication Concepts	3
CSC 384	Concurrent Systems	3
	Humanities Elective	3
or		
	Social Science Elective	3
or		
	Art Elective	3
or		
	Foreign Language Elective	3
	Cultural Diversity/Liberal Arts Elective	3
	Social Science Elective	3
		15

SEVENTH SEMESTER		Credits
CSC 476	Network Design and Management	3
CSC 477	Certification Preparation I	3
	Science Elective with lab	4
	Humanities Elective	3
	Open Elective	3
		16

EIGHTH SEMESTER		Credits
CSC 478	Certification Preparation II	3
CSC 498	Senior Project	3
	Humanities Elective	3
or		
	Social Science Elective	3
or		
	Art Elective	3
or		
	Foreign Language Elective	3
	Open Elective	3
	Open Elective	3
		15

Directed Business Elective - Any ACC (except ACC 105 & ACC 112), MGT or MKT course.

Computer Information Technology Internetworking Application Development Concentration (BIA) Bachelor of Science Degree (B.S.)

The bachelor of science in Computer Information Technology will provide an opportunity for individuals who are interested in working in computer-related fields to earn a four-year degree in an emerging field of study in order to prepare them for computer-related jobs for the year 2000 and beyond. The major will have three major components: the bachelor degree core required by Pennsylvania College of Technology, an Information Technology core, and a technical concentration area. Students will be able to choose the area

of concentration. The concentration areas available now are: Data Communications and Networking; Internetworking Application Development. Concentrations will be added to the degree as new techniques emerge and the needs are continually assessed. Students who complete the Computer Information Technology degree will be able to obtain positions in the general computer field, the field of networking and distributed systems, as end user support people, or as analysts in a large or small technological environment.

Career Opportunities: The bachelor of science in Computer Information Technology will offer students an opportunity to apply for positions in the field as technicians, systems analysts, network coordinators, information technology specialists, consultants, market representatives and related positions that will continue to emerge as the technology advances. As the industry panel agreed, there is no one specific title in the industry at this time that identifies the information technologist. Positions continue to emerge; titles are specific to the particular organization. Responsibilities directly relate to the academic and experiential requirements of the jobs.

Recommended High School Subjects: English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All transfer credits will be evaluated on a course-by-course basis to determine where they would fit into the curriculum sequence. Students must have earned a grade of "C" or better in courses transferred into the major.

Program Goals: The purpose of the Internetworking Application Development major is to prepare students for positions in the field as programmers, program analysts, system analysts, information technology specialists, consultants, and market representatives. Specifically graduates of this major should be able to

- apply a suite of software tools useful for word process, spreadsheet, database, presentation graphics, database retrieval, and Internet and electronic mail.
- employ systems and development concepts, information technology, and application software.
- demonstrate a working knowledge of various popular operating systems.
- apply hardware/software technology for effective use in a business environment.
- demonstrate an understanding of algorithm development, programming, computer concepts, and the design and application of data and file structures on several platforms and a variety of programming languages.
- develop application design skills and application development skills.
- complete the analysis and logical design of applications.
- perform the physical design and implementation of applications in both database and programming environments.
- develop project management skills.

FIRST SEMESTER	Credits
CSC 110 Introduction to Information Technology	3
CSC 140 Problem Solving with Elementary Programming	3
MGT 110 Principles of Business	3
EET 105 Microcomputer Maintenance	1
ENL 111 English Composition I	3
MTH 180 College Algebra and Trigonometry I	3
OFT 101 Keyboarding and Its Applications	1
	<u>17</u>

SECOND SEMESTER	Credits
ACC 113 Introduction to Financial Accounting	3
CSC 128 COBOL Programming I	3
CSC 161 Computer Programming I	3
ENL 121 English Composition II	3
or	
ENL 201 Technical and Professional Communication	3
MTH 182 College Algebra and Trigonometry II	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

THIRD SEMESTER	Credits
CSC 238 COBOL Programming II	3
CSC 250 Creating Web Applications	3
CSC 262 Computer Programming II	3
CSC 281 Computer Organization	3
Fitness and Lifetime Sports Elective	1
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
	<u>16</u>

FOURTH SEMESTER	Credits
CSC 201 File and Database Processing	3
CSC 258 Programming in RPG	3
CSC 263 Data and Object Structures	3
CSC 282 Systems Programming	3
Science Elective	3
	<u>15</u>

FIFTH SEMESTER	Credits
CSC 300 Computer Law, Ethics and Society (WRT)(STS)	3
CSC 302 Database Development	3
CSC 364 Object-Oriented Programming	3
Directed Business Elective	3
Art Elective	3
	<u>15</u>

SIXTH SEMESTER	Credits
CSC 303 System Analysis and Design Methods	3
CSC 365 Event-Driven Programming	3
Social Science Elective	3
Cultural Diversity/Liberal Arts Elective	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>15</u>

SEVENTH SEMESTER	Credits
CSC 404 System Implementation and Management Methods	3
CSC 466 Software Engineering	3
Science Elective with lab	4
Humanities Elective	3
Open Elective	3
	<u>16</u>

EIGHTH SEMESTER	Credits
CSC 405 Database Management Integration	3
CSC 498 Senior Project	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Open Elective	3
Open Elective	3
	<u>15</u>

Directed Business Elective - Any MGT, MKT, or ACC course (except ACC 105 & ACC112).

Construction Management (BCM)

Bachelor of Science Degree (B.S.)

The Construction Management major focuses on materials and methods involved in the building process, and the managerial and business techniques necessary for successful construction business operation. Students will develop skills needed to work as general contractors and construction managers or to specialize in estimating, purchasing, supervising, and project scheduling. They also will complete a general core of degree requirement courses.

Career Opportunities: Construction manager, project manager, estimator, purchasing/expediting agent, contractor/sub-contractor, code enforcement officer, building inspector

Recommended High School Subjects: Two years of algebra, one year of physics, computer science, architectural drawing and courses requiring writing skills. Students must remediate deficiencies in English, mathematics and reading prior to admission.

Remediation Strategies: Students with English, mathematics and reading deficiencies must remediate prior to admission to the major. Transfer students must have completed all math, English and reading requirements or take the college placement exam prior to admission to the major.

Transfer Procedures: Students transferring from associate degree majors at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance into the baccalaureate. No course for which a student received less than a "C" grade will be accepted for transfer into the major. Courses taken more than 10 years ago will be evaluated to determine if they meet current course requirements.

Program Goals: Completion of program objectives will prepare individuals to work in the residential and commercial construction industry as managers of construction projects. A graduate of the Construction Management major should be able to

- demonstrate planning and organizational skills on construction projects.
- prepare and interpret working and shop drawings.
- demonstrate knowledge of the construction processes, methods, and materials.
- demonstrate competence in construction contracting practices.
- prepare bid documents, contracts, proposals, and specifications.
- demonstrate general management skills of organizing, planning, directing, monitoring, and controlling.
- use and construct various schedules using Gantt charts, CPM, and network analysis.
- use computer-based cost control methods for construction.
- inspect construction projects to ensure compliance with plans, specifications, building codes, and quality assurance standards.
- interpret OSHA, state and local safety and occupational standards and develop safety plans.
- plan and conduct meetings and staff development activities.
- verify building lines, elevations, and other construction layout data.
- possess the interpersonal skills, personal qualities, and ethical behavior needed to provide leadership and motivation to subordinates.
- demonstrate human resources skills.
- demonstrate general business management skills of accounting, business practices, and knowledge of legal requirements in the construction industry.

FIRST SEMESTER	Credits
BCM 101 Construction Materials and Methods I	3
BCM 110 Construction Safety Management	2
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MTH 172 Introduction to Geometry	3
Fitness and Lifetime Sports Elective	1
	<u>15</u>

SECOND SEMESTER	Credits
BCM 102 Construction Materials and Methods II	3
BCM 112 Construction Working Drawings	4
BCM 210 Heavy Construction and Estimating	2
BCM 250 Basic Construction Estimating	3
ENL 201 Technical and Professional Communication	3
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

THIRD SEMESTER	Credits
BCM 201 Construction Equipment	2
BCM 202 Basic Construction Surveying	3
BCM 255 Construction Computer Applications	4
ACC 113 Introduction to Financial Accounting	3
MGT 231 Business Law I	3
Science Elective	3
	<u>18</u>

FOURTH SEMESTER	Credits
Cultural Diversity Elective	3
Humanities/Social Science/Art/Foreign Language	
Humanities Elective	3
MGT 115 Principles of Management	3
Science Elective with lab	4
SPC 101 Fundamentals of Speech	3
	<u>16</u>

FIFTH SEMESTER	Credits
BCM 300 Construction Specifications	3
BCM 301 Construction Law	2
BCM 302 Electrical and Mechanical Systems	3
BCM 310 Construction-Temporary Structures	2
MTH 160 Elementary Statistics with Computer Applications	4
CHM 100 Fundamentals of Chemistry	4
or	
SCI 100 Environmental Science	3
or	
GEL 105 Physical Geology	4
or	
PHS 115 College Physics I	4
	<u>18</u>

SIXTH SEMESTER	Credits
BCM 260 Construction Project Financing	1
BCM 306 Structural Components	3
BCM 312 Construction in the International Market	2
BCM 314 Real Estate for Contractors	2
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
MGT 340 Human Resource Management	3
Social Science Elective	3
	<u>17</u>

SEVENTH SEMESTER	Credits
BCM 410 Advanced Estimating Systems	3
BCM 402 Advanced Construction Surveying	2
BCM 406 Construction Management-Residential (WRT)	3
MGT 249 Small Business Management	3
Art Elective	3
Fitness and Lifetime Sports Elective	1
Open Elective	3
	<u>18</u>

EIGHTH SEMESTER	Credits
BCM 405 Quality Assurance and Inspection	3
BCM 407 Advanced Materials Applications	2
BCM 408 Construction Management-Commercial	3
BCM 409 Technology and Construction (STS)	3
BCM 412 Construction Planning and Scheduling	3
BCM 495 Senior Project/Co-Op Experience	3
	<u>17</u>

Culinary Arts Technology (BCY)

Bachelor of Science Degree (B.S.)

The bachelor of science in Culinary Art prepares students for entry-level positions with management potential in commercial, institutional and industrial food service operations.

The bachelor of science in Culinary Arts, has a strong emphasis on an array of “real world” activities to include four internship experiences, extensive catering functions, and an in-house fine dining facility, LeJeune Chef Restaurant. Advanced courses of study will emphasize supervisory techniques and positive approaches to the successful operation of a business. Customer/client satisfaction, a positive team-working environment, and a professional demeanor and image will be strongly emphasized.

Career Opportunities: Kitchen Manager, Management Trainee, Sous Chef, and Assistant to the Executive Chef.

Recommended High School Subjects: Students planning to enter this degree should take keyboarding, algebra, chemistry and four years of English/communications-oriented classes. Electives in foods, baking and hospitality-oriented classes are strongly suggested. Ideally, participation in an AVTS or BOCES will prepare the student for successful matriculation.

Remediation Strategies: Students with English, mathematics and reading deficiencies must remediate prior to admission to the major. Transfer students must have completed all math, English and reading requirements or take the College Placement Exam prior to admission to the major.

Transfer Procedures: Individuals who have received a certificate, AOS, AAS, or AS degree in culinary arts from an ACFAC-accredited program will be granted third-year status provided they have satisfied the academic core requirements of the first two years of Penn College’s BS degree in Culinary Arts. All other potential transfers will be evaluated by the Dean of Hospitality and the Office of the Registrar on a case-by-case basis.

Program Goals: Culinary Arts Technology provides students the skills and knowledge required for successful performance in food-service operations. Upon completion of the degree, the student should be able to

- establish and maintain high standards of sanitation; demonstrate working knowledge of HACCP guidelines and applications.
- describe the physiological effects of food on the human body.
- exhibit nutritional awareness and implement food-for-life principles.
- plan menus, purchase, cost and price product for profit.
- demonstrate a solid foundation of techniques for food preparation, presentation, and service including competence in baking, line cooking, classical cuisine, and garde manger; specifically, those competencies required for ACFAC Certified Culinarian certification eligibility.
- use problem solving techniques in maintaining kitchen morale and building a team spirit.
- plan and cater events.
- conform to professional standards in personal appearance.
- demonstrate appropriate work ethic attitudes to include punctuality and professional business communication standards and expectations.
- identify and describe the equipment available in the marketplace and plan its arrangement, operation, and maintenance for efficiency and safety.
- conform to established codes of ethics and demonstrate a responsible attitude to the culinary arts profession.
- demonstrate philosophical and practical application of ethics as a worker and supervisor in a daily work environment.
- demonstrate display techniques as they apply to hot and cold buffet presentations.
- demonstrate creativity and sound thinking in solving management problems and in merchandising techniques.
- demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
- apply spreadsheet and database technologies to everyday accounting practices.
- demonstrate working knowledge of the factors involved in setting up and managing a food service establishment, with an emphasis on kitchen management skills.
- demonstrate a working knowledge of wines; choose wines appropriate for specific foods.
- apply knowledge of physical activities and sports in maintaining good health.
- fabricate and process meats, seafood, and wild game.
- demonstrate appropriate purchasing, preparation, and presentation techniques designed to maximize guest satisfaction and financial profitability.
- demonstrate and apply technical, communication, and management skills required for industry supervision and leadership roles, utilizing information technology systems.
- demonstrate and apply sensitivity to the ethical, cultural, and legal parameters of social and cultural diversity.
- comprehend a second language, common to the hospitality industry.
- demonstrate advanced library skills to include research and utilization of journals, texts, periodicals, and on-line databases.
- demonstrate and apply knowledge of hospitality kitchen systems.
- demonstrate knowledge and application of the food and cultures of Regional American and International Cuisine.
- gain taste distinction through critical analysis of food and sensory perceptions.
- recognize, differentiate among, and critique customer service philosophies and identify the subtleties in the service of food and wine that distinguishes a high quality dining experience, commensurate with target market expectations.

FIRST SEMESTER	Credits
FHD 106 Introduction to the Hospitality Industry	1
FHD 108 Foundations of Food Preparation	4
FHD 116 Nutrition Application	3
FHD 117 Purchasing	2
FHD 118 Sanitation	1
ENL 111 English Composition I	3
CSC 110 Introduction to Information Technology	3
	<u>17</u>

SECOND SEMESTER	Credits
FHD 125 Menu Planning and Cost Control	3
FHD 140 Food Preparation, Application and Production	4
FHD 133 Tableservice	2
FHD 134 Tableservice Practicum	1
FHD 137 Introductory Baking	3
MTH 151 Structures of Mathematics	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>16</u>

SUMMER SESSION	Credits
FHD 269 Culinary Internship	1
	<u>1</u>

THIRD SEMESTER	Credits
FHD 135 Wine and Beverage Management	2
FHD 136 Wine and Beverage Practicum	1
FHD 268 Facilities Planning	3
FHD 273 Breakfast and Brunch Lecture	1
FHD 274 Breakfast and Brunch Practicum	2
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
FIT 204 First Aid, Responding to Emergencies	2
Mathematics Elective	3
	<u>17</u>

FOURTH SEMESTER		Credits
FHD 277	Advanced Garde Manger	1
FHD 305	Regional American Cuisine Lecture	1
FHD 306	Regional American Cuisine Practicum	2
FHD 308	Classical Cuisines of the World Lecture	1
FHD 309	Classical Cuisines of the World Practicum	2
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Humanities Elective	3
	Science Elective with lab	4
		17
SUMMER SESSION		Credits
FHD 304	Culinary Internship II Le Jeune Chef Restaurant	1
		1
FIFTH SEMESTER		Credits
FHD 266	Catering	3
FHD 310	Legal Issues and Applications in Hospitality	3
	Cultural Diversity Elective	3
SPA 111	Beginning Spanish I	3
	Science Elective	3
		15
SIXTH SEMESTER		Credits
FHD 222	Diet Therapy and Application	3
FHD 307	Wines of the World	3
PHL 210	Ethics	3
SPA 121	Beginning Spanish II	3
	Social Science Elective	3
	Open Elective	3
		18
SEVENTH SEMESTER		Credits
FHD 301	Meat Fabrication and Processing	2
FHD 404	Hospitality Systems Management	3
FHD 405	Culinary Internship III, School of Hospitality Lab Assistant	1
HRT 260	The Art of Floral Design	3
	Science/Technology/Society Elective	3
	Open Elective	3
		15
EIGHTH SEMESTER		Credits
FHD 455	Culinary Capstone Internship IV	9
FHD 495	Culinary Arts Capstone Project (WRT)	3
		12

Additional Information: Dress Code: Professionalism is the signature of this degree, and is the expectation for performance and appearance. Uniform and personal appearance standards are strictly enforced. Students are required to be clean-shaven (neat mustache above the lip is allowed), have properly contained hair (top of ear and back of collar for men; tied up and under hat for women, utilizing a net if necessary - no protruding bangs). In labs, no excessive makeup and no jewelry are allowed, including rings, watches and earrings or visible piercings of any style. Students in Tableservice and/or Wine and Beverage Practicum may wear appropriate cosmetics, a watch, a single set of post-style earrings. Hair must be restrained - the utilization of a French Braid or discrete pinning/styling is required.

Dental Hygiene

Health Policy and Administration Concentration (BHM)

Bachelor of Science Degree (B.S.)

The bachelor of science in Dental Hygiene has two entry options. One is designed for students who wish to complete coursework toward the bachelor degree beginning with their freshman year, and the other is designed for individuals who are graduates of accredited dental hygiene programs, licensed and interested in earning the bachelor degree. The curriculum will enable the graduate to assume positions of responsibility in a variety of alternate care settings, and also create positions to meet the demands of future health care needs. The curriculum offers a required core of dental hygiene and general education courses, while offering students an area of concentration in either Special Population Care, or Health Policy and Administration. Students are offered the flexibility of completing the degree on either a full-time or part-time basis.

Students in each concentration area will take six credits of coursework within that concentration, in addition to the dental-hygiene core courses and required baccalaureate courses. Curriculum will be based on individual needs.

Career Opportunities: Advanced position in the field of dental hygiene, legislative aid, lobbyist, insurance review specialist, dental health consultant, office manager, marketing representative, public health hygienist, geriatric oral health specialist and special population provider.

Remediation Strategies: All developmental needs must be cleared before admission to this major unless the Director of Dental Hygiene gives special permission.

Transfer Procedures: All students entering the major will be treated as transfer students, including students who have graduated with Penn College's associate degree major. All students' transcripts will be evaluated by the Director of Dental Hygiene. Students must have earned a grade of "C" or better in courses to be transferred.

A maximum of 44 credits in dental hygiene courses may be transferred from an associate degree level curriculum. Credits will be transferred as a block of credits, rather than as individual course credits. In addition, all general education courses that meet College requirements will be eligible for transfer according to College policy. Thirty-six of the last 60 credits must be Penn College courses. Courses taken more than 10 years ago will be evaluated to determine if they meet current course requirements.

Program Goals: This major serves licensed hygienists who desire the baccalaureate credential. This major should prepare the student to

- develop skills for and commit to the process of lifelong learning.
- develop techniques and skills for problem solving and decision-making.
- demonstrate effective organizational, operational, and management skills.
- appreciate and adapt to diverse/alternative cultures, processes, and ideas.
- recognize and adapt to the changing health care environment.
- identify and interact with various health care delivery, social service, educational, and legislative/political systems.
- analyze and design activities relative to the future in terms of possibilities, responsibilities, and challenges facing health care providers and consumers.
- initiate changes in the health care environment when need and opportunity are indicated.
- develop and demonstrate empathy with students, faculty, clients, and colleagues.
- evaluate professional literature and scientific studies.
- contribute service and knowledge to the community and the profession.
- continue clinical competence based upon current standards of dental hygiene practice and available information.
- discuss, contrast, compare, and appreciate different career paths in dental hygiene and other health career areas.

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- continue investigation and development of competencies in the six roles of the dental hygienist including: administrator/manager, change agent, clinician, consumer advocate, educator/health promoter, and researcher.
- assume one or more roles of the six roles of the dental hygienist.
- present current dental information to community groups/organizations.
- evaluate information and concepts for application in the chosen area of concentration.
- apply information and concepts presented in class to the chosen area of concentration.
- assume an expanded role in pain control and periodontal therapy.
- integrate ethical and moral behavior and serve as a role model for the dental hygiene profession.

FIRST SEMESTER	Credits
DEN 103 Dental Hygiene I	4
DEN 104 Preventive Dentistry	2
DEN 107 Orofacial Anatomy	3
DEN 108 Oral Histology	1
BIO 115 Human Anatomy and Physiology I	4
Math Elective (MTH150 or higher)	3
	<u>17</u>

SECOND SEMESTER	Credits
DEN 123 Dental Radiology	3
DEN 126 Dental Hygiene II	5
DEN 130 Introduction to Periodontics	2
DEN 211 Oral Health and Nutrition	2
BIO 201 Microbiology	4
BIO 125 Human Anatomy and Physiology II	4
	<u>20</u>

SUMMER SESSION	Credits
ENL 111 English Composition I	3
	<u>3</u>

THIRD SEMESTER	Credits
DEN 204 Pharmacology	2
DEN 208 Dental Hygiene III	6
DEN 214 Dental Materials and Specialties	3
DEN 202 General and Oral Pathology	2
DEN 212 Periodontics II	1
PSY 111 General Psychology	3
	<u>17</u>

FOURTH SEMESTER	Credits
DEN 220 Community Dental Health	2
DEN 224 Dental Law and Ethics (WRT)	1
DEN 227 Dental Hygiene Theory and Practice	5
CSC 110 Introduction to Information Technology	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
Social Science Elective	3
	<u>18</u>

FIFTH SEMESTER	Credits
DEN 301 Issues in Professional Dental Hygiene (WRT)	3
Directed Dental Hygiene Elective	2
MGT 115 Principles of Management	3
PSC 231 American Government-National	3
or	
PSC 241 State and Local Government	3
DEN 288 Clinical Practice Update	1
	<u>12</u>

SIXTH SEMESTER	Credits
HTH 325 Health Care Delivery Systems	3
Directed Dental Hygiene Elective	2
MGT 248 Supervision and Human Relations	3
or	
MGT 340 Human Resource Management	3
MTH 160 Elementary Statistics with Computer Applications	4
	<u>12</u>

SEVENTH SEMESTER	Credits
HTH 448 Health Care Public Policy Development	4
Art Elective	3
Humanities Elective	3
Fitness and Lifetime Sports Elective	1
	<u>11</u>

EIGHTH SEMESTER	Credits
DEN 495 Dental Hygiene Capstone	3
Communication Elective	3
Cultural Diversity Elective	3
Science/Technology/Society Elective	3
Proven Professional Credential	
	<u>12</u>

Directed Dental Hygiene Elective: DEN305, DEN312, DEN320, DEN330, DEN445, HTH310, HTH327

Special Admissions Requirements: Freshman students seeking entrance refer to the catalog section on Special Admission Requirements for Health Sciences and for the bachelor degree admission requirements. Curriculum sequence for this option will be individualized. Dental Hygienists seeking entrance must have (1) obtained a passing score on the Dental Hygiene National Board Examination, (2) graduated from an accredited dental hygiene program, (3) hold a dental hygiene license in any one state, (4) be eligible for Pennsylvania licensure.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones.

Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

Licensure to practice dental hygiene is one requirement for graduation.

Accreditation: The associate degree dental hygiene component of the Dental Hygiene major is fully approved by the American Dental Association, Commission on Dental Accreditation.

The bachelor degree component is fully approved under the auspices of the Middle States Association of Colleges and Secondary Schools.

Dental Hygiene Special Population Care Concentration (BHP)

Bachelor of Science Degree (B.S.)

The bachelor of science in Dental Hygiene has two entry options. One is designed for students who wish to complete coursework toward the bachelor degree beginning with their freshman year, and the other is designed for individuals who are graduates of accredited dental hygiene programs, licensed and interested in earning the bachelor degree. The curriculum will enable the graduate to assume positions of responsibility in a variety of alternate care settings, and also create positions to meet the demands of future health care needs. The curriculum offers a required core of dental hygiene and general education courses, while offering students an area of concentration in either Special Population Care, or Health Policy and Administration. Students are offered the flexibility of completing the degree on either a full-time or part-time basis.

Students in each concentration area will take six credits of coursework within that concentration, in addition to the dental-hygiene core courses and required baccalaureate courses. Curriculum will be based on individual needs.

Career Opportunities: Advanced position in the field of dental hygiene, legislative aid, lobbyist, insurance review specialist, dental health consultant, office manager, marketing representative, public health hygienist, geriatric oral health specialist and special population provider.

Remediation Strategies: All developmental needs must be cleared before admission to this major unless the Director of Dental Hygiene gives special permission.

Transfer Procedures: All students entering the major will be treated as transfer students, including students who have graduated with Penn College's associate degree major. All students' transcripts will be evaluated by the Director of Dental Hygiene. Students must have earned a grade of "C" or better in courses to be transferred.

A maximum of 44 credits in dental hygiene courses may be transferred from an associate degree level curriculum. Credits will be transferred as a block of credits, rather than as individual course credits. In addition, all general education courses that meet College requirements will be eligible for transfer according to College policy. Thirty-six of the last 60 credits must be Penn College courses. Courses taken more than 10 years ago will be evaluated to determine if they meet current course requirements.

Program Goals: This major serves licensed hygienists who desire the baccalaureate credential. This major should prepare the student to

- develop skills for and commit to the process of lifelong learning.
- develop techniques and skills for problem solving and decision-making.
- demonstrate effective organizational, operational, and management skills.
- appreciate and adapt to diverse/alternative cultures, processes, and ideas.
- recognize and adapt to the changing health care environment.
- identify and interact with various health care delivery, social service, educational, and legislative/political systems.
- analyze and design activities relative to the future in terms of possibilities, responsibilities, and challenges facing health care providers and consumers.
- initiate changes in the health care environment when need and opportunity are indicated.
- develop and demonstrate empathy with students, faculty, clients, and colleagues.
- evaluate professional literature and scientific studies.
- contribute service and knowledge to the community and the profession.
- continue clinical competence based upon current standards of dental hygiene practice and available information.
- discuss, contrast, compare, and appreciate different career paths in dental hygiene and other health career areas.
- continue investigation and development of competencies in the six roles of the dental hygienist including: administrator/manager, change agent, clinician, consumer advocate, educator/health promoter, and researcher.
- assume one or more roles of the six roles of the dental hygienist.
- present current dental information to community groups/organizations.
- evaluate information and concepts for application in the chosen area of concentration.
- apply information and concepts presented in class to the chosen area of concentration.
- assume an expanded role in pain control and periodontal therapy.
- integrate ethical and moral behavior and serve as a role model for the dental hygiene profession.

FIRST SEMESTER	Credits
DEN 103 Dental Hygiene I	4
DEN 104 Preventive Dentistry	2
DEN 107 Orofacial Anatomy	3
DEN 108 Oral Histology	1
BIO 115 Human Anatomy and Physiology I	4
Math Elective (MTH150 or higher)	3
	<hr/> 17

SECOND SEMESTER	Credits
DEN 123 Dental Radiology	3
DEN 126 Dental Hygiene II	5
DEN 130 Introduction to Periodontics	2
DEN 211 Oral Health and Nutrition	2
BIO 201 Microbiology	4
BIO 125 Human Anatomy and Physiology II	4
	<hr/> 20

SUMMER SESSION	Credits
ENL 111 English Composition I	3
	<hr/> 3

THIRD SEMESTER	Credits
DEN 204 Pharmacology	2
DEN 208 Dental Hygiene III	6
DEN 214 Dental Materials and Specialties	3
DEN 202 General and Oral Pathology	2
DEN 212 Periodontics II	1
PSY 111 General Psychology	3
	<hr/> 17

FOURTH SEMESTER	Credits
DEN 220 Community Dental Health	2
DEN 224 Dental Law and Ethics (WRT)	1
DEN 227 Dental Hygiene Theory and Practice	5
CSC 110 Introduction to Information Technology	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
Social Science Elective	3
	<hr/> 18

FIFTH SEMESTER	Credits
DEN 301 Issues in Professional Dental Hygiene (WRT)	3
Directed Dental Hygiene Elective	2
DEN 330 Special Populations	3
PSC 231 American Government-National	3
or	
PSC 241 State and Local Government	3
	<hr/> 11

SIXTH SEMESTER	Credits
HTH 325 Health Care Delivery Systems	3
Directed Dental Hygiene Elective	2
HTH 327 Health Issues in Geriatrics	3
MTH 160 Elementary Statistics with Computer Applications	4
	<hr/> 12

SEVENTH SEMESTER	Credits
HTH 448 Health Care Public Policy Development	4
Art Elective	3
Humanities Elective	3
Fitness and Lifetime Sports Elective	1
	<hr/> 11

EIGHTH SEMESTER	Credits
DEN 495 Dental Hygiene Capstone	3
Communication Elective	3
Cultural Diversity Elective	3
Science/Technology/Society Elective	3
Proven Professional Credential	
	<hr/> 12

Directed Dental Hygiene Elective: DEN305, DEN312, DEN320, DEN330, DEN445, HTH310, HTH327

Special Admissions Requirements: Freshman students seeking entrance must refer to the catalog section on Special Admission Requirements for Health Sciences and for the bachelor degree admission requirements. Curriculum sequence for this option will be individualized. Dental Hygienists seeking entrance must have (1) obtained a passing score on the Dental Hygiene National Board Examination, (2) graduated from an accredited dental hygiene program, (3) hold a dental hygiene license in any one state, (4) be eligible for Pennsylvania licensure.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

Accreditation: The associate degree dental hygiene component of the Dental Hygiene major is fully approved by the American Dental Association, Commission on Dental Accreditation.

The bachelor degree component is fully approved under the auspices of the Middle States Association of Colleges and Secondary Schools.

Licensure to practice dental hygiene is one requirement for graduation.

Electronics Engineering Technology (BET)

Bachelor of Science Degree (B.S.)

The bachelor of science in Electronics Engineering Technology is designed to prepare women and men for a variety of careers in electronics engineering technology. It exhibits a high level of quantitative and analytical skills with a strong bias for hands-on and laboratory work while retaining some design theory and practice. It is structured to support electronics operations in which engineers pass plans and projects to mid-management personnel who must carry out the planning, organization and delivery of completed products. The major includes courses in analog and digital electronic systems, measurements and tests, electronic prototyping and design, digital signal processing, and final project. Emphasis is on skills needed to lead projects and interface with engineering and development teams. The major addresses the need for engineering technologists in electronics with practical skills who are ready to enter the workplace upon graduation. This four-year degree allows transfer from other majors in electrical/electronics engineering technology. The design is challenging and unique. The technical content is relevant and abreast of current topics in electronics engineering technology. Students prepare for mid-management and supervisory positions, technical positions, sales, service and research.

Career Opportunities: Engineering technician, field service engineer, test engineer, application engineer, senior technician, associate engineer, project engineer and systems software engineer.

Recommended High School Subjects: Strong preparation in mathematics and science with good communication skills. Must be able to enter precalculus in the first semester or take remedial courses before entry. Hands-on skills in electronics are helpful but not necessary.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading. Students not ready for precalculus at entry are strongly cautioned to remediate this deficiency prior to enrollment.

Transfer Procedures: This major will subscribe to the transfer standards established by the College. Individual transfer records will be reviewed by the Office of Admissions. Discrepancies and deviation from standards must be approved by the Office of Admissions and/or the Dean of the School of Industrial and Engineering Technologies.

Program Goals: The purpose of the bachelor of science in Electronics Engineering Technology is to prepare students for a variety of careers in electronics engineering technology. Specifically, this major will prepare the student to

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.

- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standard test equipment while observing standard safety practices.
- construct and troubleshoot electronic circuits from schematic diagrams.
- demonstrate a cooperative and responsible attitude in the workplace.
- apply advanced mathematical skills using calculus, including ordinary differential equations.
- demonstrate fundamental principles of physical phenomena.
- design and construct analog signal processing circuits and perform software verification through simulation.
- design and construct digital electronic circuits employing microprocessors, including reduced instruction set processor and interrupt-driven systems.
- design and construct prototype electronic circuits using schematic capture, circuit board layout software and printed circuit fabrication systems.
- apply automated methods of signal sampling and testing, including real-time data acquisition and computer recording.
- understand and apply methods to quantize and encode an analog signal into a digital signal.
- use the z-transform to specify the parameters of digital signals.
- synthesize digital signal processing systems to perform specified tasks.
- research, plan and prepare a comprehensive capstone project.
- research, plan and prepare professional technical documents similar to comprehensive manuals.

FIRST SEMESTER	Credits
EET 110 DC-AC Basics	3
EET 111 DC-AC Measurements	1
EET 112 Introduction to Solid State Devices	3
EET 113 Solid State Devices Applications	1
EET 114 Introduction to Digital Electronics	3
EET 115 Digital Circuits Applications	1
MTH 190 Pre-Calculus	4
	<u>16</u>

SECOND SEMESTER	Credits
EET 150 DC-AC Circuit Analysis	3
EET 151 Advanced DC-AC Circuit Applications	1
EET 152 Intermediate Solid State Devices and Circuits	3
EET 153 Intermediate Devices Applications	1
EET 154 Introduction to Microprocessors	3
EET 155 Microprocessor Applications I	1
ENL 111 English Composition I	3
MTH 240 Calculus I	4
	<u>19</u>

THIRD SEMESTER	Credits
EET 206 Linear Integrated Circuits	3
EET 207 Linear Circuits Applications	1
EET 202 Microprocessor Interfacing	3
EET 203 Microprocessor Applications II	1
MTH 242 Calculus II	4
PHS 201 General Physics I	4
	<u>16</u>

FOURTH SEMESTER	Credits
EET 204 Network Installation and Maintenance	3
EET 205 Network Maintenance Laboratory	1
ENL 201 Technical and Professional Communication	3
PHS 202 General Physics II	4
CSC 108 Introduction to Computer Programming Concepts	1
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

FIFTH SEMESTER		Credits
MET 311	Computer Solutions of Engineering Problems	3
EET 300	Analog Systems	3
EET 301	Analog Systems Lab	1
EET 304	Digital Systems	3
EET 305	Digital Systems Lab	1
SPC 101	Fundamentals of Speech	3
MTH 260	Ordinary Differential Equations	4
	or	
MTH 346	Ordinary Differential Equations	4
		<u>18</u>

SIXTH SEMESTER		Credits
MET 321	Engineering Ethics and Legal Issues (WRT)(STS)	3
	or	
	Science/Technology/Society Elective	3
EET 320	Measurement and Tests	3
EET 321	Measurement and Tests Lab	1
EET 324	Electronic Prototyping and Design	3
EET 325	Electronic Prototyping and Design Lab	1
	Art Elective	3
	Specified Technology/Math/Science with Lab Elective	4
		<u>18</u>

SEVENTH SEMESTER		Credits
MET 495	Senior Seminar-Lecture (WRT)	1
EET 400	Digital Signal Processing	3
EET 401	Digital Signal Processing Lab	1
ECO 111	Principles of Macroeconomics	3
HIS 115	World Civilization I (CUL)	3
	or	
HIS 125	World Civilization II (CUL)	3
	Open Elective	3
	Technical Communications Elective	3
		<u>17</u>

EIGHTH SEMESTER		Credits
EET 420	Senior Electronic Colloquium	3
MET 315	Engineering Economics	3
MET 496	Senior Seminar - Lab	3
	Fitness and Lifetime Sports Elective	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Open Elective	3
		<u>16</u>

Specified Technology/Math/Science with Lab Elective: CHM100, CHM111, CIM150, EET440, EET441, MSC106, MTH160, PHS203, PHS204, QAL230
 The seventh semester Communications elective must be a 300-level course.

Graphic Communications Management (BGC)

Bachelor of Science Degree (B.S.)

The Graphic Communications Management major supports the human resource development needs of the printing and publishing industry. This major offers students an opportunity to develop skills and knowledge that will prepare them for entry-level management positions specific to the graphic communications field. Students will develop planning and organizational skills as well as decision-making capabilities. Students will also refine technical abilities through the application of tools, materials, and processes used in various graphic media systems. Laboratory experiences will

reinforce communications, math, science, and technical concepts while challenging students' problem-solving abilities.

Career Opportunities: Entry-level positions leading into production management, scheduling, sales and service, cost estimating, quality-control supervision, and department supervision.

Program Goals: For this progressive professional major, the objectives for the Graphic Communications Technology major will apply. In addition, graduates of this major should be able to

- recognize and apply professional behaviors in dealing with peers, supervisors, and clients.
- implement and manage a variety of printing systems including offset lithography, screen printing, and flexography.
- synthesize the theory and concepts derived from related (non-major) courses with the theory and concepts derived from Graphic Communications courses.
- develop the means to remain professionally current.
- evaluate, select, and apply cost-estimating systems.
- synthesize a range of management principles and practices applied specifically to the printing industry.
- evaluate legal, environmental, and ethical issues facing the printing and publishing industry.
- develop the skills needed for critical thinking, analysis, problem solving, and decision-making.
- demonstrate productive work in actual professional settings.
- design and plan production for a complete publication.
- scientifically measure and analyze a broad range of paper and ink properties and analyze paper and ink interactions in a variety of printing processes.

FIRST SEMESTER		Credits
PNP 110	Introduction to Printing and Publishing Professions	2
PNP 114	Electronic Typography	3
PNP 123	Digital Imaging I	3
PNP 124	Offset Lithography	3
CSC 110	Introduction to Information Technology	3
OFT 101	Keyboarding and Its Applications	1
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

SECOND SEMESTER		Credits
PNP 125	Page Layout and Design	3
PNP 210	Digital Imaging II	3
PNP 234	Advanced Offset Lithography	3
ENL 111	English Composition I	3
PHO 101	Black-and-White Photography	3
		<u>15</u>

THIRD SEMESTER		Credits
PNP 212	Screen Printing	3
PNP 232	Finishing and Distribution	3
PNP 272	Digital Media Publishing	3
ENL 201	Technical and Professional Communication	3
MTH 153	Topics in Mathematics	3
		<u>15</u>

FOURTH SEMESTER		Credits
PNP 215	Flexography	3
PNP 220	Output Workflow	3
PNP 252	Production Printing	3
	or	
PNP 252	Production Printing (Co-Op)	3
	Science Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>15</u>

SUMMER SESSION II

PNP 355 Internship	Credits
	3
	<u>3</u>

FIFTH SEMESTER

PNP 350 Ink and Substrates	Credits
PNP 352 Printing Estimating	3
CHM 100 Fundamentals of Chemistry	3
MGT 115 Principles of Management	4
MTH 158 Elementary Statistics I	3
or	
MTH 160 Elementary Statistics with Computer Applications	4
	<u>16</u>

SIXTH SEMESTER

PNP 354 Trends and Issues in Printing and Publishing (WRT)	Credits
ACC 113 Introduction to Financial Accounting	3
ENL 351 Document Design	3
MKT 240 Principles of Marketing	3
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
	<u>15</u>

SEVENTH SEMESTER

PNP 470 Printing Production Management	Credits
HIS 262 Technology and Society (WRT)(STS)	3
MGT 248 Supervision and Human Relations	3
MGT 360 The Legal Environment of Business	3
Open Elective	3
	<u>15</u>

EIGHTH SEMESTER

PNP 495 Capstone	Credits
MGT 330 Managerial Decision Making	3
Social Science Elective	3
Humanities/Social Science	3
Cultural Diversity Elective	
Fitness and Lifetime Sports Elective	1
Open Elective	3
	<u>16</u>

Graphic Design (BGD)

Bachelor of Science Degree (B.S.)

This major emphasizes the development of students' skills for a career in graphic design. Theory and application through hands-on learning provide students with the background to develop a viable portfolio and the erudition to secure and maintain a creative position in the applied arts. Students develop the necessary sensibilities for creative design through a series of required courses and electives in the visual arts, including courses ranging from drawing to illustration and bookmaking to computer graphics and Internet-based design. A proper balance of technically oriented courses, visual arts courses, and liberal arts courses prepares students for diverse and creative positions in the graphic design field. The broad range of learning experiences in this major enriches and expands individual inventiveness and problem-solving skills.

Career Opportunities: Layout artist; graphic designer; creative director for advertising agencies, publications or electronic media. Additional possibilities include employment in corporate and health-service settings directing the preparation of promotional materials and in-house publications.

Recommended High School Subjects: Two units of high school math (one of which should be algebra), four units of English, two units in the natural sciences, and experience with the visual arts.

Remediation Strategies: Students must remediate English and reading deficiencies (RDG 111 level) within the first semester of the major and must remediate math deficiencies by the end of the first year. Students who test at the RDG 001 level will not be accepted until they pass the College's reading placement test.

Transfer Procedures: Graduates of Penn College's Advertising Art major will transfer into the baccalaureate all courses; major courses (defined as those with ART, PNP, PHO designators) must have been completed with a grade of "C" or better. Internal and external transfers with fewer than 61 credits can carry parallel courses into the baccalaureate when grades are "C" or better. Transcripts should be submitted with the application for admission and will be evaluated by Admissions staff and by Integrated Studies staff. Applicants for transfers must also pass a portfolio review. Those accepted for transfer will begin the baccalaureate at the course/skill level consistent with their academic work. Transfers from other art programs who have earned 60 credits will be eligible for junior status upon (a) transcript evaluation courses at "C" or better and a 2.0 in major courses, and (b) successful review of this portfolio.

Program Goals: Upon successfully completing this major, students should be able to

- develop a professional-looking portfolio representing various media.
- produce viable projects based on intended concepts.
- promote awareness of the creative process and its application to design.
- identify models of color and design concepts based on recognized theories.
- increase proficiency of technical and artistic skills.
- recognize styles, materials, and themes in art and design.
- identify historic style characteristics in graphic design.
- demonstrate skills in rhetoric and criticism.
- recognize connections between words and images.
- analyze designs created by using traditional and computer-generated methods.

FIRST SEMESTER

ART 102 Two-Dimensional Design	Credits
ART 180 Drawing	3
PHO 101 Black-and-White Photography	3
ENL 111 English Composition I	3
CSC 110 Introduction to Information Technology	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SECOND SEMESTER

ART 109 Design and Color	Credits
ART 122 Painting	3
ART 125 Art History: Ancient through 15th Century	3
ART 202 Introduction to Three-Dimensional Design	3
ENL 121 English Composition II	3
	<u>15</u>

THIRD SEMESTER

ART 145 History of Graphic Design	Credits
ART 225 Type Design I	3
ART 260 Introduction to Computer Graphics	3
PNP 114 Electronic Typography	3
PNP 123 Digital Imaging I	3
MTH 151 Structures of Mathematics	3
or	
MTH 153 Topics in Mathematics	3
	<u>18</u>

FOURTH SEMESTER

ART 210 Introduction to Graphic Design	Credits
ART 235 Type Design II	3
PHO 250 Introduction to Digital Photography	3
PNP 210 Digital Imaging II	3
Science - Science, Technology and Society Elective	3
	<u>15</u>

FIFTH SEMESTER

ART 340 Illustration	Credits
ART 360 Graphic Design for the Web	3
MCM 121 Principles of Advertising	3
MTH 172 Introduction to Geometry	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SIXTH SEMESTER		Credits
ART 310	Graphic Design: Point of Purchase (POP)	3
ART 330	Modern Art and the Contemporary Image (WRT)	3
HIS 115	World Civilization I (CUL)	3
	or	
HIS 125	World Civilization II (CUL)	3
	Social Science Elective	3
	Open Elective	3
		<hr/> 15

SEVENTH SEMESTER		Credits
ART 410	Graphic Design, Corporate Identity (CID)	3
ART 460	Advanced Computer Graphics Specified Graphic Design Elective	3
PHL 111	Introduction to Philosophy Analysis	3
	Science Elective with lab	4
		<hr/> 16

EIGHTH SEMESTER		Credits
ART 420	Portfolio Design	3
ART 496	Senior Project Specified Graphic Design Elective	3
	Humanities - Science, Technology and Society Elective	3
	Open Elective	3
		<hr/> 15

Specified Graphic Design Elective: ART135, ART140, ART215, ART220, ART223, ART240, PHO210, PHO230, PHO300

Humanities - Science, Technology and Society Elective: HIS262, HIS315, HUM301, PHL240

Note: Co-op or internship may replace one specified BGD elective.

HVAC Technology (BHV)

Bachelor of Science Degree (B.S.)

The HVAC baccalaureate addresses industry need for trained technicians with basic business management and supervision skills. Students in this major receive training in installation and repair of residential and commercial heating, cooling, and refrigeration systems. In addition, students study methods of HVAC system design, advanced controls, energy management and project management. Students also learn skills vital to HVAC business operations in the areas of estimating, scheduling, material and equipment management, contractor/subcontractor relations, quality control, and supervision.

Career Opportunities: Graduates will be prepared to seek entry into the HVAC industry at two distinct points. Graduates may seek employment as residential or commercial field technicians, as repairpersons or installers of HVAC equipment and systems. Graduates will also be qualified to apply for positions with larger companies as field or shop supervisors, design assistants, project managers or superintendents, or other mid-level management jobs. Some graduates will begin their careers as self-employed businesspersons in sales, service, installation or HVAC contracting.

Recommended High School Subjects: Two years of algebra, one year of physics or chemistry, four years of oral and written communications courses. Students should be encouraged to take occupational courses in HVAC, basic electrical or plumbing when scheduling allows.

Remediation Strategies: Students seeking admission to BHV must remediate all developmental deficiencies or be admitted under conditional status. The order of remediation should be: reading, math, English.

Transfer Procedures: Students transferring from associate degree majors at Penn College or other colleges and universities will be evaluated individually by the Office of Admissions, the Construction and Design Technologies department head, the dean or faculty member, as appropriate. No course for which the student has received less than a "C" grade will be accepted for transfer into major.

Courses taken more than 10 years ago must be evaluated for equivalency to

current course requirements. Specific transfer guides for related associate degree majors at Penn College are available.

Program Goals: The goals for the bachelor of science degree in HVAC Technologies are designed to prepare students in the arena of HVAC Design. Upon completion of the major, students should be equipped with the knowledge to design an array of HVAC mechanical and refrigeration systems, describe system functions, and communicate the operations and specifications of design systems. Graduates of this major should have the following skills and knowledge:

- demonstrate cooperative and responsible attitude toward work.
- demonstrate ability to supervise subordinates to achieve productivity goals.
- interpret federal, state, and local HVAC building codes, regulations, and environmental laws.
- utilize computer to perform cost estimates, work schedules, and technical calculations necessary to size and design HVAC systems.
- demonstrate an understanding of the HVAC contracting process.
- read and interpret HVAC blueprints and specifications.
- perform technical operations associated with the installation, maintenance, and repair of various cooling and refrigeration equipment and systems.
- identify and demonstrate ability to correctly use tools of the HVAC trade.
- apply knowledge of the dynamics of airflow, ventilation, and energy use in the installation, repair, and design of HVAC systems.
- install, service, and repair various heating systems and equipment to include hydronic, forced air, radiant, and heat pump systems.
- demonstrate the ability to use standardized HVAC equipment and systems.
- apply customer relations and sales techniques in providing service to the public.
- apply business techniques and practices as they apply to the operation of an HVAC service or contracting business.
- demonstrate an understanding of the HVAC industry market.

FIRST SEMESTER		Credits
ACR 111	Introduction to Refrigeration	5
ELT 250	HVAC/R Electricity	5
PLH 111	Plumbing Skills-Residential	5
MTH 180	College Algebra and Trigonometry I	3
		<hr/> 18

SECOND SEMESTER		Credits
ACR 120	Blueprints and Specifications Commercial Refrigeration Elective	2
	or	
	Commercial Plumbing Elective	10
ENL 111	English Composition I	3
MTH 182	College Algebra and Trigonometry II	3
		<hr/> 18

THIRD SEMESTER		Credits
ACR 237	Basic A/C Systems and Design	5
ELT 252	HVAC Controls I-Residential	4
PLH 239	Basic Heating Systems and Design	5
PHS 103	Physics Survey	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 18

FOURTH SEMESTER		Credits
ACR 243	HVAC Systems II	4
ELT 253	HVAC Controls II-Commercial	4
PLH 244	Hydronic Heating Systems	4
ENL 201	Technical and Professional Communication	3
SOC 111	Introduction to Sociology	3
		<hr/> 18

FIFTH SEMESTER		Credits
BHV 310	Cooling System Design	3
BHV 315	Heating Design	3
CSC 110	Introduction to Information Technology	3
SPC 201	Interpersonal Communication	3
PHS 114	Physics with Technological Applications	4
	or	
	Science Elective with lab	4
		<hr/> 16

SIXTH SEMESTER		Credits
BHV 320	Advanced Cooling System Design	3
BHV 325	Advanced Heating System Design	3
	Fitness and Lifetime Sports Elective	1
HIS 262	Technology and Society (WRT)(STS)	3
MGT 115	Principles of Management	3
PHL 210	Ethics	3
		<u>16</u>

SEVENTH SEMESTER		Credits
BHV 400	Commercial Refrigeration Systems Design	3
BHV 370	Advanced HVAC-R Control Systems (WRT)	3
SOC 311	Sociology of Work and Culture (CUL)	3
	Art Elective	3
	Open Elective	3
		<u>15</u>

EIGHTH SEMESTER		Credits
BHV 430	Environmental Impacts of the HVAC Industry	2
BHV 435	Computer Applications for HVAC/R	3
BHV 495	HVAC Senior Project	3
MGT 330	Managerial Decision Making	3
	or	
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Open Elective	3
		<u>17</u>

Commercial Refrigeration Elective: ACR121, ACR123
 Commercial Plumbing Elective: BCT254, PLH121, PLH123



Legal Assistant/ Paralegal Studies (BLA) Bachelor of Science Degree (B.S.)

The bachelor of science in Legal Assistant/Paralegal Studies is a two-plus-two major that will allow students with an associate degree in paralegal/legal assistant/legal studies to continue study toward the baccalaureate degree. Inasmuch as the paralegal field continues to be listed as one of the fastest growing professions into the 21st century and inasmuch as the American Bar Association has recognized the benefit of four-year paralegal programs, this major will provide students with marketable skills for employment in the paralegal or other law-related professions. The degree will open the door for opportunities in law office management, court administration, arbitration/mediation, financial institutions, the medical field, the insurance and real estate industry, etc. Practicing paralegals will have the opportunity to pursue continuing legal education. In addition, the degree will allow graduates to seek admission to law school.

As with any bachelor degree, students will be required to meet the College core requirements, as well as all major requirements. Advanced legal courses will be offered in the areas of ethics, constitutional law, international law, law office administration, banking, insurance, counseling and negotiation, advanced legal writing and analysis, consumer and employee benefits, etc. Students will be expected to meet the following core of legal assistant courses

in the two-year degree in order to be considered for junior level status: Introduction to Paralegal Studies; Legal Research and Writing; Civil Practice and Procedures; Real Property Law. Students who have not completed these legal assistant associate degree core courses will be required to do so prior to scheduling advanced legal assistant courses.

Paralegals operate under the supervision of a licensed attorney and are prohibited from practicing law.

Career Opportunities: This major will train students for employment in the paralegal field. Paralegals currently are employed in a variety of areas, including law firms, government and court offices, real estate agencies, financial institutions, health care agencies, insurance companies, corporations and other business concerns. The curriculum also is designed to provide a continuing legal education service to practicing paralegals, and to allow interested graduates to seek admission to law school. In a September 15, 1993, conversation, the Assistant Dean of the Dickinson School of Law confirmed that law school admissions policy generally does not focus on undergraduate major. Candidates are regularly accepted from a variety of areas, including business, English, political science, psychology, education, etc.

Remediation Strategies: All students entering the major will be tested for English, mathematics and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Transfer Procedures: All students entering the Legal Assistant/Paralegal Studies bachelor degree will be considered for junior level status as they will have earned the first two years in their respective associate degree major from an accredited institution. This will apply to Pennsylvania College of Technology associate degree graduates as well. Due to the two-plus-two nature of this major, recommended high school subjects are not applicable. It is expected that students will carry a minimum of 60 associate degree credits from an accredited institution into the bachelor's degree. Students who have not met the bachelor degree requirements for the first four semesters will be required to complete these courses. Students who have not met the legal assistant associate degree core requirement will be required to complete these courses before scheduling advanced legal assistant courses. (See note concerning curriculum outline.) Credits above the 60-credit minimum that were not required for the associate degree and which meet the requirements for the third and fourth years of the major will be evaluated for transfer on a course-by-course basis. NOTE: Pre-program area relates to the College bachelor degree requirements. In addition, students will be expected to have completed the following legal assistant associate degree core requirements: Introduction to Paralegal Studies, Legal Research and Writing, Civil Practice and Procedures, and Real Property Law.

Program Goals: The purpose of the Legal Assistant Studies major is to provide graduates of a two-year Legal Assistant major the opportunity to continue their studies and gain a deeper understanding of the paralegal profession, prepare for graduate studies, or advance in a law related profession. Specifically graduates of this major should be able to

- apply information literacy to personal, professional and other related areas.
- develop the skills and awareness necessary for life long learning.
- develop the skills needed for critical thinking, analysis, problem solving, and decision-making.
- develop the human relations skills needed to succeed in the legal environment.
- be aware of and adapt to diverse/alternative cultures, processes, and ideas.
- demonstrate effective written and oral communication skills.
- demonstrate practical skills necessary to assist with the administration of a law office, including the handling of accounting and billing procedures.
- identify and appropriately evaluate legal ethical issues, including conflicts of interest, client confidentiality, and unauthorized practice of law.
- contribute to the professional growth of legal assistants.
- develop the ability to plan, organize, direct, and control within a legal environment.
- increase individual knowledge and understanding of self and others in the work environment.
- utilize legal sources to conduct effective research.

FIRST SEMESTER		Credits
	Previous Legal Assistant/Paralegal Courses	3
LAS 100	Introduction to Paralegal Studies	3
ENL 111	English Composition I	3
MTH 151	Structures of Mathematics	3
		<u>12</u>
SECOND SEMESTER		Credits
LAS 150	Legal Research and Writing	3
LAS 160	Civil Practice and Procedures	3
LAS 170	Real Property Law	3
SPC 101	Fundamentals of Speech	3
CSC 110	Introduction to Information Technology	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>
THIRD SEMESTER		Credits
	Previous Legal Assistant/Paralegal Courses	9
	Humanities Elective	3
	or	
	Social Science Elective	3
	Science Elective	3
		<u>15</u>
FOURTH SEMESTER		Credits
	Previous Legal Assistant/Paralegal Courses	10
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Foreign Language Elective	3
	Open Elective	4
		<u>17</u>
FIFTH SEMESTER		Credits
LAS 300	Interviewing, Counseling, Negotiation and Alternative Dispute Resolution	3
ENL 121	English Composition II	3
MTH 153	Topics in Mathematics	3
	Science Elective with lab	4
	Directed Business Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>17</u>
SIXTH SEMESTER		Credits
LAS 360	Advanced Legal Writing and Analysis (WRT)	3
LAS 371	Legal Ethics	3
ACC 331	Income Taxation of Individuals	3
	or	
ACC 430	Corporation, Partnership, Estate and Trust Taxation	3
	Art Elective	3
	Social Science Elective	3
	Cultural Diversity Elective	3
		<u>18</u>
SEVENTH SEMESTER		Credits
LAS 400	Constitutional Law	3
	or	
LAS 410	Law Office Administration and Management	3
	Directed Legal Assistant Elective	3
	Directed Business Elective	3
	Humanities Elective	3
	Science/Technology/Society Elective	3
	Open Elective	3
		<u>18</u>
EIGHTH SEMESTER		Credits
LAS 495	Senior Project: Legal Assistant Studies	3
	Directed Legal Assistant Elective	3
	Directed Business Elective	3
	Directed Legal Assistant Elective	3
	Open Elective	3
		<u>15</u>

Directed Legal Assistant Elective: LAS260, LAS270, LAS290, LAS320, LAS400, LAS410, LAS430, LAS460, MGT344

Directed Business Electives are any ACC, CSC or FIN course along with MGT 110, MGT 115, MGT 216, MGT 249, MGT 340, MGT 344, MKT 240, OFT 210 and OFT 265.

Approved by American Bar Association (ABA)

Manufacturing Engineering Technology (BAF)

Bachelor of Science Degree (B.S.)

Manufacturing Engineering Technology is structured to support manufacturing operations where engineers pass plans and projects to mid-management personnel, who must carry out the planning, organization and delivery of manufacturing projects. The curriculum has a strong emphasis in manufacturing, automation, and metals-oriented industries. Students have the opportunity to prepare for mid-management and supervisory positions, as well as technical positions, sales, service or research.

Career Opportunities: Manufacturing engineering technologist, manufacturing management, manufacturing process engineering technologist, line supervisor, research and development technologist, industrial/technical representative, industrial/technical sales, production technologist.

Recommended High School Subjects: A strong background in high school math and sciences is desired. An awareness of computer application and software also is desired. All developmental requirements should be satisfied prior to admission into the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Transfer Procedures: Students transferring from associate degree majors at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance into the major. A predetermined profile has been established for students articulating from approved majors.

Program Goals: The purpose of the bachelor of science in Manufacturing Engineering Technology is to prepare the student for a variety of manufacturing positions found in the manufacturing environment. Specifically, this major should prepare the student to

- solve manufacturing problems using computer hardware and software.
- solve manufacturing problems using scientific principles and methodology.
- demonstrate knowledge of the impact and linkage of technology as a cultural universal.
- analyze and solve manufacturing problems of an economic, technical, organization, and design variety.
- analyze and recommend solutions of manufacturing problems of the moral, ethical, and legal nature.
- analyze issues of quality assurance and recommend systems, procedures, and techniques to meet quality standards.
- program computers, CNC machines and other automated manufacturing equipment.
- contribute to an industrial design team in the design, redesign, and upgrade of products to achieve improved manufacturability, aesthetics, and function.
- demonstrate discipline to specific skills and knowledge of tools, equipment, systems, materials, processes, and procedures to solve manufacturing and production problems.
- plan, organize, and carry out engineering technology projects under supervision.
- demonstrate skill and knowledge in the selection and use of appropriate materials.
- demonstrate leadership skills, ethical behavior, and knowledge of management dynamics.
- demonstrate knowledge of the organization and functions in a manufacturing concern.

70 — BACHELOR DEGREE MAJORS

	Credits
FIRST SEMESTER	
MTT 113 Basic Metalworking I	3
MTT 114 Basic Metalworking II	2
MTT 116 Lathe Applications I	3
MTT 117 Lathe Applications II	2
MTH 180 College Algebra and Trigonometry I	3
SAF 110 Occupational Health and Safety	2
CSC 110 Introduction to Information Technology	3
	18
SECOND SEMESTER	
CIM 101 Basic Machine Tool Programming	3
MTT 123 Machining Processes	4
MTT 126 Metrology/Quality Control	5
MTH 182 College Algebra and Trigonometry II	3
ENL 111 English Composition I	3
	18
THIRD SEMESTER	
CIM 123 CNC Programming and Machining	4
MTT 210 Tool Technology	5
MTH 230 Applied Calculus	3
or	
MTH 240 Calculus I	4
ENL 201 Technical and Professional Communication	3
ECO 111 Principles of Macroeconomics	3
	18
FOURTH SEMESTER	
CIM 205 Electrical Discharge Machining	3
CIM 220 CAD/CAM	3
PHS 114 Physics with Technological Applications	4
MTH 160 Elementary Statistics with Computer Applications	4
or	
MTH 242 Calculus II	4
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
	18
FIFTH SEMESTER	
MET 311 Computer Solutions of Engineering Problems	3
MET 318 Manufacturing Process and Organization	3
MSC 106 Introduction to Metallurgy	4
QAL 101 Introduction to Quality Assurance	3
Humanities Elective	3
	16
SIXTH SEMESTER	
CIM 222 Robotic Applications	3
MET 315 Engineering Economics	3
MET 321 Engineering Ethics and Legal Issues (WRT)(STS)	3
Fitness and Lifetime Sports Elective	1
Art Elective	3
Open Elective	3
	16
SEVENTH SEMESTER	
CIM 227 Material Handling/Fluid Power	3
MET 425 Advanced Manufacturing Systems	3
MET 495 Senior Seminar-Lecture (WRT)	1
EET 302 Industrial Electronics and Applications	3
Cultural Diversity Elective	3
Humanities/Social Science/Art/Foreign Language	
Science Elective with lab	4
	17

	Credits
EIGHTH SEMESTER	
CIM 221 CNC Applications	3
CIM 428 Interdisciplinary CIM	3
MET 496 Senior Seminar - Lab	3
Open Elective	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	15

Additional Information: National Institute of Metalworking Skills (NIMS) Certification

Nursing (BSN)

Bachelor of Science Degree (B.S.)

This unique BSN completion major offered by the Nursing Department within the School of Health Sciences is specifically designed for the registered nurse who wishes to earn a degree on a full or part time basis. The baccalaureate curriculum builds on the knowledge and skills possessed by R.N.s who have graduated from diploma and associate degree nursing programs. The standard curriculum plan, directly applicable to Penn College A.D. Nursing graduates, is designed to be completed in four semesters. Other curriculum plan options are available, depending on the number of transfer credits accorded for previous college work.

The bachelor of science in nursing degree is designed to prepare licensed registered nurses to contribute to the quality provision of nursing care in a rapidly changing health care environment. This major will enable nurses to build upon their knowledge base and assume positions of responsibility in a variety of health care settings for promoting health and facilitating adaptation to increasingly complex health care problems/needs.

The curriculum offers a required core of nursing and general education courses with elective course options based on student educational and career goals.

Career Opportunities: The BSN can lead to advanced clinical and administrative positions in the traditional field of nursing, but also offers opportunities which include, but are not limited to: home health nursing, public health nursing, nursing education and health care case management.

Remediation Strategies: All transfer students entering the BSN completion major without prior college level English and mathematical classes will be tested for deficiencies, and will be required to remediate the deficiencies prior to acceptance. Any reading deficiency also must be remediated prior to acceptance.

Transfer Procedures: All students entering the BSN major will be treated as transfer students, including students who graduated from Penn College's Associate Degree Nursing major. All student transcripts will be evaluated by Admissions. All general education/liberal arts courses that meet core College requirements for baccalaureate degrees will be eligible for transfer according to College policy. The transfer of nursing credits is evaluated on an individual basis according to the program's policy. Students must have a minimum grade of "C" (2.00) in courses transferred into the BSN major.

All Penn College associate degree in nursing requirements will apply toward bachelor of science degree in nursing requirements.

A block of 33 nursing credits will be transferred in from NLNAC-accredited A.D. and diploma nursing curricula.

Program Goals: The Bachelor of Science in Nursing graduate of the Pennsylvania College of Technology will have the ability to:

- engage as a generalist synthesizing knowledge from nursing, the liberal arts and sciences to make decisions for caring nursing practice that is evidence-based, theory-guided, holistic and culturally competent.

- facilitate the teaching-learning process to improve health and reduce risks.
- advocate for the health care needs of clients of all ages, families and communities in a variety of health care settings.
- analyze research findings and identify research problems related to the nursing care of clients within the health care delivery system.
- fulfill responsibilities of professional nursing through the integration of leadership and management skills in developing collaborative relationships with other health care providers to improve the delivery of health care.
- establish accountability for ethical, political and legal concerns and responsibility for one's own practice, professional growth, life-long learning and the development of the profession in an atmosphere of mutual respect and understanding.

PRE. PROGRAM	Credits
NUR 302 Credentials Proven By License	<u>33</u>
	33

FIRST SEMESTER	Credits
BIO 115 Human Anatomy and Physiology I	4
ENL 111 English Composition I	3
PSY 111 General Psychology	3
Math Elective (124 or Higher)	3
Liberal Arts/Core Elective	<u>3</u>
	16

SECOND SEMESTER	Credits
Science Elective with lab	4
CSC 110 Introduction to Information Technology	3
ENL 121 English Composition II	3
or	
ENL 201 Technical and Professional Communication	3
PSY 203 Developmental Psychology	3
SOC 111 Introduction to Sociology	<u>3</u>
	16

THIRD SEMESTER	Credits
NUR 310 Philosophy of Professional Nursing	3
NUR 383 Advanced Physical Assessment	3
NUR 374 Critical Thinking for Nursing	2
HTH 310 Health Issues and Transitions (WRT)(CUL)(STS)	3
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
Fitness and Lifetime Sports Elective	<u>1</u>
	15

FOURTH SEMESTER	Credits
NUR 326 Community Health Nursing (WRT)	4
NUR 352 Teaching and Learning Concepts and Strategies	3
Art Elective	3
PHL 210 Ethics	3
Open Elective	<u>3</u>
	16

FIFTH SEMESTER	Credits
NUR 412 Explorations in Clinical Practice	4
Nursing Special Topics Elective	3
Nursing Seminar Elective	1
MTH 160 Elementary Statistics with Computer Applications	4
Fitness and Lifetime Sports Elective	<u>1</u>
	13

SIXTH SEMESTER	Credits
NUR 461 Leadership and Management in Nursing	3
NUR 495 Research and Theory in Clinical Practice (WRT)	4
Nursing Special Topics Elective	3
Nursing Seminar Elective	1
Open Elective	<u>3</u>
	14

Nursing Special Topics Elective: HTH373, HTH380, HTH381, HTH464, NUR351, NUR373, NUR380, NUR381, NUR463, NUR491

Nursing Seminar Elective: HTH305, HTH307, HTH360, HTH361, HTH460, NUR305, NUR307, NUR360, NUR361, NUR370, NUR391, NUR460

Special Admissions Requirements: Current valid RN license in any state with eligibility for licensure in Pennsylvania

Graduate of an NLNAC -accredited program within the last ten (10) years and meeting one (1) of the three (3) following criteria: - Graduate of an NLNAC-accredited program within the last three (3) years; - Practiced a minimum of 1,000 hours in nursing in the last three (3) years; - Successfully completed a State Board of Nursing-approved refresher course within the last three (3) years.

Other applicants will be reviewed on an individual basis.

Junior-level status may be achieved by meeting the college's requirements of completing a minimum of 60 college credits. In addition, a 2.0 GPA in nursing is required.

Taking upper-level NUR courses requires acceptance into the BSN major or permission of the Director of Nursing.

Registered nurses who are not enrolled in the BSN major may be permitted to take selected NUR electives with permission of the Director.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

Note: A minimum of 36 credits must be taken at Penn College.

General Information: All communication with NLNAC should be addressed to: The National League for Nursing Accrediting Commission, 61 Broadway, New York, NY 10006, 1-800-669-9656

Physician Assistant (BPA)

Bachelor of Science Degree (B.S.)

Physician Assistants (PAs) are health professionals licensed to practice medicine with physician supervision. PAs exercise autonomy in medical decision-making and provide a broad range of diagnostic and therapeutic services. The clinical role of physician assistants includes primary and specialty care in medical and surgical settings in rural and urban areas. Students will learn to work successfully in the health care environment, provide treatment for patients, problem solve, and value their professionalism.

The bachelor of science in Physician Assistant at Pennsylvania College of Technology will provide opportunities for both freshmen and transfer students. Freshmen can apply and be accepted directly into the physician assistant program on a conditional basis.

Transfer students can be admitted after 30 credits of pre-requisite coursework. Entry into the professional component is competitive and selection will be based upon a selection process involving GPA's, a point system and a personal interview.

This bachelor's degree prepares graduates to successfully complete the national certification examination and enter the health care workforce as intermediate level health care providers. Graduates of the BS in Physician Assistant also will be prepared to continue their formal education if they so choose.

The main emphasis of the 24-month professional level program is primary care. Rigorous and intense didactic coursework will take place during the first 12 months of the professional level program and will be conducted on the main campus. The clinical internships, involving 50 weeks of practice of at least 40-hour weeks, are designed to provide a variety of experiences for the PA student, and will take place during the second 12 months of the professional level program. It is highly likely that the student will have to relocate during clinical internships.

Graduates will be eligible to sit for the Physician Assistant National Certification Exam (PANCE). For further information, contact National Commission on Certification of Physician Assistants (NCCPA), 157 Technology Parkway, Suite 800, Norcross, GA 30092-2913

Career Opportunities: The role of the physician assistant demands intelligence, sound judgment, intellectual honesty, appropriate interpersonal skills and the capacity to react to emergencies in a calm and reasoned manner. An attitude of respect for others, adherence to the concepts of privilege and confidentiality in communicating with patients, and a commitment to the patient's welfare are essential attributes. Individuals who can meet those requirements and become physician assistants will be able to provide the following services: Evaluation - elicit a detailed and accurate history, perform an appropriate physical examination, order, perform, and interpret appropriate diagnostic studies, delineate problems, develop management plans and record and present data. Monitoring - implement patient management plans, record progress notes and participate in the provision of the community of care. Therapeutics - perform therapeutic procedures and manage or assist in the management of medical and surgical conditions, which may include assisting surgeons in the conduct of operations and taking initiative in performing evaluation and therapeutic procedures in response to life-threatening situations. Patient Education - counsel patients regarding issues of health care management to include compliance with prescribed therapeutic regimens, normal growth and development, family planning, and emotional problems of daily living. Referral - facilitate the referral of patients to other health care providers or agencies as appropriate.

Physician Assistants are employed in hospitals, group/solo practices, health maintenance organizations and rural/inner city clinics. The federal, state and local governments, including the Armed Services, provide a number of employment options. Career opportunities in academia also exist.

Within the various disciplines of medicine, PAs practice but are not limited to the following areas: family practice, internal medicine, surgery, emergency medicine, pediatrics, occupational medicine, obstetrics and gynecology, geriatrics, rehabilitation medicine and psychiatry.

Salaries vary in geographic areas.

The demand for physician assistants is expected to increase.

Recommended High School Subjects: Students who want to become a physician assistant and are currently in high school should have above average high school academic record. Academic coursework must include three years of college prep mathematics, laboratory sciences including chemistry and biology. Other highly recommended courses include those in oral and written communication and physics.

Remediation Strategies: All remediation must be done in the admission stage. No student with deficiencies will be considered for acceptance or accepted into the junior or senior level of the program.

Transfer Procedures: College level courses less than 10 years old will be evaluated on course equivalency by the Office of Admissions. Courses more than 10 years old will be evaluated by the offering School to determine relevancy and content. The transfer guidelines established by the College will be followed.

Program Goals: Pennsylvania College of Technology Physician Assistant major will graduate professionals who possess the knowledge and are proficient in the skills necessary to excel in Physician Assistant practice. The major is dedicated to insuring that its students develop interpersonal skills that allow them to interact with patients and health care team members effectively, ethically and with empathy. We strive to respond to the identified needs for primary care practitioners in our community, state and nation and, through our graduates, improve access to quality healthcare.

This major provides didactic and clinical experiences to prepare primary care professionals. This major should prepare the Physician Assistant graduate to

- integrate ethical and moral behavior and serve as a role model for the physician assistant profession.
- demonstrate intelligence, sound judgment and intellectual honesty.
- demonstrate effective written and verbal communication skills.
- develop and maintain clinical competence sufficient to address the needs of ambulatory and hospitalized patients.
- develop, demonstrate, and appreciate techniques and skills for problem solving and decision-making.
- recognize and adapt to the changing health care environment.
- develop skills for and commit to the process of lifelong learning.
- evaluate professional/medical literature to maintain an operational knowledge of new medical evidence.
- appreciate and adapt to diverse/alternative cultures, processes, and ideas.
- develop, demonstrate, and appreciate empathy with students, faculty, colleagues, and patients.
- contribute service and knowledge to the community and the profession.
- demonstrate effective organizational, operational and management skills in physician assistant practice.
- identify and appreciate the nature of the physician assistant relationship with physicians and other health care providers.
- demonstrate an understanding and devotion to primary care medicine.
- identify and distinguish the importance of health promotion and disease prevention.

FIRST SEMESTER		Credits
BIO 113	General Biology I	4
	or	
	Biology Elective	3
ENL 111	English Composition I	3
SPC 101	Fundamentals of Speech	3
CSC 110	Introduction to Information Technology	3
	Math Elective (158 or Higher)	3
		<u>16</u>
SECOND SEMESTER		Credits
BIO 115	Human Anatomy and Physiology I	4
PHL 210	Ethics	3
	Psychology Elective (111 or higher)	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Math Elective (158 or Higher)	3
		<u>16</u>
THIRD SEMESTER		Credits
BIO 125	Human Anatomy and Physiology II	4
CHM 100	Fundamentals of Chemistry	4
	or	
	Chemistry Elective (111 or higher)	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>14</u>
FOURTH SEMESTER		Credits
BIO 201	Microbiology	4
CHM 121	General Chemistry II	4
	or	
	Chemistry Elective (121 or higher)	4
	Fitness and Lifetime Sports Elective	2
	Art Elective	3
		<u>13</u>

FIFTH SEMESTER		Credits
PHA 310	History Taking and Interviewing Techniques	3
PHA 315	Pathophysiology	3
PHA 322	Pharmacology I	2
PHA 327	Clinical Procedures I (STS)	2
PHA 328	Physical Assessment I	2
PHA 346	Principles of Clinical Medicine I	3
HTH 330	Medical Ethics	2
HTH 333	Human Cadaver Anatomy	4
		<hr/> 21

SIXTH SEMESTER		Credits
PHA 305	Clinical Laboratory Medicine	3
PHA 337	Clinical Procedures II	4
PHA 338	Physical Assessment II	3
PHA 342	Pharmacology II	2
PHA 350	Topics in Pediatrics	1
PHA 354	Physician Assistant Issues in Practice	2
PHA 366	Principles of Clinical Medicine II	4
		<hr/> 19

SUMMER SESSION		Credits
PHA 348	Psychopathology	1
PHA 352	Community and Public Health (WRT)(CUL)	2
PHA 357	Clinical Procedures III (STS)	2
PHA 362	Pharmacology III	1
PHA 367	Principles of Clinical Medicine III	4
PHA 368	Physical Assessment III	3
PHA 370	Clinical Decision Making	3
		<hr/> 16

SEVENTH SEMESTER		Credits
PHA 411	Family Practice Internship	4
PHA 412	Internal Medicine Internship	4
PHA 413	OB/GYN Internship	3
PHA 410	Internship Seminar I	1
		<hr/> 12

EIGHTH SEMESTER		Credits
PHA 414	Pediatrics Internship	4
PHA 415	Emergency Medicine Internship	4
PHA 416	Psychiatry Internship	3
PHA 420	Internship Seminar II	1
		<hr/> 12

SUMMER SESSION		Credits
PHA 417	Surgery Internship	4
PHA 418	Elective Internship	3
PHA 490	Clinical Preceptorship	4
PHA 495	Senior Capstone (Physician Assistant) (WRT)(CUL)	1
		<hr/> 12

Special Admissions Requirements: Students must meet special admission requirements to be accepted into the bachelor degree program of study for physician assistant. Academic performance, prior health care exposure and understanding of the PA profession will be evaluated. Please refer to a listing of special Health Sciences Requirements in the Admissions section of this catalog.

Notice of Conviction: Child-abuse clearance and criminal background checks are required. Students desiring entrance into the Physician Assistant major should be aware that clinical institutions could bar them from their sites if a criminal record exists or if a positive drug test is noted. Inability to gain clinical education experience results in inability to meet program objectives and outcomes. The presence of a criminal record can result in agencies refusing to issue credentials necessary for employment.

Additional Information: In addition to tuition, fees, books and other standard student costs, physician assistant students will be responsible for all costs related to travel to clinical sites, living expenses incurred while in clinical site rotations, a complete medical and dental examination, student malpractice insurance, health insurance, lab coats, instruments, laptop computer, criminal record clearance, and assessment exam. The estimate of the costs for books, and the remainder of the items listed above, excluding travel and living expenses to the physician assistant student is \$4200 the first year and \$1100 the second year.

Employment while Enrolled in the PA Program: Students generally find that maintaining employment while enrolled in the Physician Assistant Program is extremely difficult and can have detrimental effects on their academic performance. Because of the rigorous program of study, students are strongly advised not to maintain outside employment while enrolled as a PA student. Students, who choose part-time work, in addition to their academic responsibilities, should be aware that work requirements or responsibilities will never be an acceptable excuse for absenteeism or submission of incomplete assignments. Also, clinical and travel requirements during the senior year of the program will make part-time work during that time period impossible.

Successful completion of an accredited PA program is required for eligibility to take the National Certification Exam (PANCE), which is required to obtain credentials for licensure/registration.

Accreditation: The Physician Assistant major is fully accredited by the Accreditation Review Committee for Education of Physician Assistants (ARC-PA).

Plastics and Polymer Engineering Technology (BPS)

Bachelor of Science Degree (B.S.)

Plastics and Polymer Engineering Technology is structured to support plastics operations where engineers pass plans and projects to mid-management personnel who must carry out the planning, organization and delivery of manufactured products. Emphasis will be on skills needed to lead projects and interface with engineering and development teams, as well as development of competencies in the science of polymer materials, test procedures, designing for manufacturability, large quantity processing and quality assurance. Students have the opportunity to prepare for mid-management and supervisory positions, as well as technical positions, sales, service or research.

Career Opportunities: Production manager/engineering technologist, materials technologist, process engineering technologist, research and development technologist, product development management, mold and die development specialist, sales and service representative, engineer assistant, facilities manager, quality control specialist.

Recommended High School Subjects: A strong background in high school math and sciences is desired. An awareness of computer science equipment and software also is desired. All math and reading deficiencies should be remediated prior to admission into the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Transfer Procedures: Students transferring from associate degree majors at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance. A predetermined profile has been established for students articulating from approved majors.

Program Goals: The purpose of the bachelor of science in Plastics and Polymer Engineering Technology is to prepare the student for a variety of plastics and polymer positions found in the plastics industry. Specifically, this major should prepare the student to

- solve manufacturing problems using computer hardware and software.
- solve manufacturing problems using scientific principles and methodology.
- demonstrate knowledge of safety and health in the occupation and in personal life.
- demonstrate knowledge of the impact and linkage of technology as a cultural universal.
- analyze and solve manufacturing problems of an economic, technical, organization, and design variety.
- analyze and recommend solutions of manufacturing problems of the moral, ethical, and legal nature.

- contribute to an industrial design team in the design, redesign, and upgrade of products to achieve improved manufacturability, aesthetics, and function.
- select polymeric materials to achieve desired product performance.
- perform rheology tests to characterize polymeric materials.
- specify or design plastic products, molds, and production process to achieve product quality, rate of production, or special characteristics.
- evaluate problems of plastic production and develop recommendations for correction.

FIRST SEMESTER	Credits
PPT 115 The Plastics Industry	2
PPT 120 Polymer Processing Survey	4
CHM 100 Fundamentals of Chemistry	4
CSC 110 Introduction to Information Technology	3
EDT 110 Technical Drawing and Print Reading	2
ENL 111 English Composition I	3
	<u>18</u>

SECOND SEMESTER	Credits
PPT 130 Plastics and Elastomers	4
CAD 116 Introduction to 2D CAD	3
ECO 111 Principles of Macroeconomics	3
ENL 201 Technical and Professional Communication	3
MTT 105 Manufacturing Processes and Toolmaking Survey	4
Fitness and Lifetime Sports Elective	1
	<u>18</u>

THIRD SEMESTER	Credits
PPT 235 Injection Molding	4
PPT 245 Mold Design/Maintenance	4
MET 311 Computer Solutions of Engineering Problems	3
MTH 180 College Algebra and Trigonometry I	3
QAL 230 Process Improvement (SPC)	4
	<u>18</u>

FOURTH SEMESTER	Credits
PPT 250 Industrial Blow Molding	4
PPT 248 Extrusion	4
PPT 249 Industrial Project Management	3
MTH 182 College Algebra and Trigonometry II	3
Physics/Chemistry Elective	4
	<u>18</u>

FIFTH SEMESTER	Credits
PPT 315 Polymer Testing	4
MET 318 Manufacturing Process and Organization	3
MTH 230 Applied Calculus	3
QAL 101 Introduction to Quality Assurance	3
Physics/Chemistry Elective	4
	<u>17</u>

SIXTH SEMESTER	Credits
PPT 240 Advanced Polymer Processing	4
PPT 347 Moldflow	3
MET 315 Engineering Economics	3
MET 321 Engineering Ethics and Legal Issues (WRT)(STS)	3
MTH 160 Elementary Statistics with Computer Applications	4
	<u>17</u>

SEVENTH SEMESTER	Credits
PPT 415 Polymer Synthesis	4
MET 495 Senior Seminar-Lecture (WRT)	1
SPC 101 Fundamentals of Speech	3
Humanities Elective	3
Cultural Diversity Elective	3
Humanities/Social Science/Art/Foreign Language	3
Open Elective	3
	<u>17</u>

EIGHTH SEMESTER	Credits
PPT 425 Product Design	4
CIM 428 Interdisciplinary CIM	3
MET 496 Senior Seminar - Lab	3
Art Elective	3
Fitness and Lifetime Sports Elective	1
Open Elective	3
	<u>17</u>

Accreditation: Accredited by the Accreditation Board for Engineering and Technology, Technology Accreditation Commission, 111 Market Place, Suite 1050, Baltimore, MD 21202, (410) 347-7700.

Residential Construction Technology and Management (BRM)

Bachelor of Science Degree (B.S.)

This program is a two-plus-two BS degree that is based on students' completion of a two-year AAS degree in a building technology related major such as Building Construction Technology (CB), Masonry (MN), Electrical Technology (EL), Heating, Ventilating, Air Conditioning (HV/HP), or Architectural Technology (AT). The major is focused on the management of construction projects typified by single-family detached residential housing.

The Bachelor of Science degree in Residential Construction Technology and Management will allow students who have acquired appropriate applied technology skills in their first two years to move into advanced coursework related to residential construction and management. Additional coursework includes basic management and accounting, plus courses focused on topics such as advanced estimating and scheduling, residential building systems, cost control, codes compliance, construction law, purchasing, and energy management issues.

Career Opportunities: Job opportunities will be focused primarily in the residential housing industry: builder, contractor, specialty contractor, project supervisor, warranty manager, estimator, purchasing agent, job foreman, site supervisor, inspector, project coordinator, project planner.

Recommended High School Subjects: Desired high school subjects: algebra and trigonometry, English and composition, physics, computer skills, and trade skills in carpentry, masonry, HVAC, drafting, electrical, etc.

Remediation Strategies: All entering students must have a two-year associate degree in a program related to the building construction industry. Six credits of mathematics courses must be taken at MTH 150 or above for credit in the program. Students in Penn College AAS degree majors that do not currently require MTH 180 should be advised that MTH 180 is required for the Residential Construction Technology and Management major.

All students entering the baccalaureate degree major will be expected to meet the College standards for mathematics, reading and English proficiency. Students who test at a deficiency in these areas will be encouraged to remediate the deficiency during the first semester in the major.

Transfer Procedures: All students entering the major will be considered for junior-level status, as they will have earned the first two years in their respective associate degree majors in a building construction discipline. Eligible majors include Electrical Technology, Architectural Technology, HVAC or Plumbing Technology, Building Construction Technology, and Masonry. This will apply to Pennsylvania College of Technology associate degree graduates as well. It is expected that students will carry a minimum of 60 credits from the associate degree into the bachelor's degree curriculum. Where students have not met the bachelor degree requirements for the first four semesters, they will be required to take the necessary courses in order to complete the degree. Courses taken for use to meet associate degree program requirements cannot be used in the final four semesters of this major.

Program Goals: The purpose of this two-plus-two bachelor of science in Residential Construction Technology and Management is to offer students

with foundational skills in the various areas of building technology the knowledge and skills to continue in an expanding career area related to residential construction technology and management. A graduate of the Residential Construction Technology and Management major should be able to:

- develop and implement a comprehensive job-site safety plan in accordance with applicable standards, and be able to ensure project compliance with all pertinent safety and insurance regulations.
- interpret project drawings, make necessary changes during the construction process, and evaluate the impact of changes on schedules, costs, and resource requirements.
- apply knowledge of current and emerging building system technologies and codes to evaluate, propose, and plan construction projects for distinctive residential construction projects.
- manage all aspects of the residential construction process including marketing, planning, estimating, scheduling, quality control, and coordination of job-site resources.
- communicate effectively with all groups involved in the residential construction process including, prospective owners, subcontractors, skilled and unskilled laborers, supervisors, and government representatives. organize and manage all aspects of project cost control using appropriate specialized software and computer hardware.
- apply knowledge of basic legal and contractual requirements of residential construction projects and be able to incorporate the requirements into plans, drawings, communications, and construction practices.
- manage human resources aspects of construction project personnel in areas of staffing requirements, training, ethical responsibilities, policy issues, ADA compliance, equal opportunity legislation, union and non-union labor, and conflict resolution.

FIRST SEMESTER		Credits
	Directed Building Technology Electives	12
CSC 110	Introduction to Information Technology	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>
SECOND SEMESTER		Credits
	Directed Building Technology Electives	12
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>
THIRD SEMESTER		Credits
	Directed Building Technology Electives	11
ENL 201	Technical and Professional Communication	3
PHS 114	Physics with Technological Applications	4
	or	
PHS 103	Physics Survey	3
		<u>18</u>
FOURTH SEMESTER		Credits
	Directed Building Technology Electives	10
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>13</u>
FIFTH SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
ACH 113	Computer Aided Drafting I	3
BCM 110	Construction Safety Management	2
MGT 115	Principles of Management	3
SPC 101	Fundamentals of Speech	3
	or	
SPC 201	Interpersonal Communication	3
	Social Science Elective	3
		<u>17</u>

SIXTH SEMESTER		Credits
ACC 210	Payroll, State, and Local Taxation	3
BCT 300	Residential Management I (WRT)	3
BCT 320	Design and Build/Plan Modification Issues	3
MTH 172	Introduction to Geometry	3
	or	
MTH 182	College Algebra and Trigonometry II	3
	Science Elective	3
	Art Elective	3
		<u>18</u>

SUMMER SESSION II		Credits
BCT 495	Senior Co-op Experience	3
		<u>3</u>

SEVENTH SEMESTER		Credits
BCT 310	Residential Management II	3
BCT 330	Residential Building Systems	3
	Humanities Elective	3
	Fitness and Lifetime Sports Elective	1
	Cultural Diversity Elective	3
	Humanities/Social Science/Art/Foreign Language	
	Open Elective	3
		<u>16</u>

EIGHTH SEMESTER		Credits
BCT 410	Advanced Residential Estimating and Scheduling	3
BCT 420	Advanced Mechanical Systems	2
BCT 430	Contemporary Issues in Residential Construction (STS)	3
MGT 248	Supervision and Human Relations	3
	Liberal Arts/Core Elective	3
	Open Elective	3
		<u>17</u>

Directed Building Technology electives include ACH, ACR, BCT, ELT, MCT and PLH courses. Major courses other than ACH, ACR, BCT, ELT, MCT and PLH will need advisor approval.

Major endorsed by:
CENTEX HOMES

Technical and Professional Communication (BPC)

Bachelor of Science Degree (B.S.)

Technical and Professional Communication (BPC) emphasizes the development of skills needed to become an effective technical communicator in any employment environment. In addition, students complete extensive coursework in technical study areas that provide them with the background necessary to work in a specific field. Theory and application through hands-on learning provide students with the skills required to secure and maintain employment as technical communicators. Students develop sensitivity to audience information needs and corporate documentation requirements through a series of required technical communication courses. They gain insight into the documentation strategies used by specific discourse communities through coursework in a technical study area. A balance of liberal arts courses, technical communication courses and science and technology courses prepares students for entry into the technical communication field. The broad range of learning experiences in this major, focused on the process of technical communication rather than the products of technical communicators, enriches and expands the individual's ability to connect diverse, important information and to develop problem-solving skills for communicating that information.

Career Opportunities: The BPC major can provide students with skills for employment in a wide range of technical communication positions: writer, senior writer, editor, communications manager, publications manager, documentation manager, freelance writer, communications consultant, documentation designer, and technical scriptwriter. Additional possibilities include employment in corporate, governmental, or service environments that specialize in the research and design, manufacture, or documentation of products within specified technical areas.

Recommended High School Subjects: Four units of college-preparatory English; two units of math (algebra and geometry); four units in the natural sciences; one unit each in art, drafting, and photography; and experience with computers (word processing).

Remediation Strategies: Students must remediate math deficiencies within their first year of enrollment. Students who test deficient in English and reading will not be accepted until they pass the College's placement tests in these areas.

Transfer Procedures: The transcripts of both internal and external transfer students will be evaluated for parallel courses, following current College practice. Students who have completed technical courses may - upon review - apply those courses to the Technical Study Area of the baccalaureate.

Program Goals: Data from the needs assessment survey indicate that a technical communication major should provide training in the theory and strategies (process) of technical communication, a broad understanding of science and technology within social contexts, a thorough understanding of theory and practice in at least one specific science or technology, and an exposure to a variety of both PC and MAC-based computer applications.

Graduates of the BPC major should be able to assimilate technical information from a specific technical field and disseminate that information both within and among various discourse communities. Graduates should acquire this skill by being able to

- develop a professional employment portfolio that exhibits the ability to produce various technical documents designed for use by specific audiences.
- move a documentation project from concept to "copy ready" in a manner that demonstrates an understanding of the technical communication processes as well as an appreciation for the importance of the final document as product.
- identify, gather, and organize information appropriate for specific audiences.
- adapt information to various documents intended for use by differing audiences.
- recognize and respect the impact of technology on communication and social relationships.
- exhibit fluent written and oral communication skills.
- communicate in the three technical genres (reports, proposals, manuals) using print and electronic media.
- synthesize the broad base of communication theory from liberal arts and technical courses with the theory and practice of technical communication.
- function effectively in cooperative documentation projects, adapting to varied personal styles and behaviors.
- develop professional values and behaviors including a commitment to information literacy and lifelong learning that will enable graduates to remain current in the discipline and adjust to diverse employment opportunities.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
	Chemistry Elective	4
CSC 110	Introduction to Information Technology	3
ENL 112	Technical Communication: Introduction to the Profession	3
	Math Elective (MTH180 or higher)	3
		<u>16</u>

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
	Biology Elective	4
	Social Science Elective	3
MTH 160	Elementary Statistics with Computer Applications	4
SPC 201	Interpersonal Communication	3
		<u>17</u>

THIRD SEMESTER		Credits
ENL 201	Technical and Professional Communication	3
	Communication Elective	6
	or	
	Humanities Elective	6
	Physics Elective	4
	Technical Study Area Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
	Communication Elective	3
	or	
	Humanities Elective	3
PNP 114	Electronic Typography	3
HIS 262	Technology and Society (WRT)(STS)	3
SPC 301	Organizational Communication (CUL)	3
	Technical Study Area Elective	3
		<u>15</u>

FIFTH SEMESTER		Credits
ENL 301	Advanced Technical Communication	3
ENL 321	Rhetoric of Persuasion	3
PNP 134	Electronic Publishing and Design	3
HUM 301	Scientific Literature: Historical and Social Contexts (WRT)(STS)	3
	Technical Study Area Elective	3
		<u>15</u>

SIXTH SEMESTER		Credits
ENL 351	Document Design	3
	Specified Technical & Professional Communication Elective	3
PHL 210	Ethics	3
	Technical Study Area Elective	3
	Open Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

SEVENTH SEMESTER		Credits
ENL 421	Technical and Scientific Editing	3
	Specified Technical & Professional Communication Elective	3
	Technical Study Area Elective	3
ENL 430	Online Documentation 1: From Paper to Hypertext	3
	Open Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

EIGHTH SEMESTER		Credits
ENL 495	Capstone I: Senior Research Project	3
	or	
ENL 496	Capstone II: Technical Communication Internship	3
ENL 432	Online Documentation 2: Online Information Products	3
	Specified Technical & Professional Communication Elective	3
	Technical Study Area Elective	3
	Communication Elective	3
	or	
	Humanities Elective	3
		<u>15</u>

Specified Technical & Professional Communication Elective: ENL261, ENL330, ENL331, ENL350C, ENL361, ENL411, ENL441

All 4-credit BIO, CHM, and PHS courses listed in the Catalog as Science Electives are available for fulfilling the program requirements.

Technical Study Areas: Research shows that, in addition to a broad understanding of the sciences, BPC students should have a focused exposure to a specific technical discipline in order to meet the needs of potential employers. The College offers BPC students the unique opportunity to design customized Technical Study Areas in a vast range of technical curriculums.

In conjunction with advisor(s), each BPC student will design a customized Technical Study Area that responds to the student’s interests and prepares the student for entry into the workforce. To complete the BPC major successfully, each student must choose a Technical Study Area and declare the intent to complete specified coursework in that technical discipline (declaration to be made before the third semester in the major).

Students may customize their Technical Study Area in three ways:

1. By choosing to complete the requirements for a technical minor.
2. By selecting and scheduling courses with the advice of their primary advisor and a technical discipline advisor. For example, a student interested in employment opportunities with companies or governmental entities that must implement environmental regulations and compliance strategies might design the following Technical Study Area: BIO 208 - Ecology; CHM 123 - Introductory Organic and Biochemistry I; ENV 125 - State and Federal Environmental Regulations; ENV 135 - Air Pollution Control; ENV 151 - Industrial Processes; ENV 201 - Waste Recovery, Incineration and Disposal Processes; ENV 220 - Environmental Compliance Plans
3. By identifying a sequence of interdisciplinary courses to prepare for a freelancing or consulting career in a particular science or technical field, a student might take courses that span two or more academic areas. For example, to prepare to manage a small business, the student might take a selection of business-related courses, along with coursework in technology and/or science. Those course choices might be drawn from the listing of course descriptions at the 100 level or higher in the current catalog.

Technology Management (BTM) Bachelor of Science Degree (B.S.)

This major is designed as a two plus two program. Students seeking entrance must have completed an associate degree in a technical or professional area. Students will not be permitted to enter this major as first- or second-year students.

The bachelor of science degree in Technology Management will allow students who enter with an associate degree in a technical/professional area to obtain a baccalaureate degree with the last two years having an emphasis in the development of business/management skills. Technical/professional associate degrees would include degrees where a concentrated area of study is in a technical/professional area. This will exclude majors with a heavy business management emphasis such as retail management, marketing management or business management. Courses taken to fulfill associate degree requirements cannot be used in the final four semesters of this major.

Each student will be expected to meet the following criteria to satisfy the bachelor degree requirements: 1) an earned associate degree in a technical/professional area with a minimum of 60 credits. 2) completion of all College-approved specified course requirements for the baccalaureate degree. 3) a total of 66-68 credits beyond the associate degree to complete the bachelor of science degree, plus any unmet major requirements.

Career Opportunities: The major will lead students to advanced positions in their respective technical/professional areas. The management/administrative skills gained through the major will ensure an opportunity to advance in the field. As the technical/professional area will vary according to the respective students enrolled, no specific jobs can be identified.

Remediation Strategies: All students entering the baccalaureate degree major will be expected to meet the College standards for mathematics, reading and English proficiency. Students who test at a deficiency in these areas will be encouraged to remediate the deficiency during the first semester in the major.

Transfer Procedures: All students entering the Technology Management bachelor degree major will be considered for junior-level status, as they will

have earned the first two years in their respective associate degree majors. This will apply to Pennsylvania College of Technology associate degree graduates as well. It is expected that students will carry a minimum of 60 credits from the associate degree into the bachelor’s degree curriculum. Where students have not met the bachelor degree requirements for the first four semesters, they will be required to take the necessary courses in order to complete the degree. Courses taken for use to meet associate degree program requirements cannot be used in the final four semesters of this major.

Program Goals: The purpose of the bachelor of science degree in Technology Management is to provide the student with the management and administrative skills necessary to advance in his or her specific technical/professional field. Specifically, graduates of this major should be able to

- develop the skills and techniques needed for problem solving and decision-making.
- develop the ability to plan, organize, direct and control within an organization environment.
- understand the nature and functions of our legal system and its importance to the business environment.
- understand group interaction and its impact on productivity, efficiency, and effectiveness.
- use the strategic management process to analyze the current business environment, forecast the future environment and make recommendations on preferred courses of action.
- demonstrate the ability to organize, communicate and present information for managerial decision-making and managerial effectiveness.
- increase awareness and understanding of, and appreciation for, elementary accounting, marketing, and financing principles.
- demonstrate the ability to integrate and synthesize the knowledge and competencies gained from technical and managerial courses.

FIRST SEMESTER		Credits
	Previous Program Courses	<u>15</u>
		15
SECOND SEMESTER		Credits
	Previous Program Courses	<u>15</u>
		15
THIRD SEMESTER		Credits
	Previous Program Courses	9
ENL 111	English Composition I	3
	Math Elective (MTH150 or higher)	3
	Computer Science Elective	<u>3</u>
		18
FOURTH SEMESTER		Credits
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Science Elective with lab	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	<u>2</u>
		12
FIFTH SEMESTER		Credits
	Directed Technology Management Elective	3
SPC 101	Fundamentals of Speech	3
MGT 115	Principles of Management	3
ACC 113	Introduction to Financial Accounting	3
ECO 111	Principles of Macroeconomics	3
	or	
ECO 112	Principles of Microeconomics	3
	Open Elective	<u>3</u>
		18

SIXTH SEMESTER		Credits
MGT 210	Electronic Commerce for Business	3
	Science Elective	3
MGT 330	Managerial Decision Making	3
MKT 240	Principles of Marketing	3
MGT 360	The Legal Environment of Business	3
MTH 160	Elementary Statistics with Computer Applications	4
		<hr/> 19

SEVENTH SEMESTER		Credits
FIN 220	Finance	3
MGT 410	Management of Organizational Behavior (WRT)(CUL)	3
	Humanities Elective	3
	Open Elective	3
	Directed Technology Management Elective	3
		<hr/> 15

EIGHTH SEMESTER		Credits
MGT 497	Business Policy and Strategy	3
	Art Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Directed Technology Management Elective	3
	Science/Technology/Society Elective	3
	Liberal Arts	3
		<hr/> 15

Computer Science Elective: CSC040, CSC103, CSC110, CSC128, CSC211, CSC221, CSC238, CSC255, CSC258

Directed Technology Management Elective: ACC123, ACC310, CIM428, LAS290, MGT216, MGT249, MGT315, MGT320, MGT325, MGT340, MGT351, MKT243, MKT253, MKT260, QAL101

Three of the nine credits of Directed Technology Management electives must be at the 300 or 400 level.

Note: Semesters 1-4 outline the bachelor degree courses as they relate to the College requirements.

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE)

Welding and Fabrication Engineering Technology (BWE)

Bachelor of Science Degree (B.S.)

Welding and Fabrication Engineering Technology is structured to support welding and joining operations where engineers pass plans and projects to mid-management personnel who must carry out the planning, organization and delivery of manufacturing projects. Emphasis will be on developing skills needed to lead projects and interface with engineering and development teams. Students have the opportunity to prepare for careers in mid-management and supervisory positions, as well as technical positions, sales, service or research.

Career Opportunities: Research, inspection, teaching, consulting, management, construction, production, power generation.

Recommended High School Subjects: A strong background in high school math and sciences is desirable. An awareness of computer science equipment

and software also is desired. All math and reading deficiencies should be remediated prior to admission.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Transfer Procedures: Students transferring from associate degree majors at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance. A predetermined profile has been established for students articulating from approved majors.

Program Goals: The purpose of the bachelor of science in Welding and Fabrication Engineering Technology is to prepare the student for a variety of technical and engineering positions found in the welding and fabrication industry. Specifically, this major should prepare the student to

- solve manufacturing problems using computer hardware and software.
- solve manufacturing problems using scientific principles and methodology.
- demonstrate knowledge of safety and health in the occupation and in personal life.
- demonstrate knowledge of the impact and linkage of technology as a cultural universal.
- analyze and solve manufacturing problems of an economic, technical, organization, and design variety.
- analyze and recommend solutions of manufacturing problems of the moral, ethical, and legal nature.
- contribute to an industrial design team in the design, redesign, and upgrade of products to achieve improved manufacturability, aesthetics, and function.
- solve welding design and materials joining problems with accepted methods, processes, and techniques to meet industrial standards.
- demonstrate knowledge of legal and ethical behavior governing the engineering technologist.
- demonstrate skill in accepted welding and materials joining processes.
- demonstrate knowledge and skill in interpreting and using organizational economic and managerial techniques to promote profit, product, or service quality and institutional stability.
- demonstrate proficiency in welding automation, principles of fabrication, and process integration.

FIRST SEMESTER		Credits
WEL 113	Oxy-Fuel Welding and Cutting I	2
WEL 114	Shielded Metal Arc I	2
WEL 115	Oxy-Fuel Welding and Cutting II	2
WEL 116	Shielded Metal Arc II	2
EDT 107	Blueprint Reading for Welders	2
ENL 111	English Composition I	3
SAF 110	Occupational Health and Safety	2
MTH 180	College Algebra and Trigonometry I	3
		<hr/> 18

SECOND SEMESTER		Credits
WEL 120	Gas Metal Arc I	2
WEL 123	Gas Tungsten Arc I	2
WEL 124	Gas Metal Arc II	2
WEL 129	Gas Tungsten Arc II	2
CSC 110	Introduction to Information Technology	3
ENL 201	Technical and Professional Communication	3
MTH 182	College Algebra and Trigonometry II	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 18

THIRD SEMESTER		Credits
WEL 210	Flux Cored and Sub-Arc I	2
WEL 213	Gas Tungsten Arc III	2
WEL 214	Flux Cored and Sub-Arc II	2
WEL 219	Gas Tungsten Arc IV	2
WEL 240	Basic CNC Programming	3
QAL 237	Non-Destructive Testing I	3
MSC 106	Introduction to Metallurgy	4
		<hr/> 18

FOURTH SEMESTER		Credits
WEL 230	Shielded Metal Arc III	2
WEL 233	Shielded Metal Arc IV/Pipe Welding	2
WEL 234	Shielded Metal Arc V	2
WEL 239	Shielded Metal Arc VI/Pipe Welding	2
WEL 247	Welding Design	3
WEL 248	Robotic Welding	3
QAL 247	Non-Destructive Testing II	3
		<u>17</u>

FIFTH SEMESTER		Credits
QAL 101	Introduction to Quality Assurance	3
SPC 101	Fundamentals of Speech	3
ECO 111	Principles of Macroeconomics	3
CET 233	Statics	3
PHS 115	College Physics I	4
	Fitness and Lifetime Sports Elective	1
		<u>17</u>

SIXTH SEMESTER		Credits
WEL 300	Industrial Welding and Cutting Processes	3
MET 315	Engineering Economics	3
MET 321	Engineering Ethics and Legal Issues (WRT)(STS)	3
CET 243	Strength of Materials	3
MTH 160	Elementary Statistics with Computer Applications	4
		<u>16</u>

SEVENTH SEMESTER		Credits
WEL 400	Fabrication of Alloys	3
MET 311	Computer Solutions of Engineering Problems	3
MET 318	Manufacturing Process and Organization	3
MET 495	Senior Seminar-Lecture (WRT)	1
	Humanities Elective	3
	Open Elective	3
		<u>16</u>

EIGHTH SEMESTER		Credits
WEL 420	Welding Codes and Procedures	3
MET 496	Senior Seminar - Lab	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Cultural Diversity Elective	3
	Humanities/Social Science/Art/Foreign Language	
	Art Elective	3
	Open Elective	3
		<u>18</u>

Welding Core Courses: WEL 113 - WEL 239 are two-credit, eight week classes.

Additional Information: American Welding Society (AWS) Certification

Minor in Accounting (MAC)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 18 credits from among the following listing to earn an Accounting Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits.

	Credits
ACC 113 Introduction to Financial Accounting	3
ACC 123 Introduction to Managerial Accounting	3
Accounting Minor Electives	<u>12</u>
	18

Accounting Minor Electives: ACC210, ACC280, ACC285, ACC310, ACC331, ACC340, ACC345, ACC360, ACC410, ACC430, ACC450, ACC460, ACC480, ACC495

Students who are enrolled in BSA, BBM and BA are ineligible.

Minor in Architectural Technology (MAT)

Baccalaureate Degree Minor

Requirements: A student would have to complete a minimum of 18 credits from among the following listings to earn an Architectural Technology Minor. At least 12 of these credits must be from 200 level courses. Existing prerequisites for any of these courses will continue to apply. All courses listed are 3 credits.

	Credits
ACH 115 Computer Aided Drafting I	3
ACH 120 Building Materials I	3
Architectural Technology Minor Electives	<u>12</u>
	18

Architectural Technology Minor Electives: ACH230, ACH235, ACH236, ACH237, ACH240, ACH241, ACH243, ACH244, ACH247, ACH248, ACH249, CAD247

Minor in Business Administration (MBS)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 18 credits from among the following listings to earn a Business Administration Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits.

	Credits
MGT 110 Principles of Business or	3
MGT 115 Principles of Management	3
MKT 240 Principles of Marketing	3
ACC 113 Introduction to Financial Accounting	3
Business Administration Minor Electives	<u>9</u>
	18

Business Administration minor electives include any MGT, FIN, MKT, or ACC course at or above the 200 level. Students who are enrolled in BBA, BBE, BBF, BBK, BBM, BBS, BTM and BAU or have completed BM are ineligible.

Minor in Communication Studies (MCN)

Baccalaureate Degree Minor

REQUIREMENTS: At least 18 credits of required courses and directed electives. All courses are 3 credits.

	Credits
MCM 111 Introduction to Mass Communications	3
MCM 243 Public Relations	3
SPC 201 Interpersonal Communication	3
SPC 303 Group Communication	3
Communication Studies Minor Electives	<u>6</u>
	18

Communication Studies Minor Electives: MCM120, MCM121, MCM250, SPC203, SPC301, SPC302

Students who have completed MC, BC, GC/PB are ineligible.

Minor in Computer Science (MCS)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete at least 21 credits from among the following listings to earn a Computer Science Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits unless otherwise indicated.

	Credits
CSC 140 Problem Solving with Elementary Programming	3
CSC 161 Computer Programming I	3
CSC 262 Computer Programming II	3
CSC 263 Data and Object Structures	3
Computer Science Minor Electives	<u>9</u>
	21

Computer Science minor electives may be chosen from CSC courses numbered 200 or higher, excluding CSC 211 and CSC 221. Students who are enrolled in BAD, BDC and BIA and those who have completed CS, CU, MP, MS, BP, CX, CO, NT, and PD are ineligible.

Minor in Finance (MFN)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 18 credits as indicated below.

	Credits
FIN 220 Finance	3
FIN 320 Investments	3
FIN 370 Money and Banking	3
Finance Minor Electives	<u>9</u>
	18

Finance Minor Electives: FIN150, FIN250, FIN305, FIN310, FIN420, FIN430, FIN450

Students enrolled in BBF are ineligible.

Minor in Financial Planning (MFP)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 18 credits in accordance with the following list. All course prerequisites apply. All courses are 3 credits.

	Credits
FIN 305 Fundamentals of Financial Planning	3
FIN 310 Principles of Insurance	3
FIN 320 Investments	3
ACC 331 Income Taxation of Individuals	3
FIN 420 Estate Planning	3
FIN 430 Retirement Planning and Employee Benefits	3
	18

Minor in Graphic Communications Technology (MGC)

Baccalaureate Degree Minor

Requirements: The 24 required credits provide fundamental industry knowledge. Substitution of other PNP courses may be permitted with administration approval.

	Credits
PNP 114 Electronic Typography	3
PNP 123 Digital Imaging I	3
PNP 124 Offset Lithography	3
PNP 125 Page Layout and Design	3
Graphic Communication Technology Minor Electives	12
	24

Graphic Communication Technology Minor Electives: PNP210, PNP212, PNP215, PNP220, PNP232, PNP234, PNP272, PNP350, PNP354

Students enrolled in BGC or BPT or who have completed GT, GC, PB, or GA are ineligible.

Minor in Information Systems (MIS)

Baccalaureate Degree Minor

REQUIREMENTS: A student will have to complete the following 19 credits to earn an Information Systems minor. Existing prerequisites for each of these courses must be satisfied. All courses are 3 credits unless otherwise indicated.

	Credits
CSC 211 Business Computer Applications Using Spreadsheet	3
CSC 221 Business Computer Applications Using Database	3
CSC 201 File and Database Processing	3
CSC 300 Computer Law, Ethics and Society (WRT)(STS)	3
CSC 250 Creating Web Applications	3
OIS 214 OIS Desktop Publishing	3
OIS 216 Office Network Productivity	1
	19

Students enrolled in BBS, BIA, BDC are ineligible.

Minor in International Business (MIB)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 21 credits from among the following listings to earn an International Business Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits.

	Credits
MGT 116 International Business	3
or	
MGT 216 International Business	3
MGT 450 International Finance	3
or	
FIN 450 International Finance	3
LAS 320 International Law (CUL)	3
FRE 111 Beginning French I	3
or	
GER 111 Beginning German I	3
or	
SPA 111 Beginning Spanish I	3
FRE 121 Beginning French II	3
or	
GER 121 Beginning German II	3
or	
SPA 121 Beginning Spanish II	3
International Business Minor Electives	6
	21

International Business Minor Electives: ECO257, ENL231, MKT310, PSC210, SPC302

Minor in Legal Studies (MLS)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 9 credits from among each of the following two listings of approved courses, for a total of 18 credits, to earn a Legal Studies Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits unless otherwise indicated.

	Credits
Legal Studies Minor Electives 100-200 Level	9
Legal Studies Upper Level Minor Electives 300-400 Level	9
	18

Legal Studies Minor Electives 100-200 Level: DEN224, ENV125, FHD310, HSR263, LAS120, LAS290, MCM122, MGT231, MGT241, PSC231, PSC241, SAF110, SOC242

Legal Studies Upper Level Minor Electives 300-400 Level: CSC300, HSR411, LAS320, LAS400, LAS410, LAS430, LAS460, MET321, MGT344, MGT360

Students who are enrolled in BLA or who have completed LA are ineligible.

Minor in Management (MMG)

Baccalaureate Degree Minor

REQUIREMENTS: A student would have to complete 18 credits from among the following listings to earn a Management Minor. At least 12 of these credits must be from 200 or higher level courses. Existing prerequisites for any of these courses will continue to apply. All courses are 3 credits.

	Credits
MGT 115 Principles of Management	3
MGT 248 Supervision and Human Relations or	3
MGT 340 Human Resource Management	3
MGT 231 Business Law I or	3
MGT 360 The Legal Environment of Business Management Elective	3
Management Electives (200 or Higher)	6
	18

Management Elective: MGT110, MGT115, MGT216, MGT230, MGT231, MGT241, MGT248, MGT249, MGT250, MGT315, MGT320, MGT325, MGT330, MGT340, MGT351, MGT355, MGT360, MGT370, MGT410, MGT447, MGT497

Management Electives (200 or Higher): MGT216, MGT230, MGT231, MGT241, MGT248, MGT249, MGT250, MGT315, MGT320, MGT325, MGT330, MGT340, MGT351, MGT355, MGT360, MGT370, MGT410, MGT447, MGT497

Students who are enrolled in BAU, BSA, BBA, BBE, BBF, BBK, BBM, BBS, BCM, BTM or who have completed BM, FH, AS and RM are ineligible.

Minor in Mathematics (MMA)

Baccalaureate Degree Minor

Requirements: To receive a Minor in Mathematics from Pennsylvania College of Technology, a student must satisfy all the following requirements.

	Credits
MTH 240 Calculus I	4
MTH 242 Calculus II	4
MTH 340 Calculus III	4
Mathematics Minor Electives	7
	19

Mathematics Minor Electives: MTH160, MTH250, MTH255, MTH346, MTH360

Students must maintain a minimum grade point average of 2.5 for those courses taken to satisfy the minor in mathematics. Any course with a final grade of "D" will not fulfill a mathematics minor requirement.

Minor in Technical and Professional Communication (MTP)

Baccalaureate Degree Minor

REQUIREMENTS: Students are required to take 18 credits in the minor; 12 credits must be taken at the 200-level or higher. A 2.0 GPA in the minor is required for graduation. All courses are 3 credits.

	Credits
ENL 201 Technical and Professional Communication	3
ENL 112 Technical Communication: Introduction to the Profession	3
ENL 301 Advanced Technical Communication	3
ENL 351 Document Design	3
Technical & Professional Communication Minor Electives	6
	18

Technical & Professional Communication Minor Electives: ENL321, ENL411, ENL421, ENL441

Students who are enrolled in BPC are ineligible.

Minor in Travel and Tourism (MTV)

Baccalaureate Degree Minor

REQUIREMENTS: The Travel and Tourism Minor requires a minimum of 19 credits as outlined below. Existing prerequisites for these courses will continue to apply. All courses are 3 credits unless otherwise indicated.

	Credits
TTM 110 Introduction to Travel and Tourism	3
TTM 120 Travel Reservations and Ticketing	3
TTM 230 Group Tour Operations	3
TTM 250 Travel and Tourism Management	3
FHD 106 Introduction to the Hospitality Industry	1
Travel & Tourism Minor Electives	6
	19

Travel & Tourism Minor Electives: FHD275, FHD310, GEO111, MGT249, MKT240, MKT243

Students who have completed TV are ineligible. Classes that can be used to satisfy the Travel and Tourism elective will be determined by the School of Business and Computer Technologies.





Associate Degrees



ASSOCIATE DEGREES

Associate degree majors help students prepare for employment or serve as the basis for additional education. Associate degree majors require a minimum of 60 credits.

The **Associate of Applied Arts (A.A.A.)** degree is offered in Advertising Art, Broadcast Communications and Mass Communications. These majors offer students the opportunity to gain the technical and professional skills needed for employment and to prepare for transfer to a four-year college.

The **Associate of Applied Science (A.A.S.)** degree offers students the opportunity to gain the technical and occupational skills needed for employment. Many four-year colleges accept all or a substantial portion of A.A.S. degree credits as part of a bachelor's degree.

Access our online catalog at www.pct.edu
for the most current information.

EVENING DEGREES

Students can earn a Penn College degree following an evening format; completing a bachelor degree in eight years (*part-time*) and an associate degree in four years (*part-time*). All courses are sequenced and offered in the 6:30-9:30 p.m. time frame. Exceptions to this time frame are Dental Hygiene (BS), and Nursing (BS) which are offered at a time frame selected to meet the needs of these specific students.

The evening students have College services available to them early evenings during the first full week of each semester. These services include: College Store (*books and supplies, parking permits*), Counseling & Career Services, Registrar, Admissions, Financial Aid, Student Accounts/Bursar, Information Desk, Health Services, Disability Services and Advisement Center.

To successfully complete a major within the time prescribed, students must complete at least 15-18 credits per year — fall, spring, summer. The time frame does not take into consideration students who must remediate placement test deficiencies. To ensure proper movement through the degree, students are encouraged to schedule early and work carefully with an advisor.

The following associate degree majors are available for evening students:

Accounting (BA)

Business Management (BM)

Computer Information Technology (NT, PD)

General Studies (GS)

Health Arts (HT)

Legal Assistant/Paralegal (LA)

Office Technology (OL, OP)

Accounting (BA)

Associate of Applied Science Degree (A.A.S.)

The Accounting major prepares students for a variety of entry level accounting positions in all types of business environments. In addition to basic accounting courses, offerings include cost, income tax and computerized accounting.

Career Opportunities: Public accountant (auditing, giving tax advice and/or preparing tax returns, management consulting); industry accountant (determine cost of producing products, budgeting, general recording of transactions and preparing statements, designing accounting systems, preparing tax returns, internal auditing); not-for-profit accountant (performing previously named duties for governments and non-governmental organizations).

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The general objective of the Accounting program is to prepare the student for employment in the accounting field - public, private, and government. The program will also serve to upgrade the skills of those now employed in this field.

The graduate should be able to

- identify and apply generally accepted accounting principles.
- organize, prepare, and interpret financial data and statements.
- use and interpret federal and state income tax laws applicable to the individual and sole proprietor.
- identify, use and interpret cost accounting information.
- identify the laws that affect business.
- use microcomputers and related accounting software, including spreadsheet and database, for the preparation and analysis of accounting and financial statements.
- understand the impact of operating, investing, and financing decisions on the business entity.

FIRST SEMESTER	Credits
ACC 113 Introduction to Financial Accounting	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MGT 110 Principles of Business	3
MTH 113 Business Mathematics	3
OFT 101 Keyboarding and Its Applications	1
	<u>16</u>

SECOND SEMESTER	Credits
ACC 123 Introduction to Managerial Accounting	3
Computer Science Elective	3
ECO 111 Principles of Macroeconomics	3
MGT 230 Business Communications	3
or	
ENL 201 Technical and Professional Communication	3
MGT 231 Business Law I	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

THIRD SEMESTER	Credits
ACC 310 Cost Accounting	3
ACC 340 Intermediate Accounting I	3
SPC 101 Fundamentals of Speech	3
Directed Business Elective	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>3</u>
	<u>15</u>

FOURTH SEMESTER	Credits
ACC 331 Income Taxation of Individuals	3
Directed Business Elective	3
ACC 280 Computerized Accounting	3
Science Elective	3
Open Elective	3
	<u>3</u>
	<u>15</u>

Computer Science Elective: CSC040, CSC103, CSC110, CSC128, CSC211, CSC221, CSC238, CSC255, CSC258

Directed Business Elective is any advisor-approved ACC, CSC, FIN, MGT, MKT or OFT course.

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Advertising Art (AR)

Associate of Applied Arts Degree (A.A.A.)

This major prepares students for employment in advertising art and related fields. Students develop skills in drawing, designing, illustrating, color, typesetting, layout, computer graphics, and proper use of tools, equipment and materials. Related courses in photography, and graphic communications, as well as courses in English, mathematics and science, increase the student's career opportunities.

Career Opportunities: Advertising artist, art director, illustrator and layout artist.

Recommended High School Subjects: Academic subjects with strong emphasis on communication, analytical skills and aesthetics are helpful. Geometry and some training in art are desirable.

Remediation Strategies: Students must remediate English and reading deficiencies (RDG 111 level) within the first semester of the major and must remediate math deficiencies by the end of the first year. Students who test at the RDG 001 level will not be accepted until they pass the College's reading placement test.

Program Goals: Upon successfully completing the Advertising Art major, students should be able to

- demonstrate hand skills applicable to the various media.
- produce viable projects based on intended concepts.
- organize type and images into a functional and aesthetically pleasing layout.
- identify models of color and design concepts based on recognized theories.
- demonstrate combined proficiency of technical, artistic, and conceptual skills.
- communicate clearly, verbally and visually.
- apply independent problem-solving skills pertinent to the discipline.
- demonstrate cooperation and the ability to work with people in the career field.
- analyze designs created by using traditional and computer-generated methods.

FIRST SEMESTER	Credits
ART 102 Two-Dimensional Design	3
ART 180 Drawing	3
PHO 101 Black-and-White Photography	3
ENL 111 English Composition I	3
CSC 110 Introduction to Information Technology	3
Fitness and Lifetime Sports Elective	1
	<u>1</u>
	<u>16</u>

SECOND SEMESTER		Credits
ART 109	Design and Color	3
ART 202	Introduction to Three-Dimensional Design	3
PNP 114	Electronic Typography	3
ENL 121	English Composition II	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>15</u>

THIRD SEMESTER		Credits
ART 225	Type Design I	3
ART 260	Introduction to Computer Graphics	3
PNP 123	Digital Imaging I	3
PNP 125	Page Layout and Design	3
MTH 151	Structures of Mathematics	3
	or	
MTH 153	Topics in Mathematics	3
	Science Elective	3
		<u>18</u>

FOURTH SEMESTER		Credits
ART 210	Introduction to Graphic Design	3
ART 235	Type Design II	3
ART 295	Portfolio	3
PHO 250	Introduction to Digital Photography	3
PNP 210	Digital Imaging II	3
		<u>15</u>

Architectural Technology (AT)

Associate of Applied Science Degree (A.A.S.)

Architectural Technology provides individuals with knowledge and skills that will lead to employment and advancement in the field of architectural technology. The technical courses will enable the graduate to work in related areas or continue toward an advanced degree in an associated field of technology. The architectural technician will be involved in work requiring a knowledge of drafting, construction materials, mechanical and structural systems, estimating, site and building design fundamentals and presentation methods, building codes and specifications, and computer applications.

Career Opportunities: Architectural draftsman, CAD operator, estimator, detailer or specification writer in the private practice or public sector; employment is available in related industries.

Recommended High School Subjects: Two years of algebra, one year of science and art/design.

Remediation Strategies: Students will be required to remediate deficiencies. The order of remediation should be reading, English, and math.

Program Goals: The Architectural Technology major exists to provide talented individuals with the knowledge and skills that will lead to employment and advancement in the field of architecture. The coursework enables the graduate to work in architectural or building construction related jobs or continue towards an advanced degree in an associated field. The architectural technician will be involved in work requiring a knowledge of computer aided and manual drafting, construction materials, mechanical and structural systems, estimating, site and building design fundamentals, presentation methods, building codes, specifications, and computer applications. Graduates of this major should be able to

- implement solutions to practical problems in architecture as an individual and in teams.
- use appropriate tools, media, computers, networks, and applications software to produce architectural solutions.
- understand and integrate in projects the various applications of construction materials, systems, and methods used in the building industry.

- demonstrate the ability to perform higher order mathematical computations to solve architectural problems.
- analyze data and apply knowledge of architecture to solve original problems.
- develop an understanding of the relationship of architecture to other construction fields.
- understand the career opportunities available in architecture and its related industries.
- develop a basic knowledge of the architectural design process and an appreciation for the beauty of architecture as a visual art.
- explain the course of a typical building project through its phases of development.
- work cooperatively in teams.
- use various media, including manual drafting and computer aided drafting, to create complete and effective two- and three-dimensional architectural documents and models.
- understand and interpret architectural drawings and related documents.
- develop an understanding that success as an architectural technologist requires a lifelong pursuit of learning.
- develop an appreciation for the responsibilities of those involved in the architectural profession.
- understand the impact of architectural choices on the global economy and environment.

FIRST SEMESTER		Credits
ACH 111	Architectural Graphics	3
ACH 112	Architectural History	3
ACH 115	Computer Aided Drafting I	3
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
		<u>15</u>

SECOND SEMESTER		Credits
ACH 120	Building Materials I	3
ACH 122	Site Design	3
ACH 125	Computer Aided Drafting II	3
ACH 127	Working Drawings-Residential	3
BCT 128	Building Materials Applications	2
MTH 180	College Algebra and Trigonometry I	3
	Fitness and Lifetime Sports Elective	1
		<u>18</u>

THIRD SEMESTER		Credits
ACH 230	Building Materials II	3
ACH 235	Computer Aided Drafting III	3
ACH 236	Architectural Design I	3
ACH 237	Working Drawings-Commercial	3
ACH 241	Codes, Specifications and Estimating	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	or	
SPC 101	Fundamentals of Speech	3
		<u>18</u>

FOURTH SEMESTER		Credits
ACH 240	Environmental Systems	3
ACH 243	Structural Principles	3
ACH 248	Architectural Detailing	3
	Specified Architectural Elective	6
PHS 103	Physics Survey	3
	or	
SCI 100	Environmental Science	3
		<u>18</u>

Specified Architectural Elective: ACH244, ACH247, ACH249, CAD247

Automated Manufacturing Technology (AF)

Associate of Applied Science Degree (A.A.S.)

The Automated Manufacturing major is designed to provide students with the opportunity for hands-on experience necessary for employment as a technician in the computer-enhanced manufacturing process. Full size (rather than miniature or small scale) equipment is utilized. Through the integration of mathematics, robotics, metallurgy, programmable machinery shop skills, and computer-assisted machining techniques, a student should acquire the necessary skills for employment in an industrial environment.

Career Opportunities: Programmer, engineer trainee, production specialist, CAM specialist, toolmaker, supervision, CIM technician.

Recommended High School Subjects: Two years of algebra, one year of science; machining experience or training.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Automated Manufacturing major is to prepare the student for a variety of manufacturing/industrial positions found in a manufacturing environment. Specifically, this major should prepare the student to

- demonstrate safe work habits when working on machine tools.
- operate basic machine tools.
- demonstrate knowledge of programmable machine tools in milling, turning, handling, set up, and maintenance.
- demonstrate knowledge of machining parameters, torque, feeds and speeds and motion control.
- define input-output communication for automated machining operations.
- demonstrate skills in computer aided manufacturing, robotics, and other automated manufacturing methods.
- demonstrate hands-on experience on system operating modes, command entry methods, tool path, chip removal, program editing, programming and program interfacing.
- perform operations with a robot using robot arm geometry and work envelope.
- apply systems knowledge.
- demonstrate materials handling.
- perform tooling operations.
- demonstrate computer integrated manufacturing (CIM) operations.

FIRST SEMESTER	Credits
MTT 113 Basic Metalworking I	3
MTT 114 Basic Metalworking II	2
MTT 116 Lathe Applications I	3
MTT 117 Lathe Applications II	2
CSC 110 Introduction to Information Technology	3
MTH 180 College Algebra and Trigonometry I	3
SAF 110 Occupational Health and Safety	2
	<u>18</u>

SECOND SEMESTER	Credits
CIM 101 Basic Machine Tool Programming	3
MTT 123 Machining Processes	4
MTT 126 Metrology/Quality Control	5
ENL 111 English Composition I	3
MTH 182 College Algebra and Trigonometry II	3
	<u>18</u>

THIRD SEMESTER	Credits
CIM 123 CNC Programming and Machining	4
MTT 210 Tool Technology	5
PHS 114 Physics with Technological Applications	4
ENL 201 Technical and Professional Communication	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

FOURTH SEMESTER	Credits
CIM 205 Electrical Discharge Machining	3
CIM 220 CAD/CAM	3
MTT 215 Abrasive Machining and Heat Treatment	5
MSC 106 Introduction to Metallurgy	4
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>3</u>
	<u>18</u>

FIFTH SEMESTER	Credits
CIM 202 Advanced Programming	3
CIM 221 CNC Applications	3
CIM 222 Robotic Applications	3
CIM 226 Computer Integrated Manufacturing	3
CIM 227 Material Handling/Fluid Power	3
	<u>3</u>
	<u>15</u>

Additional Information: National Institute of Metalworking Skills (NIMS) Certification

Automotive Service Sales and Marketing (AK)

Associate of Applied Science Degree (A.A.S.)

The Automotive Service Sales and Marketing degree prepares students for careers in automotive service specializing in the customer relations and marketing of service related retail sales. Students have the option of developing technical skills in either automotive maintenance and repair, or in collision repair. Internships provide actual work experience in production and customer relations while business courses further develop skills in management, marketing, and sales.

Career Opportunities: Assistant service manager, service advisor, service writer, parts manager, sales of automotive service/merchandise, and sales and marketing of specialized automotive service equipment.

Recommended High School Subjects: Three years of English, one year of algebra, one year of physical science.

Remediation Strategies: Deficiencies should be remediated in the following order: math, reading, English.

Program Goals: Upon successfully completing the Automotive Service Sales and Marketing major, students should be able to:

- demonstrate maintenance and repair skills in the fields of either automotive or collision repair.
- differentiate and practice various current customer service techniques and apply production and management software in the operation and record keeping of a service facility.
- apply physical laws and deductive reasoning to automotive systems and components when diagnosing problems.
- correlate legal, market, and economic indicators in predicting automotive service productivity.

FIRST SEMESTER	Credits
Directed Elective - Automotive Emphasis	12
or	
Directed Elective - Collision Repair Emphasis	12
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
OFT 101 Keyboarding and Its Applications	1
	<u>1</u>
	<u>16</u>

SECOND SEMESTER		Credits
Directed Elective - Automotive Emphasis	or	10
Directed Elective - Collision Repair Emphasis		11
CSC 110 Introduction to Information Technology		3
ENL 111 English Composition I		3
		<u>16</u>

THIRD SEMESTER		Credits
AMT 260 Automotive Service Internship I		2
AMT 262 Automotive Customer Service Techniques		2
ECO 111 Principles of Macroeconomics		3
ENL 201 Technical and Professional Communication		3
MGT 115 Principles of Management		3
MKT 240 Principles of Marketing		3
		<u>16</u>

FOURTH SEMESTER		Credits
AMT 242 Vehicle Safety Inspection		1
AMT 261 Automotive Internship II		2
Fitness and Lifetime Sports Elective		1
MGT 249 Small Business Management		3
MGT 360 The Legal Environment of Business		3
MKT 243 Sales		3
Science Elective		3
		<u>16</u>

Directed Elective - Automotive Emphasis: AMT111, AMT112, AMT113, AMT119, AMT122, AMT123, AMT124, AMT126

Directed Elective - Collision Repair Emphasis: ABC111, ABC113, ABC114, ABC121, ABC122, ABC224

Directed electives consist of 22 credits from the Automotive emphasis or 23 credits from the Collision Repair emphasis.



Additional Information: The first year technical courses contained in the degree are certified by the National Automotive Technicians Education Foundation in both automotive and collision repair.

Automotive Technology (AU)

Associate of Applied Science Degree (A.A.S.)

This major includes advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The coursework emphasizes the development of skills in service, repair and test procedures. Business management and specialized service courses prepare students for advancement in the automotive field. Specific courses also prepare the student for transfer to four-year colleges.

Career Opportunities: Dealership service specialist, assistant manager, skilled jobs in automotive manufacturing, service equipment representative, rebuilding shop assembler, repair shop operator, parts department manager.

Recommended High School Subjects: Three years of English, two years of algebra, and one year of science.

Remediation Strategies: Students may enter the major with one deficiency. If a student is deficient in both MTH 004 and RDG 001, they must remediate before entering any of the automotive majors. The order of remediation will be math, reading, English.

Program Goals: The goal of this major is to prepare students for jobs in the automotive field. The major also prepares students to take written certification exams (e.g., the National Institute for Automotive Service Excellence exam and the Pennsylvania Vehicle Safety Inspection exams, written and practical) for certification as vehicle safety inspectors.

A graduate of Automotive Technology should be able to

- diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
- diagnose and repair malfunctions and wear of engines.
- apply basic laws of physics and scientific principles to automotive systems and components when diagnosing problems and in product development.
- demonstrate knowledge of good management practices, including personnel, equipment, shop layout, and customer relations, in the automotive service shop.
- write clear, concise, and accurate repair orders, technical reports, service advertising copy, business memoranda, and business letters.
- maintain business records, explain the factors to be considered in starting a new business, and state good management practices.
- demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

FIRST SEMESTER		Credits
AMT 111 Manual Transmission and Transaxle Principles		3
AMT 112 Brake Systems		3
AMT 113 Steering and Suspension		3
AMT 119 Fundamentals of Automatic Transmissions		3
CSC 110 Introduction to Information Technology		3
MTH 124 Technical Algebra and Trigonometry I	or	3
MTH 180 College Algebra and Trigonometry I		3
		<u>18</u>

SECOND SEMESTER		Credits
AMT 122 Engine Principles		3
AMT 123 Basic Fuel and Emission Control Systems		3
AMT 124 Automotive Electrical/Electronic Principles		3
AMT 126 Engine Electrical Systems		4
ENL 111 English Composition I		3
Fitness and Lifetime Sports Elective		1
		<u>17</u>

THIRD SEMESTER		Credits
AMT 235 Engine Service		4
AMT 238 Emissions Inspection		2
AMT 239 Engine Repair and Overhaul		4
AMT 273 Powertrain Computer Systems Analysis		2
ENL 201 Technical and Professional Communication		3
Humanities Elective		3
or		
Social Science Elective		3
or		
Art Elective		3
or		
Foreign Language Elective		3
		<u>18</u>

FOURTH SEMESTER		Credits
AMT 241 Automotive Chassis Service		5
AMT 242 Vehicle Safety Inspection		1
AMT 274 Automotive Air Conditioning Systems and Service		3
AMT 275 Automotive Electrical Accessories Service		3
PHS 103 Physics Survey		3
or		
PHS 114 Physics with Technological Applications		4
		<u>15</u>

Accreditation: The automotive major is master accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Automotive Technology Ford Asset (FA)

ASSET

Associate of Applied Science Degree (A.A.S.)

This major includes advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The coursework emphasizes the development of skills in service, repair, and test procedures in relation to Ford vehicles and systems. Instruction will be on a rotating basis between classroom/shop activities and a sponsoring Ford/Lincoln/Mercury dealership. Specific courses also prepare the student for transfer to four-year colleges.

Career Opportunities: Service technician, service equipment representative, rebuilding shop assembler, repair shop operator, parts and inventory control.

Recommended High School Subjects: Three years of English, two years of algebra and one year of science.

Remediation Strategies: Students are strongly encouraged to remediate prior to entrance in the major. The order of remediation is math, reading, English and keyboarding.

Program Goals: The goal of this major is to prepare students for jobs in Ford/Lincoln/Mercury dealerships. Instruction will be on Ford/Lincoln/Mercury automobiles. The major prepares students to take written certification exams; for example, the National Institute for Automotive Service Excellence exams and the Ford Service Technician Specialty Training exams. A prospective student will need dealer sponsorship prior to the Ford Dealership Co-op and acceptance into the major.

A graduate of Automotive Technology/Ford ASSET should be able to

- diagnose and repair common malfunctions of systems and components on Ford/Lincoln/Mercury automobiles.
- diagnose and repair malfunctions and wear of engines.
- apply basic laws of physics and scientific principles to automotive systems and components when diagnosing problems and in product development.
- demonstrate knowledge of good management practices, including personnel, equipment, shop layout, and customer relations in the automotive service shop.
- maintain business records, explain the factors to be considered in starting a new business, and state good management practices.
- demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.
- diagnose and repair malfunctions of Ford automatic transmissions/transaxles.

	Credits
FIRST SEMESTER	
AMT 110 Ford Automotive Fundamentals	5
AMT 120 Ford Automotive Electrical Systems	5
AMT 160 Ford Dealership Internship I	2
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>15</u>
SECOND SEMESTER	
AMT 130 Ford Automotive Engines, Diagnosis, Overhaul and Repair	5
AMT 146 Ford Automotive Electronics and Diagnostics	5
AMT 161 Ford Dealership Internship II	2
ENL 111 English Composition I	3
	<u>15</u>

	Credits
SUMMER SESSION	
AMT 141 Ford Vehicle Heating and Air Conditioning	4
AMT 162 Ford Dealership Internship III	2
ENL 201 Technical and Professional Communication	3
CSC 110 Introduction to Information Technology	3
	<u>12</u>

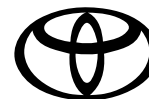
	Credits
THIRD SEMESTER	
AMT 163 Ford Dealership Internship IV	2
AMT 210 Ford Steering, Suspension and Brake Systems	5
AMT 220 Ford Engine Management Systems	5
PHS 103 Physics Survey	3
or	
PHS 114 Physics with Technological Applications	4
	<u>15</u>

	Credits
FOURTH SEMESTER	
AMT 164 Ford Dealership Internship V	2
AMT 230 Ford Automotive Manual Transmissions, Drivelines and Transfer Cases	5
AMT 240 Ford Automotive Transmissions and Transaxles	5
Fitness and Lifetime Sports Elective	1
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>16</u>

Accreditation: The automotive major is master accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Automotive Technology Toyota Emphasis (TY)



Associate of Applied Science Degree (A.A.S.)

This major includes advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The coursework emphasizes the development of skills in service, repair and test procedures in relation to Toyota vehicles and systems. Business management and specialized service courses prepare students for advancement in the automotive field. Specific courses also prepare the student for transfer to four-year colleges.

Career Opportunities: Dealership service specialist, assistant manager, skilled jobs in automotive manufacturing, service equipment representative, rebuilding shop assembler, repair shop operator, parts department manager.

Recommended High School Subjects: Three years of English, two years of algebra, and one year of science.

Remediation Strategies: Students may enter the major with one deficiency. If a student is deficient in MTH 004 or RDG 001, they must remediate before entering any of the automotive majors. The order of remediation will be math, reading, English.

Program Goals: The goal of this program is to prepare students for jobs in the automotive field. Primary emphasis and training will be on Toyota vehicles and systems. The program also prepares students to take written certification exams (e.g., the National Institute for Automotive Service Excellence exams, written and practical) for certification as vehicle safety inspectors. A prospective student will need dealer sponsorship prior to the Toyota Dealership co-op and acceptance into the program.

A graduate of Automotive Technology/Toyota Emphasis should be able to

- diagnose and repair common malfunctions of systems and components on automobiles with specific attention to Toyota vehicles.
- diagnose and repair malfunctions and wear of engines.
- apply basic laws of physics and scientific principles to automotive systems and components when diagnosing problems and in product development.
- demonstrate knowledge of good management practices, including personnel, equipment, shop layout, and customer relations, in the automotive service shop.
- write clear, concise, and accurate repair orders, technical reports, service advertising copy, business memoranda, and business letters.
- maintain business records, explain the factors to be considered in starting a new business, and state good management practices.
- demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.
- diagnose and repair malfunctions of Toyota automatic transmissions/transaxles.

FIRST SEMESTER	Credits
AMT 111 Manual Transmission and Transaxle Principles	3
AMT 112 Brake Systems	3
AMT 113 Steering and Suspension	3
AMT 119 Fundamentals of Automatic Transmissions	3
CSC 110 Introduction to Information Technology	3
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

SECOND SEMESTER	Credits
AMT 122 Engine Principles	3
AMT 123 Basic Fuel and Emission Control Systems	3
AMT 124 Automotive Electrical/Electronic Principles	3
AMT 126 Engine Electrical Systems	4
ENL 111 English Composition I	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SUMMER SESSION	Credits
AMT 150 Toyota Dealership Internship	1
	<u>1</u>

THIRD SEMESTER	Credits
AMT 235 Engine Service	4
AMT 238 Emissions Inspection	2
AMT 239 Engine Repair and Overhaul	4
AMT 273 Powertrain Computer Systems Analysis	2
ENL 201 Technical and Professional Communication	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

FOURTH SEMESTER	Credits
AMT 241 Automotive Chassis Service	5
AMT 242 Vehicle Safety Inspection	1
AMT 274 Automotive Air Conditioning Systems and Service	3
AMT 275 Automotive Electrical Accessories Service	3
PHS 103 Physics Survey	3
or	
PHS 114 Physics with Technological Applications	4
	<u>15</u>

Accreditation: The automotive major is master accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Aviation Technology (AD)

Associate of Applied Science Degree (A.A.S.)

This major prepares students for employment as airframe and powerplant maintenance technicians and affords the opportunity for students to broaden their perspective and ability to adapt to a rapidly changing industry. Emphasis on the general education component enhances the student's prospects of employment and further educational advancement. This curriculum is approved under Title 14 of the Code of Federal Regulations (CFR) Part 147. As graduates, students will be eligible to take the required examinations for the Airframe and Powerplant Maintenance Certificate.

Career Opportunities: Employment as maintenance technicians for commercial aviation, general aviation, aviation repair stations, and manufacturer's services. With technician experience, a graduate may advance for positions as maintenance supervisor, manufacturer service representative, product development technician, and accident/equipment failure investigators.

Recommended High School Subjects: Three years of English, one year of algebra, and one year of science.

Remediation Strategies: A student cannot enter the major with a MTH 004 deficiency. A double- or triple-deficient student will be required to either remediate prior to commencement of the first semester or change major to Aviation Maintenance Technician until remedial courses are completed satisfactorily. The large number of credits per semester and the required summer does not afford the student the ability to remediate by the end of the fourth semester without seriously overloading every semester. Other single deficient students could enter the Aviation Technology major.

Program Goals: The major objectives of the Aviation Technology major are to prepare students for the written, oral and practical Federal Aviation Administration (FAA) Examination of the Airframe and Powerplant Maintenance Certificate and to provide knowledge needed for supervisory and technical positions. The major broadens the general education component to assist the student with adapting to a rapidly changing workplace.

A graduate of the Aviation Technology degree major should be able to

- prepare FAA maintenance forms accurately.
- locate specific information in various aviation publications and be able to interpret and apply the information.
- read and understand airframe and powerplant service publications and be able to interpret and apply the information.
- recognize the need for accuracy and thoroughness, as defined by the FAA.
- demonstrate standard inspection procedures and maintenance and repair skills following FAA guidelines.
- demonstrate and practice safety habits at all times.
- demonstrate correct use of basic hand tools, special tools, and required testing equipment.
- use mathematics, blueprints, diagrams, and theory in aviation maintenance work.
- list, define, and correctly use aviation maintenance terminology.
- maintain high professional standards, as established by the FAA, the aviation industry, and through program instruction.
- demonstrate clear, concise writing ability in composing letters, shop orders, and technical reports.
- evaluate consumer needs and relate them to current business procedures in aviation maintenance.
- use current decision-making techniques and demonstrate the potential for managerial growth.

FIRST SEMESTER		Credits
AVC 101	Basic Electricity	2.5
AVC 104	Federal Air Regulations, Records and Publications	1.5
AVC 105	Flight Line Servicing and Corrosion Control	2.5
AVC 108	Aircraft Materials, Process, Fluid Lines and Fittings	3.0
AVC 115	Aircraft Basic Science	3.0
AVC 125	Engine Ignition Systems	2.0
AVC 132	Engine Fuel Metering	2.0
MTH 180	College Algebra and Trigonometry I	3.0
		19.5
SECOND SEMESTER		Credits
AVC 116	Turbine Engines	3.5
AVC 128	Engine Induction and Exhaust Systems	1.5
AVC 134	Propellers	3.0
AVC 137	Reciprocating Engine Installation and Operation	3.0
AVC 138	Reciprocating Engine Overhaul	4.0
AVC 144	Aircraft Drawings	1.5
ENL 111	English Composition I	3.0
		19.5
SUMMER SESSION		Credits
ENL 121	English Composition II or	3.0
ENL 201	Technical and Professional Communication Fitness and Lifetime Sports Elective	3.0 1.0
CSC 110	Introduction to Information Technology	3.0
		7.0
THIRD SEMESTER		Credits
AVC 177	Engine Cooling, Lubrication and Inspection	2.0
AVC 178	Engine and Airframe Fuel and Fire Protection	1.5
AVC 181	Engine Electrical	3.5
AVC 182	Aircraft Instrument Systems	1.5
AVC 201	Aircraft Electrical	4.0
AVC 205	Aircraft Assembly and Flight Control Rigging	2.0
AVC 207	Airframe Covering, Finishes and Welding Humanities Elective or Social Science Elective or Art Elective or Foreign Language Elective	3.0 3.0 3.0 3.0 3.0
		20.5
FOURTH SEMESTER		Credits
AVC 208	Aircraft Landing Gear, Hydraulics, Pneumatics and Position Warning	5.5
AVC 213	Airframe Inspection	.5
AVC 214	Aircraft Atmosphere Control and Ice/Rain Control	2.0
AVC 309	Airframe Sheet Metal Structures	4.0
AVC 310	Non-Metallic Structures	1.5
AVC 311	Navigation and Communication Systems	2.0
AVC 312	Rotary Wing Aircraft Science Elective	1.5 3.0
		20.0

Accreditation: Approved under Title 14 of the Code of Federal Regulations (CFR) Part 147.

Baking and Pastry Arts (BK)

Associate of Applied Science Degree (A.A.S.)

Baking and Pastry Arts prepares students for baking and pastry positions in the hospitality industry. Students meet objectives through hands-on production and theory application. The major develops skills and knowledge necessary for employment in a variety of baking and pastry establishments.

Career Opportunities: Successful graduates can anticipate entry-level employment as bakers and pastry cooks in restaurants, hotels, resorts, retail and wholesale baking establishments. Entrepreneurship is also possible for the student with corollary business skills.

Recommended High School Subjects: A strong background in high school math, reading and written communication is required, as is a working knowledge of keyboarding and computer science equipment and software. Strong manual dexterity and mechanical skills are highly desirable.

Remediation Strategies: Students must remediate deficiencies in the order of math, English, and reading.

Transfer Procedures: Students transferring from associate degree programs at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance in the major.

Program Goals: Baking and Pastry Arts Technology develops the skills and knowledge necessary for employment. Graduates of the major should be able to

- exhibit a strong foundation of baking methodology.
- establish and maintain high standards of sanitation.
- exhibit nutritional awareness and implement food-for-life principles.
- plan production of product; purchase, cost and price product for profit.
- exhibit a solid foundation of techniques for food preparation, presentation, and service, including competence in baking and pastry production and basic culinary skills.
- develop problem-solving techniques in real world applications.
- demonstrate the ability to function as a team member.
- conform to professional standards in appearance, attitude and performance.
- conform to established codes of ethics.
- demonstrate plating techniques as they apply to hot and cold dessert presentations.
- demonstrate basic knowledge and skills for display pieces including chocolate, marzipan, pulled sugar, and nougat.
- plan and present a grand pastry buffet.
- demonstrate working knowledge of the factors involved in setting up and operating a baking and pastry facility.
- demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
- demonstrate creativity and analytical thinking in solving management problems.
- establish a commitment to the profession through activities such as attending food shows, seminars, continuing education programs and professional association memberships.
- demonstrate knowledge and use microcomputers for information management.
- develop a career portfolio.
- demonstrate all Certified Pastry Culinarian competencies and outcomes required for licensing by the American Culinary Federation Accrediting Commission.

FIRST SEMESTER		Credits
FHD 106	Introduction to the Hospitality Industry	1
FHD 108	Foundations of Food Preparation	4
FHD 117	Purchasing	2
FHD 118	Sanitation	1
FHD 137	Introductory Baking	3
CSC 110	Introduction to Information Technology	3
MTH 113	Business Mathematics	3
		<hr/> 17
SECOND SEMESTER		Credits
FHD 116	Nutrition Application	3
FHD 125	Menu Planning and Cost Control	3
FHD 138	Cakes and Decorations	1
FHD 208	Principles of Quantity Baking	6
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 17
SUMMER SESSION		Credits
FHD 279	Baking and Pastry Arts Internship	1
		<hr/> 1
THIRD SEMESTER		Credits
FHD 141	Principles of Chocolate Works	1
FHD 203	Cakes, Pastries and Desserts	3
FHD 268	Facilities Planning	3
FHD 270	Classical and Specialty Dessert Presentation	3
FHD 310	Legal Issues and Applications in Hospitality	3
	Communication Elective	3
		<hr/> 16
FOURTH SEMESTER		Credits
FHD 105	Sugar Art	1
FHD 223	Baking and Pastry Arts Application	6
FHD 280	Pastry Food Show and Buffet Presentation Concepts	1
MGT 115	Principles of Management	3
	Science Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 17

Additional Information: Dress Code: Professionalism is the signature of this degree, and is the expectation for performance and appearance. Uniform and personal appearance standards are strictly enforced. Students are required to be clean-shaven (neat mustache above the lip is allowed), have properly contained hair (top of ear and back of collar for men; tied up and under hat for women, utilizing a net if necessary - no protruding bangs). In labs, no excessive makeup and no jewelry are allowed, including rings, watches and earrings or visible piercings of any style.

Accreditation: Accredited by American Culinary Federation Accrediting Commission.



Broadcast Communications (BC)

Associate of Applied Arts Degree (A.A.A.)

The Broadcast Communications curriculum prepares students for staff positions at small- to medium-sized radio and television facilities or in related mass communication industries such as cable systems or video production companies. Students have the opportunity for actual production experience in the College's radio station (WPTC-FM) and video-production laboratory. Student internships with regional radio and television stations may also be arranged.

Career Opportunities: Radio/television announcer, radio/television reporter, radio/video production assistant, copywriter, advertising salesperson, and public-relations practitioners involved in both commercial and industrial media production.

Recommended High School Subjects: Academic subjects that strongly emphasize written and verbal communication (especially grammatical structure) are helpful. Typing or word processing is very beneficial.

Remediation Strategies: Students must remediate English and reading deficiencies (RDG 111 level) within the first semester of the major and must remediate math deficiencies by the end of the first year. Students who test at the RDG 001 level will not be accepted until they pass the College's reading placement test.

Program Goals: The program's general goal is to prepare students for positions in small- to medium-sized radio and video facilities or in related mass communication industries.

Graduates of the Broadcast Communications program should be able to

- gather information needed to produce specialized material for the media - for example, news, sports, commercials, press releases, and public service announcements.
- demonstrate basic skills and sufficient discipline needed for basic broadcast writing, announcing and programming.
- demonstrate overall proficiency in the use of standard audio and video equipment, including audio and video editing.
- master basic photography skills - technique as well as aesthetics - and demonstrate basic operation of a video camera.
- electronically produce properly formatted text and appropriately designed graphics for modern print production.
- explain the organization structures and departmental functions of radio and television stations and of cable and video outlets.
- delineate skills in employee and management relations that reflect sound business principles as practiced by the media industry.
- trace the general history of advertising in the United States and analyze advertisements in terms of basic marketing theory.
- produce materials specific to a job search in the broadcast field - for example, audition tapes and career portfolios.
- know and remain current on the ethical canons, laws, and governmental regulations that influence the production of mass media.
- distinguish among the philosophical and practical standards and goals of the various forms of mass media.
- discuss the power and the responsibilities of the mass media in the United States and evaluate the trained media professional's unique role as an individual citizen who has the potential for influencing the lives of many others in the community.
- develop a level of self-awareness and valuing that maintains physical and mental well-being.
- analyze methods of advertising and prepare copy that incorporates advertising methods and principles.

FIRST SEMESTER		Credits
MCM 111	Introduction to Mass Communications	3
MCM 130	Audio in Media	3
MCM 131	Announcing Techniques	3
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
	Science Elective	3
		<u>16</u>

SECOND SEMESTER		Credits
MCM 120	News Writing	3
MCM 121	Principles of Advertising	3
MCM 132	Radio Station Operation and Production	3
ENL 121	English Composition II	3
PNP 134	Electronic Publishing and Design	3
PHO 101	Black-and-White Photography	3
		<u>18</u>

THIRD SEMESTER		Credits
MCM 232	Radio Programming and Management	3
MCM 135	Introduction to Video	3
MGT 115	Principles of Management	3
MTH 151	Structures of Mathematics	3
	or	
MTH 158	Elementary Statistics I	3
PSC 241	State and Local Government	3
	Social Science Elective	3
	or	
	Humanities Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>18</u>

FOURTH SEMESTER		Credits
MCM 243	Public Relations	3
MCM 220	Broadcast Journalism	3
MCM 122	Media and Law	3
	Mass Communications Elective	3
SPC 201	Interpersonal Communication	3
CSC 110	Introduction to Information Technology	3
		<u>18</u>

Mass Communications Elective: MCM152, MCM225, MCM244, MCM250, MCM253, PHO220

Building Construction Technology (CB)

Associate of Applied Science Degree (A.A.S.)

This major prepares a graduate with job-entry competencies in the construction industry. Students learn the principles and technologies of residential and light commercial construction. The curriculum emphasizes layout, construction materials, construction methods, cost estimation, project management and construction safety. Courses in English, mathematics, science, computer applications, and a social science or humanities elective are included to enhance a student's career opportunities.

This major may serve as a basis for continued education leading to a bachelor's degree in building construction management and/or vocational education.

Career Opportunities: Positions leading to supervisor, contractor, construction technician, or construction superintendent. These positions require, in addition to this degree, suitable job experience.

Recommended High School Subjects: Two years of algebra, one year of science. One year of geometry is desirable.

Remediation Strategies: Students are required to remediate all deficiencies in the first year. The order of remediation should be reading, math, and English.

Program Goals: The primary objective of the Building Construction Technology major for graduates is to be proficient with their trade skills needed for employment in the industry. It also provides graduates with the technical and managerial skills necessary for advancement in the industry.

A graduate of the Building Construction Technology major should be able to

- practice safe work habits, identify work hazards, and demonstrate responsible attitudes and high quality work.
- demonstrate the basic manipulative skills needed to layout and plan work.
- interpret plans, drawings, specifications, lines, symbols, and abbreviations on working drawings or blueprints.
- demonstrate the ability to layout and erect residential and commercial structures.
- identify the building codes related to all the various aspects of residential building industry.
- analyze specifications and contract drawings; make accurate quantity take-offs and labor estimations to develop an estimated construction cost for a building project.
- prepare preliminary architectural working drawings and sketches.
- demonstrate basic knowledge and skills in masonry and concrete construction.
- describe the organization, financing, labor relations, selling, pricing, customer service, management, and other aspects of business.
- describe the complexity of the building construction industry, the relationship among the various trades; methods of communication and coordination among all trades and professions in the industry.
- apply technical and basic skills on practical residential and light commercial construction projects.

FIRST SEMESTER		Credits
BCT 102	Construction Safety and Equipment	2
BCT 103	Construction Hand and Power Tools	1
BCT 109	Framing Principles	4
BCT 110	Site Preparation and Layout	2
BCT 117	Construction Materials and Applications I	3
CSC 110	Introduction to Information Technology	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>

SECOND SEMESTER		Credits
BCT 118	Construction Materials and Applications II	3
BCT 119	Blueprint Reading and Specifications	3
BCT 127	Roof Framing and Exterior Finishing	5
ARH 102	Basic Architectural Drafting	3
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
		<u>18</u>

THIRD SEMESTER		Credits
BCT 234	Masonry Principles	5
BCT 238	Concrete Construction	3
BCT 260	Introduction to Electrical and Mechanical Systems	3
ENL 201	Technical and Professional Communication	3
PHS 103	Physics Survey	3
	or	
PHS 114	Physics with Technological Applications	4
		<u>17</u>

FOURTH SEMESTER		Credits
BCT 255	Construction Estimating	3
BCT 256	Residential Construction Planning, Scheduling, and Management	3
BCT 257	Interior Finish and Trim	5
BCT 258	Computer Applications for Construction	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 18

MTH 180 is recommended for students desiring to transfer into B.S. majors after completing A.A.S. requirements. Faculty strongly recommend PHS114 because it covers topics related to construction and masonry. PHS114 has a MTH 180 prerequisite.



Building Construction Technology Masonry Emphasis (MN)

Associate of Applied Science Degree (A.A.S.)

This major provides students with the skills necessary for jobs in masonry construction. Training will be provided in blocklaying, bricklaying, and stone, along with the technologies of fireplace and structural masonry construction. Students are given specific instruction in site layout, concrete construction, blueprint reading, drafting and estimating. Related courses and electives will improve the student's potential for advancement and further prepare the graduate for employment.

Career Opportunities: The students will graduate with entry-level skills in masonry. Additional skills in architectural drawing, blueprint reading, estimating and related topics make the student very employable. A student graduating from this major would be qualified as a beginning blocklayer or bricklayer. The graduate would be qualified for a sales position, inspector, or entry-level management positions. Also, graduates could seek self-employment in masonry trades.

Recommended High School Subjects: Three years of English, two years of algebra, and one year of science.

Remediation Strategies: Students are required to remediate all deficiencies in the first year. Triple-deficient students will be required to remediate prior to admission into the major. The order of remediation will be reading, math and English.

Program Goals: The primary objective of the Building Construction Technology Masonry Emphasis major is to prepare graduates for masonry related jobs in the construction industry. Instruction should be broad based to expose students to all types of construction features they may find. Students should be able to solve problems and, with their acquired skills, accomplish multi-faceted tasks in the industry.

A graduate of the Building Construction Technology Masonry Emphasis should be able to

- practice approved safety procedures in various work situations.
- read and interpret drawings and blueprints.
- identify the building codes related to all various aspects of the residential building industry.
- write clear, accurate, and complete reports to industry standards.
- demonstrate the correct use of tools and methods.
- demonstrate good construction methods with regard to concrete block and brick construction.
- identify building materials and how they relate to each other structurally.

- use computer skills to store and retrieve estimates as related to the trade.
- demonstrate the ability to apply modern decision making techniques and the potential for managerial growth.

FIRST SEMESTER		Credits
BCT 102	Construction Safety and Equipment	2
BCT 103	Construction Hand and Power Tools	1
BCT 110	Site Preparation and Layout	2
MCT 115	Concrete Block Construction	5
CSC 110	Introduction to Information Technology	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<hr/> 16

SECOND SEMESTER		Credits
BCT 117	Construction Materials and Applications I	3
BCT 119	Blueprint Reading and Specifications	3
ARH 102	Basic Architectural Drafting	3
MCT 129	Brick Masonry	5
ENL 111	English Composition I	3
		<hr/> 17

THIRD SEMESTER		Credits
MCT 233	Stone Masonry	2
MCT 239	Fireplace Construction	3
BCT 238	Concrete Construction	3
ENL 201	Technical and Professional Communication	3
PHS 114	Physics with Technological Applications	4
	or	
PHS 103	Physics Survey	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 18

FOURTH SEMESTER		Credits
BCT 255	Construction Estimating	3
BCT 258	Computer Applications for Construction	4
MCT 262	Structural Masonry Systems	5
BCT 256	Residential Construction Planning, Scheduling, and Management	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

MTH 180 is recommended for students desiring to transfer into B.S. majors after completing A.A.S. requirements. Faculty strongly recommend PHS 114 because it covers topics related to construction and masonry. PHS 114 has a MTH 180 prerequisite.

MCT courses may be offered out of sequence or by alternative delivery strategies.



Business Management (BM)

Associate of Applied Science Degree (A.A.S.)

The Business Management curriculum offers students the skills needed to prepare for a career in management and management related fields. Students develop skills in effective decision making, problem solving, organizing and planning. The major includes courses in accounting, finance, personnel management, human resources, international business, and marketing.

Career Opportunities: Entry-level management trainee positions in manufacturing, retailing, banking, insurance, marketing, and government.

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The general objective of the Business Management major is to prepare students for an entry-level management trainee position in manufacturing, finance, banking, insurance, marketing, government or other business organizations.

The graduate should be able to

- demonstrate specialized knowledge and skills (e.g. marketing, accounting, finance, computers, etc.) needed for employment in management positions.
- demonstrate decision making in a business environment.
- relate in a professional manner to supervisors, peers, subordinates and customers.
- analyze business situations including problem identification, research, development and evaluation of alternatives, and solution selection and implementation.
- identify and evaluate the environments that impact on business, to include the legal, political, economic, competitive, social and technological.
- understand the global perspective of business.
- recognize the importance of business ethics and its relationship to business operations.
- identify vital software and its applications to business.

FIRST SEMESTER	Credits
MGT 115 Principles of Management	3
ACC 113 Introduction to Financial Accounting	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MTH 113 Business Mathematics	3
OFT 101 Keyboarding and Its Applications	1
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SECOND SEMESTER	Credits
MGT 230 Business Communications	3
or	
ENL 201 Technical and Professional Communication	3
ACC 123 Introduction to Managerial Accounting	3
CSC 211 Business Computer Applications Using Spreadsheet	3
ECO 111 Principles of Macroeconomics	3
SPC 101 Fundamentals of Speech	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

THIRD SEMESTER	Credits
MGT 231 Business Law I	3
MGT 248 Supervision and Human Relations	3
or	
MGT 340 Human Resource Management	3
MKT 240 Principles of Marketing	3
Specified Business Management Elective	3
Specified Business Management Elective	3
	<u>15</u>

FOURTH SEMESTER	Credits
MGT 116 International Business	3
or	
MGT 216 International Business	3
MGT 220 Finance	3
or	
FIN 220 Finance	3
MGT 315 Business Ethics (STS)	3
Specified Business Management Elective	3
Science Elective	3
	<u>15</u>

Specified Business Management Elective: ACC331, MGT241, MGT249, MGT250, MKT243, MKT253, MKT260

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Business Management

Travel and Tourism Emphasis (TV)

Associate of Applied Science Degree (A.A.S.)

The Business Management associate degree with an emphasis in Travel and Tourism prepares students to enter the travel and tourism industry. In the course of study, students are exposed to a range of liberal arts, business, and travel and tourism courses. Both classroom and practical learning experiences expose the student to the travel and tourism industry and its various career areas. The major allows students, through the choice of electives, to explore specific career paths including the study of travel agency operations and management, group tour operations and escorting, hospitality and tourist attraction services, or airline operations.

Career Opportunities: The major provides students with the necessary skills, knowledge and credentials to obtain various entry level positions and then progress into management and/or ownership positions in the areas of airlines, car rentals, corporate travel, passenger rail, tourist attractions, tourist offices, tour operators and travel agencies. In general, entry-level positions are available in the areas of daily operations, sales, customer service and business operations.

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The goal of this emphasis is to prepare students to enter the travel and tourism industry. Through the application of knowledge and skills learned, graduates will be ready to make positive contributions to the industry and society in general, and to gain personal fulfillment through the development of a rewarding and successful career.

Specifically, the graduate should be able to

- identify and demonstrate a working knowledge of terminology, regulations, services, and day-to-day operations of the travel and tourism industry, in particular, and business in general.
- explain professionalism and ethical decision making in a managerial capacity when dealing with fellow employees, clients/customers, government offices and agencies, and other businesses.
- perform the primary tasks required in entry-level positions in the travel and tourism industry.
- execute complete travel and tourism transactions that meet client/customer needs and to satisfy industry standards.
- identify and analyze current trends in the industry and recognize the importance of these trends to future success in the travel and tourism industry.

100 — ASSOCIATE DEGREE MAJORS

- demonstrate awareness and an understanding of the wide range of career opportunities available within the travel and tourism industry.
- apply general business and management theories and techniques to the everyday operations of the travel and tourism industry.
- identify, analyze, and integrate the broad base of theory and knowledge from liberal arts courses with that from the more job-specific travel, tourism, and business courses.

FIRST SEMESTER		Credits
MGT 115	Principles of Management	3
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MTH 113	Business Mathematics	3
TTM 110	Introduction to Travel and Tourism	3
OFT 101	Keyboarding and Its Applications	1
		<hr/> 16

SECOND SEMESTER		Credits
MGT 230	Business Communications	3
or		
ENL 201	Technical and Professional Communication	3
GEO 111	Introduction to Cultural Geography	3
or		
ECO 111	Principles of Macroeconomics	3
SPC 101	Fundamentals of Speech	3
TTM 120	Travel Reservations and Ticketing	3
	Specified Travel & Tourism Business Elective	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

THIRD SEMESTER		Credits
MGT 231	Business Law I	3
or		
FHD 265	Hospitality Business and Law	3
or		
FHD 310	Legal Issues and Applications in Hospitality	3
MKT 240	Principles of Marketing	3
ACC 113	Introduction to Financial Accounting	3
TTM 230	Group Tour Operations	3
	Science Elective	3
		<hr/> 15

FOURTH SEMESTER		Credits
MGT 216	International Business	3
MKT 243	Sales	3
MGT 315	Business Ethics (STS)	3
TTM 250	Travel and Tourism Management	3
	Specified Travel & Tourism Elective	3
	Specified Travel & Tourism Elective	3
		<hr/> 18

Specified Travel & Tourism Business Elective: ACC331, MGT241, MGT248, MGT249, MGT250, MKT253, MKT260

Specified Travel & Tourism Elective: ACC113, ACC123, CSC211, FIN220, MGT241, MGT248, MGT249, MGT250, MGT340, MKT253, MKT260

Accreditation: Accredited by The International Assembly for Collegiate Business Education (IACBE).

Civil Engineering Technology (CT)

Associate of Applied Science Degree (A.A.S.)

This major trains students in the skills needed to assist civil engineers in planning, designing and building highways, railroads, bridges, airfields, buildings and dams. Experience with modern

equipment prepares students to meet the challenge of recent technical developments.

Career Opportunities: Engineering technician, engineering surveyor, inspector, draftsman, CAD operator, cartographer, design technician, construction manager.

Recommended High School Subjects: Two years of algebra, one year of science. Any math deficiencies should be corrected prior to entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Civil Engineering Technology major is to prepare students for technical-level positions in the field of civil engineering. The major also provides an overview of the field and prepares students for technician certification tests and for advanced study. Specifically, this major should prepare the student to

- distinguish among various types of surveys and select and use the proper instruments and methods for each type of survey; including control, construction, and topographic surveys.
- construct cartographic and topographic maps using recognized mapping procedures.
- apply basic criteria used to design and locate highways and estimate earthwork quantities for highway construction.
- determine and use the engineering properties of the basic construction materials such as steel, concrete, wood, and soil.
- describe the functions of basic structural components and design these components to resist applied loads.
- demonstrate a working knowledge of the mechanics of compressible and incompressible fluid flow and their applications in piping systems, pumps, open channels, and reservoirs.
- predict the effects of rainfall runoff on engineering systems; design inlets, gutters, retention/detention basins and sedimentation control devices using accepted procedures.
- demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD); perform basic drawing functions with CAD equipment to create engineering drawings.
- use algebra, trigonometry, analytic geometry, statistics, and applied calculus to solve problems related to civil engineering.
- apply scientific procedures learned in physics in solving engineering problems.
- prepare and use the computer programs needed to solve engineering problems.

FIRST SEMESTER		Credits
CAD 116	Introduction to 2D CAD	3
CET 113	Introductory Surveying	2
CET 114	Civil Drafting	2
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MTH 180	College Algebra and Trigonometry I	3
CSC 108	Introduction to Computer Programming Concepts	1
		<hr/> 17

SECOND SEMESTER		Credits
CET 122	Topographic Drawing and Cartography	3
CET 123	Plane Surveying	3
ENL 201	Technical and Professional Communication	3
MTH 158	Elementary Statistics I	3
or		
MTH 160	Elementary Statistics with Computer Applications	4
MTH 182	College Algebra and Trigonometry II	3
	Humanities Elective	3
or		
	Social Science Elective	3
		<hr/> 18

THIRD SEMESTER		Credits
CET 233	Statics	3
CET 234	Highway Engineering Technology	3
CET 235	Computer Applications in Civil Engineering	1
CET 237	Route Surveying	3
CET 238	Origin, Distribution and Behavior of Soils (WRT)	3
PHS 115	College Physics I	4
	Fitness and Lifetime Sports Elective	1
		<hr/> 18

FOURTH SEMESTER		Credits
CET 242	Fluid Mechanics	3
CET 243	Strength of Materials	3
CET 246	Materials of Construction	3
CET 249	Stormwater Management	2
MTH 230	Applied Calculus	3
PHS 125	College Physics II	4
		<hr/> 18

MTH 180/182 - Eligible students may substitute MTH 240/242 for MTH 180/182.

NOTE: Students taking the MTH 240/242 option may substitute PHS 201 and PHS 202 for PHS 115 & PHS 125, and are not required to take MTH 230.

Co-op Options: Parallel, Summer

Accreditation: Accredited by the Accreditation Board for Engineering and Technology, Technology Accreditation Commission, 111 Market Place, Suite 1050, Baltimore, MD, 21202, Telephone (410) 347-7700.

Collision Repair Technology (CR)

Associate of Applied Science Degree (A.A.S.)

Students learn to apply advanced auto body techniques and principles in diagnosing damage and prescribing corrective work. The major emphasizes auto body shop management, as well as the theory and skills of metal and plastic repair, MIG and plastic welding, unibody straightening, multi-component paint systems, computer estimating, and hazardous-material handling.

Career Opportunities: Independent auto body shop owner/operator, assistant auto body manager, service equipment representative, insurance estimator, skilled jobs involving paint applications in manufacturing or service industries, dealer service specialist.

Recommended High School Subjects: Three years of English, two years of algebra and one year of science.

Remediation Strategies: Deficient students may start the major. The order of remediation will be math, reading and English.

Program Goals: The general objective of the Collision Repair Technology major is to prepare the students to manage and operate a collision repair shop in a dealership or to be self-employed. Basic and advanced collision repair skills are stressed, coupled with an understanding of business principles.

A graduate of the Collision Repair Technology major should be able to

- write clear, concise, and accurate repair orders, technical reports, and business letters.
- diagnose and repair collision damage to sheet metal and plastics.
- diagnose common paint problems and make necessary repairs.
- mix and apply modern multi-component paint systems.
- assess damage to mechanical areas caused by collision.
- perform unibody frame straightening operations.
- understand the health hazards of modern paint systems, proper handling, records maintenance, and protective procedures.
- diagnose basic mechanical damage and perform basic removal and installation of affected parts.
- demonstrate both efficiency and quality in automotive refinishing work.

- test, adjust, and align modern automotive suspension systems.
- maintain business records, explain factors involved in starting a new business, and state good management practices.
- utilize computers for writing estimates.
- relate in a positive manner to supervisors, peers, and employees.
- demonstrate a responsible attitude toward the collision repair service and manufacturing industry.

FIRST SEMESTER		Credits
ABC 111	Introduction to Auto Body	2
ABC 113	Basic Unibody Repair	3
ABC 114	Introduction to Body and Chassis	5
MTH 124	Technical Algebra and Trigonometry I	3
or		
MTH 180	College Algebra and Trigonometry I	3
SAF 110	Occupational Health and Safety	2
WEL 100	Introduction to Welding Processes	3
		<hr/> 18

SECOND SEMESTER		Credits
ABC 121	Introduction to Repair Procedures	5
ABC 122	Basic Refinish	5
CSC 110	Introduction to Information Technology	3
OFT 101	Keyboarding and Its Applications	1
	Humanities Elective	3
or		
	Social Science Elective	3
or		
	Art Elective	3
or		
	Foreign Language Elective	3
		<hr/> 17

THIRD SEMESTER		Credits
ABC 203	Advanced Unibody Repair	5
AMT 113	Steering and Suspension	3
AMT 118	Air Conditioning Fundamentals and General Accessories	2
ENL 111	English Composition I	3
MGT 249	Small Business Management	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 17

FOURTH SEMESTER		Credits
ABC 204	Advanced Refinishing	5
ABC 222	Basic Auto Body Mechanics	4
ABC 224	Job Estimating with Computers	3
ENL 201	Technical and Professional Communication	3
	Science Elective	3
		<hr/> 18

The Collision Repair program is a member of the I-CAR Industry Training Alliance.

Accreditation: The collision repair major is master accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Computer-Aided Drafting Technology (CD)

Associate of Applied Science Degree (A.A.S.)

This curriculum provides a cross-section of drafting skills, technical knowledge and academic preparation for job entry as a drafter/detailer. The major also provides the math, English, and science preparation for design and engineering applications after

graduation, or transfer to an applied engineering technology/manufacturing baccalaureate degree major.

Includes a working knowledge of mechanical, structural, civil, electrical/electronic, piping, and tool and die drafting applications. Drafting fundamentals, detailing, cams, gears, and mechanisms are covered in the first year of study. Both manual and computer aided drafting techniques are emphasized in the coursework. Mathematics, science, metallurgy, manufacturing materials, communications and computer applications serve as a basis for all drafting courses, future employment, or continued education.

Career Opportunities: Drafter/detailer for mechanical, structural, civil, electrical, and electronics drafting fields. In addition, graduates may find opportunities for advancement to positions as lead drafter, designer, checker or engineering aide.

Recommended High School Subjects: Two years of algebra, one year of physics or mechanics. Following a "Tech Prep" cluster high school curriculum would be a distinct advantage.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is suggested that students remediate math deficiencies prior to English and reading.

Program Goals: The general objective of the major is to provide skills and knowledge in various drafting fields. Graduates of the major should be able to

- apply basic drafting fundamentals using various CAD media and equipment.
- prepare detail drawings from design layouts and engineering information.
- prepare sub-assembly and assembly drawings.
- analyze, design, and calculate gears, cams, and mechanisms.
- perform engineering calculations (algebraic and trigonometric functions) to solve drawing and design problems.
- apply dimensions and calculate tolerances for parts and designs.
- apply geometric dimensioning and tolerancing to drawings.
- prepare structural plans and details for steel structures.
- use the design process to solve problems and prepare modifications to a product.
- prepare civil drawings from surveying and engineering notes.
- use manufacturers' catalogs to select standard parts.
- prepare electrical and electronic drawings and schematics from engineering information.
- design and draw tools, dies, jigs and fixtures used to manufacture parts.
- prepare piping drawings and schematics.
- prepare two-dimensional drawings using CAD software.
- demonstrate CAD customization and management techniques.
- use 3D CAD and solids modeling techniques to design and prepare drawings.
- describe and apply principles of physics and metallurgy to drafting applications.
- demonstrate an understanding of professional behaviors associated with the drafting and design occupation.
- demonstrate research and data collection skills necessary to obtaining technical information.
- demonstrate knowledge of basic machine shop practices and their application in drafting and design.

FIRST SEMESTER	Credits
CAD 116 Introduction to 2D CAD	3
CCD 101 Technical Drawing I	3
CCD 102 Detailing I	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MTT 211 Manufacturing Materials and Processes	3
	18

SECOND SEMESTER	Credits
CAD 126 Advanced 2D CAD	3
CCD 121 Technical Drawing II	3
CCD 122 Detailing II	3
MTH 180 College Algebra and Trigonometry I	3
ENL 201 Technical and Professional Communication	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	18

THIRD SEMESTER	Credits
CAD 237 3D CAD and Modeling	3
CCD 235 Design and Production Drawings	3
CCD 236 Civil and Structural Drawings	3
MTH 182 College Algebra and Trigonometry II	3
PHS 115 College Physics I	4
Fitness and Lifetime Sports Elective	1
	17

FOURTH SEMESTER	Credits
CAD 247 CAD Management and Customization	3
CCD 243 Tooling Design and Drawings	3
CCD 244 Electrical and Electronics Drawings	3
MSC 106 Introduction to Metallurgy	4
or	
PHS 125 College Physics II	4
	13

Students planning to continue in the BCD program are advised to take ECO 111 in the second semester. Economics will satisfy the humanities/social science/art/foreign language elective. Students planning to continue in BCD should take MTH 240 and PHS 125 during the fourth semester.



Computer Information Systems Networking and Technical Support (NT) Associate of Applied Science Degree (A.A.S.)

The Networking and Technical Support curriculum offers the theoretical and hands-on training required for students who plan to enter this fast-growing field. Course offerings are intended for those with a specific interest in practical applications for computers. This curriculum prepares students for positions requiring practical applications of microcomputers to problem solving in business situations. Students who complete this sequence will have a solid foundation in structured programming, microcomputer applications, and local area networking.

Career Opportunities: End-user technical specialist, network maintenance specialist, microcomputer applications trainer, sales and marketing representative.

Recommended High School Subjects: Required high school English and mathematics. Algebra, keyboarding and some computer experience are beneficial.

Remediation Strategies: All students entering the major will be tested for English, reading and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Networking and Technical Support program is to prepare students for positions requiring practical applications of microcomputers to problem solving in business situations. Upon completion of this program, graduates should be able to

- apply a suite of software tools useful for word process, spreadsheet, database, presentation graphics, database retrieval, and Internet and electronic mail.
- demonstrate the installation, maintenance and technical support of popular networking systems.
- apply a working knowledge of various popular network operating systems.
- apply hardware/software technology for effective use in a business environment.
- demonstrate troubleshooting, diagnostic techniques, and interpersonal communication skills.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
CSC 140	Problem Solving with Elementary Programming	3
EET 105	Microcomputer Maintenance	1
ENL 111	English Composition I	3
MGT 115	Principles of Management	3
MTH 151	Structures of Mathematics	3
	or	
MTH 180	College Algebra and Trigonometry I	3
OFT 101	Keyboarding and Its Applications	1
		<u>17</u>

SECOND SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
CSC 161	Computer Programming I	3
EET 204	Network Installation and Maintenance	3
EET 205	Network Maintenance Laboratory	1
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
MTH 153	Topics in Mathematics	3
	or	
MTH 182	College Algebra and Trigonometry II	3
		<u>16</u>

THIRD SEMESTER		Credits
CSC 250	Creating Web Applications	3
CSC 262	Computer Programming II	3
CSC 271	Network Administration	3
CSC 281	Computer Organization	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>15</u>

FOURTH SEMESTER		Credits
CSC 263	Data and Object Structures	3
CSC 272	Network Technical Support	3
CSC 273	Network Interconnection	3
CSC 282	Systems Programming	3
	Fitness and Lifetime Sports Elective	1
	Science Elective	3
		<u>16</u>

Computer Information Systems Programming and Database Processing (PD)

Associate of Applied Science Degree (A.A.S.)

The Programming and Database Processing curriculum offers the theoretical and hands-on training required for students who plan to enter this fast-growing field. Course offerings are intended for those with a specific interest in practical applications for computers.

Programming and Database Processing prepares students for entry-level positions as programmers of business applications. Students completing this sequence will have a solid knowledge of structured programming, the popular business computer languages, and standard business/accounting practices.

Career Opportunities: Entry level programmer of business applications, maintenance programmer, or sales and marketing representative.

Recommended High School Subjects: Required high school English and mathematics. Algebra, keyboarding and some computer experience are beneficial.

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Programming and Database processing major is to prepare students for positions as programmers of business applications by providing them with knowledge of structured programming, the popular business computer languages, and standard business/accounting practices. Specifically, graduates of this major should be able to

- apply a suite of software tools useful for word process, spreadsheet, database, presentation graphics, database retrieval, and Internet and electronic mail.
- employ systems and development concepts, information technology, and application software.
- demonstrate a working knowledge of various popular operating systems.
- apply hardware/software technology for effective use in a business environment.
- demonstrate an understanding of algorithm development, programming, computer concepts, and the design and application of data and file structures on several platforms and a variety of programming languages.

FIRST SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
CSC 140	Problem Solving with Elementary Programming	3
MGT 110	Principles of Business	3
EET 105	Microcomputer Maintenance	1
ENL 111	English Composition I	3
MTH 151	Structures of Mathematics	3
	or	
MTH 180	College Algebra and Trigonometry I	3
OFT 101	Keyboarding and Its Applications	1
		<u>17</u>

SECOND SEMESTER		Credits
ACC 113	Introduction to Financial Accounting	3
CSC 128	COBOL Programming I	3
CSC 161	Computer Programming I	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
MTH 153	Topics in Mathematics	3
	or	
MTH 182	College Algebra and Trigonometry II	3
		<u>15</u>

THIRD SEMESTER		Credits
CSC 238	COBOL Programming II	3
CSC 250	Creating Web Applications	3
CSC 262	Computer Programming II	3
CSC 281	Computer Organization	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

FOURTH SEMESTER		Credits
CSC 201	File and Database Processing	3
CSC 258	Programming in RPG	3
CSC 263	Data and Object Structures	3
CSC 282	Systems Programming	3
	Science Elective	3
		<u>15</u>

Culinary Arts Technology (CY)

Associate of Applied Science Degree (A.A.S.)

The Culinary Arts Technology degree prepares students for entry-level culinary positions in commercial, institutional, and industrial food service operations and offers options that prepare the student for advancement into entry-level management positions in these areas.

Career Opportunities: Cook, sous chef, line chef, garde manger, steward.

Recommended High School Subjects: A strong background in high school math, reading and written communication is required, as is a working knowledge of keyboarding and computer science equipment and software. Strong manual dexterity and mechanical skills are highly desirable.

Remediation Strategies: Students should remediate deficiencies in the sequence of math, English and reading.

Transfer Procedures: Students transferring from associate degree programs at Penn College or another college will have their transcripts evaluated by Penn College officials prior to acceptance into the major.

Program Goals: Culinary Arts Technology provides students the skills and knowledge required for successful performance in food-service operations. Upon completion of the degree, the graduate should be able to

- establish and maintain high standards of sanitation; demonstrate working knowledge of HACCP guidelines and applications.
- describe the physiological effects of food on the human body.
- exhibit nutritional awareness and implement food-for-life principles.
- plan menus; purchase, cost, and price product for profit.
- demonstrate a solid foundation of techniques for food preparation, presentation, and service including competence in baking, line cooking, classical cuisine, and garde manger, specifically, those competencies required for ACF Certified Cook certification eligibility.
- use problem solving techniques in maintaining kitchen morale and building a team spirit.
- plan and cater events.
- conform to professional standards in personal appearance.
- demonstrate appropriate work ethic attitudes to include punctuality and professional business communication standards and expectations.
- identify and describe the equipment available in the marketplace and plan its arrangement, operation, and maintenance for efficiency and safety.
- conform to established codes of ethics and demonstrate a responsible attitude to the culinary arts profession.
- demonstrate philosophical and practical application of ethics as a worker and supervisor in a daily work environment.
- demonstrate display techniques as they apply to hot and cold buffet presentations.
- demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
- fabricate and process meats, seafood, and wild game.
- demonstrate appropriate purchasing, preparation, and presentation techniques designed to maximize guest satisfaction and financial profitability.
- demonstrate knowledge and application of food and cultures of Regional American and International cuisine.
- gain taste distinction through analysis of food and sensory perceptions.

- recognize, differentiate among, and critique customer service philosophies and identify the subtleties in the service of food and wine that distinguishes a high quality dining experience, commensurate with target market expectations.

FIRST SEMESTER		Credits
FHD 106	Introduction to the Hospitality Industry	1
FHD 108	Foundations of Food Preparation	4
FHD 117	Purchasing	2
FHD 118	Sanitation	1
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MTH 113	Business Mathematics	3
		<u>17</u>

SECOND SEMESTER		Credits
FHD 116	Nutrition Application	3
FHD 125	Menu Planning and Cost Control	3
FHD 140	Food Preparation, Application and Production	4
FHD 133	Tableservise	2
FHD 134	Tableservise Practicum	1
FHD 137	Introductory Baking	3
		<u>16</u>

SUMMER SESSION		Credits
FHD 269	Culinary Internship	1
		<u>1</u>

THIRD SEMESTER		Credits
FHD 305	Regional American Cuisine Lecture	1
FHD 306	Regional American Cuisine Practicum	2
FHD 277	Advanced Garde Manger	1
FHD 268	Facilities Planning	3
FHD 273	Breakfast and Brunch Lecture	1
FHD 274	Breakfast and Brunch Practicum	2
	Fitness and Lifetime Sports Elective	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Communication Elective	3
		<u>17</u>

FOURTH SEMESTER		Credits
FHD 135	Wine and Beverage Management	2
FHD 136	Wine and Beverage Practicum	1
FHD 266	Catering	3
FHD 308	Classical Cuisines of the World Lecture	1
FHD 309	Classical Cuisines of the World Practicum	2
MGT 115	Principles of Management	3
	Science Elective	3
	Hospitality Elective	3
		<u>18</u>

Additional Information: Dress Code: Professionalism is the signature of this degree, and is the expectation for performance and appearance. Uniform and personal appearance standards are strictly enforced. Students are required to be clean-shaven (neat mustache above the lip is allowed), have properly contained hair (top of ear and back of collar for men; tied up and under hat for women, utilizing a net if necessary - no protruding bangs). In labs, no excessive makeup and no jewelry are allowed, including rings, watches and earrings or visible piercings of any style. Students in Tableservise and/or Wine and Beverage Practicum may wear appropriate cosmetics, a watch, a single set of post-style earrings. Hair must be restrained - the utilization of a French braid or discrete pinning/styling is required.

Accreditation: Accredited by American Culinary Federation Accrediting Commission.



Dental Hygiene (DH)

Associate of Applied Science Degree (A.A.S.)

This curriculum offers the theoretical and clinical education needed for a variety of dental hygiene careers. The major provides a diversified background to prepare students for licensing exams, for additional education and for immediate employment. Students must earn a minimum grade of “C” in each aspect of their dental hygiene courses. Deficiencies identified by placement testing will be remediated prior to admission. Chemistry must be satisfied prior to admission to the major. Failure to do so will result in termination from the major. SAT scores are strongly advised for applicants applying within two years of high school graduation. Dental Hygiene is fully accredited by the American Dental Association, Commission on Dental Accreditation.

Career Opportunities: Dental hygienists are employed by dentists in private dental practices, research, government health agencies, school systems, hospital and industrial clinics, military services, and in dental hygiene education programs.

Recommended High School Subjects: Because of the strong emphasis on science in this major, applicants must have successfully completed one year of high school biology and two years of high school algebra. It also is recommended that the applicant have chemistry with a laboratory. Applicants not having a “C” or better in high school chemistry within the past 10 years, must have CHM 100 or higher or equivalent prior to admission to the Dental Hygiene major.

Remediation Strategies: All developmental needs and chemistry must be cleared before admission to this major will be considered. A minimum 2.0 GPA in math/science is required in order to be considered for admission in the major.

Transfer Procedures: Students in this major can transfer to the Dental Hygiene bachelor degree option (BHM or BHP) or the Applied Health Studies major (BAH). This major will subscribe to the transfer standards established by the College.

Program Goals: Dental Hygiene majors complete core courses in addition to the didactic and clinical instruction in preparation for licensing and employment as hygienists. The Dental Hygiene graduate should be able to

- apply a professional code of ethics in all endeavors.
- adhere to state and federal laws and regulations in the provision of dental hygiene care.
- utilize methods to ensure the health and safety of the patient and the dental hygienist in the delivery of dental hygiene.
- manage medical emergencies in the patient care environment through recognition and/or provision of appropriate life support measures.
- provide quality assurance mechanisms for appropriate oral health services.
- provide accurate, complete, and confidential documentation of dental hygiene services rendered in the dental hygiene process of care.
- utilize published reports of oral health research and critically apply this information to the practice of dental hygiene.
- promote and support the profession through service activities and affiliations with professional organizations.
- perform self-assessment for life long learning and professional growth.
- identify dental hygiene career opportunities within health care systems, industry, education, and research.
- collect, analyze, and record data on the general, oral, and psychosocial health status of a variety of patients using methods consistent with medicolegal principles.
- use critical decision making skills to reach conclusions about the patient’s dental hygiene needs based on all available assessment data.
- consider methods that can be used to promote patient adherence to disease prevention and/or health maintenance strategies.
- collaborate with the patient and other health professionals to formulate a comprehensive dental hygiene care plan that is patient-centered and based on current scientific evidence.
- provide specialized treatment that includes preventive and therapeutic services designed to achieve and maintain oral health; assist in achieving oral health goals formulated in collaboration with the patient.

- evaluate the effectiveness of the implemented clinical, preventive, and educational services and modify as needed.
- assess, plan, implement, and evaluate program and activities that comprise community dental health.

FIRST SEMESTER	Credits
DEN 103 Dental Hygiene I	4
DEN 104 Preventive Dentistry	2
DEN 107 Orofacial Anatomy	3
DEN 108 Oral Histology	1
BIO 115 Human Anatomy and Physiology I	4
Math Elective (MTH150 or higher)	3
	<hr/> 17

SECOND SEMESTER	Credits
DEN 123 Dental Radiology	3
DEN 126 Dental Hygiene II	5
DEN 130 Introduction to Periodontics	2
DEN 211 Oral Health and Nutrition	2
BIO 201 Microbiology	4
BIO 125 Human Anatomy and Physiology II	4
	<hr/> 20

SUMMER SESSION	Credits
ENL 111 English Composition I	3
	<hr/> 3

THIRD SEMESTER	Credits
DEN 204 Pharmacology	2
DEN 208 Dental Hygiene III	6
DEN 214 Dental Materials and Specialties	3
DEN 202 General and Oral Pathology	2
DEN 212 Periodontics II	1
PSY 111 General Psychology	3
	<hr/> 17

FOURTH SEMESTER	Credits
DEN 220 Community Dental Health	2
DEN 224 Dental Law and Ethics (WRT)	1
DEN 227 Dental Hygiene Theory and Practice	5
CSC 110 Introduction to Information Technology	3
SPC 101 Fundamentals of Speech	3
Fitness and Lifetime Sports Elective	1
Social Science Elective	3
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Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this major of study. Please refer to a listing of special Health Sciences requirements in the Admissions section of this Catalog.

Notice of Conviction: The Pennsylvania Board of Dentistry advises that a drug-related conviction and/or conviction of a felonious act can result in denial and/or revocation of a license to practice dental hygiene.

Accreditation: Dental Hygiene is fully accredited by the American Dental Association, Commission on Dental Accreditation.

Diesel Technology (DD)

Associate of Applied Science Degree (A.A.S.)

Students develop the skills necessary to repair and maintain diesel-powered highway, industrial, and marine vehicles and equipment. Advanced diesel maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. The coursework emphasizes diesel service management, as well as the theory and skills of refrigeration, electronic and mechanical fuel injection, chassis maintenance, vehicle inspection, tune-up, engine overhaul, transmission repair, brake service, and handling hazardous

waste. Students may enroll in this major in the fall or spring semester.

Career Opportunities: Heavy duty truck technician for truck dealership, independent garage, truck fleet, leasing company or contractor; technical service representative for diesel engine manufacturer or distributor; diesel service occupations such as service writer, warranty writer, parts manager, service manager, transport refrigeration technician, automated drive-line and fuel system specialist.

Recommended High School Subjects: Three years of English, two years of algebra and two years of science.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by end of the first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Diesel Technology major is to prepare students to manage, service and repair heavy-duty diesel engines and trucks. The curriculum provides exposure to all facets of the industry with specific emphasis on problem solving and transferability of skills. Graduates are prepared to take the Pennsylvania Vehicle Safety Inspection Examinations and the National Institute of Automotive Service Excellence (NIASE) Examinations in heavy truck mechanics.

A graduate of the Diesel Technology major should be able to

- diagnose and repair mechanical and electronic fuel injection malfunctions.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- perform vehicle safety inspections as required by state and federal laws.
- overhaul and tune up diesel engines.
- test, adjust, and align truck suspension systems.
- diagnose and repair common malfunctions to brakes, air conditioning, and refrigeration systems.
- interpret schematics and wiring diagrams, test starting, charging, lighting, and accessory systems.
- understand the potential health and safety hazards in the work place and how to properly document and perform corrective action.
- apply basic electronic principles to engine control and data storage.

FIRST SEMESTER	Credits
DSM 113 Tools and Hardware	1
DSM 114 Applied Failure Analysis	1
DSM 115 Diesel Engines	4
DSM 116 Diesel Engines Laboratory	4
DSM 117 Introduction to Hydraulics	1
CSC 110 Introduction to Information Technology	3
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<hr/> 17

SECOND SEMESTER	Credits
DSM 118 Fuel Systems	2
DSM 120 Basic Electricity	4
DSM 140 Truck Tractor Chassis and Alignment	3
DSM 141 Heavy Duty Brake Systems	2
DSM 142 Power Train and Brake Systems Lab	4
DSM 146 Commercial Truck Power Train and State Inspection	3
	<hr/> 18

THIRD SEMESTER	Credits
DSM 240 Electronic Fuel Systems Operation/Diagnostics	3
DSM 241 Diesel Electronic Systems	2
DSM 242 Diesel Equipment Air Conditioning Systems	2
DSM 246 Allison Transmissions	3
ENL 111 English Composition I	3
PHS 103 Physics Survey	3
or	
PHS 114 Physics with Technological Applications	4
Fitness and Lifetime Sports Elective	1
	<hr/> 17

FOURTH SEMESTER	Credits
DSM 258 Vehicle Electronics/Diagnostic Procedures	3
DSM 259 Automated Power Train Products	3
DSM 268 Truck and Tractor Refrigeration Systems	4
DSM 274 Equipment Maintenance Management	1
ENL 201 Technical and Professional Communication	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<hr/> 17

Diesel Technology Mack Emphasis (MK)



Associate of Applied Science Degree (A.A.S.)

Students develop the skills necessary to repair and maintain diesel powered highway vehicles. Advanced diesel maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. The major emphasizes diesel service management, as well as the theory and skills of electronic and mechanical fuel injection, chassis maintenance, vehicle inspection, tune-up, engine overhaul, transmission repair, brake service and handling hazardous waste. Students will be provided additional skill development in the servicing, repairing and testing of late model vehicles manufactured by Mack Trucks, Inc.

Career Opportunities: Heavy duty truck technician for Mack Trucks, Inc. dealership, independent garage, truck fleet, leasing company or contractor; field service representative for Mack Trucks, Inc. or distributor; diesel service occupations such as service writer, warranty writer, parts manager or assistant service manager.

Recommended High School Subjects: Three years of English, two years of algebra, and two years of science.

Remediation Strategies: Triple deficient students will be required to remediate prior to admission to the major. All students must remediate by end of the first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Diesel Technology/Mack Emphasis major is to prepare students to manage, service and repair heavy-duty diesel engines and vehicles serviced by Mack Trucks, Inc. dealerships. The program exposes students to all facets of the industry with specific focus on problem solving, transferability of skills and Mack Truck systems and design. Students need a Mack dealership sponsor and must serve a Mack internship. A graduate of the Diesel Technology/Mack Emphasis major should be able to

- practice approved safety procedures in various work situations.
- read and interpret vehicle and component service manuals and write clear, accurate, and complete service reports.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- diagnose and repair mechanical and electronic fuel injection malfunctions.
- overhaul and tune up diesel engines.
- test, adjust, and align truck suspension systems.
- diagnose and repair common malfunctions to brakes, air conditioning, and refrigeration systems.
- interpret schematics and wiring diagrams, test starting, charging, lighting, and accessory systems.
- understand the potential health and safety hazards in the work place and how to properly document and perform corrective action.
- apply basic electronic principles to engine control and data storage.
- understand approved Mack Trucks, Inc., dealer procedures as applicable to vehicle service, repair and warranty claims.

FIRST SEMESTER		Credits
DSM 113	Tools and Hardware	1
DSM 115	Diesel Engines	4
DSM 116	Diesel Engines Laboratory	4
DSM 117	Introduction to Hydraulics	1
CSC 110	Introduction to Information Technology	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<u>16</u>
SECOND SEMESTER		Credits
DSM 118	Fuel Systems	2
DSM 120	Basic Electricity	4
DSM 140	Truck Tractor Chassis and Alignment	3
DSM 141	Heavy Duty Brake Systems	2
DSM 142	Power Train and Brake Systems Lab	4
DSM 146	Commercial Truck Power Train and State Inspection	3
		<u>18</u>
SUMMER SESSION		Credits
DSM 151	Mack Dealership Internship	2
		<u>2</u>
THIRD SEMESTER		Credits
DSM 240	Electronic Fuel Systems Operation/Diagnostics	3
DSM 241	Diesel Electronic Systems	2
DSM 242	Diesel Equipment Air Conditioning Systems	2
DSM 246	Allison Transmissions	3
ENL 111	English Composition I	3
PHS 103	Physics Survey	3
	or	
PHS 114	Physics with Technological Applications	4
		<u>16</u>
FOURTH SEMESTER		Credits
DSM 259	Automated Power Train Products	3
DSM 274	Equipment Maintenance Management	1
DSM 290	V-MAC Electronics and Diagnostic Procedures	3
DSM 291	Mack Failure Analysis and Dealer Procedures	1
ENL 201	Technical and Professional Communication	3
	Fitness and Lifetime Sports Elective	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>15</u>

Dietary Manager Technology (DI)

Associate of Applied Science Degree (A.A.S.)

The Dietary Manager Technology degree prepares students for entry level food service management positions in health care, extended care, retirement communities, institutional and school facilities. It offers a strong culinary background accompanied with a theoretical and clinical education in nutrition and management to make the graduate a valuable asset to a professional dietary team. Students will be strongly encouraged to maintain active paid memberships in the American Culinary Federation and the Dietary Managers Association during the two-year degree program.

Career Opportunities: Graduates will be eligible for entry level positions in schools, health care, military, correctional facilities, sports and recreation units, health resorts and camps, and commercial food service. The entry level positions are assistant food services director, dietary manager, kitchen manager, dining services assistant manager, retirement community food service supervisor, and supervisory/team leader positions.

Recommended High School Subjects: High school students planning to enter these programs should take keyboarding, algebra, chemistry, biology, and four years of communications-oriented classes. Electives in Food and Hospitality courses are strongly recommended. Some type of extracurricular club activity involving a hospital, nursing home, senior center, school food service, or retirement center would be beneficial.

Remediation Strategies: Students must remediate all deficiencies prior to admission to the degree major.

Transfer Procedures: Individuals desiring transfer from postsecondary institutions with similar degree programs should submit transcripts and course descriptions of all work completed at an accredited postsecondary institution. Transfer of classes will be evaluated on a class-by-class basis following College guidelines.

Program Goals: Upon successful completion of the major, graduates should be eligible for entry level supervisory/management positions in schools, health care, extended care facilities, assisted living facilities, and correctional foods service facilities. Upon completion of the program, the student should be able to

- demonstrate a solid foundation of techniques for food preparation, presentation, and service including competencies in baking, line work and basic garde manger, specifically, those required competencies for ACF Certified Culinarian.
- plan menus (using traditional and specific diet adaptations), purchase, compute raw food cost and selling price for menu items.
- apply nutritional knowledge and implement food-for-life and therapeutic principles.
- apply nutritional principles for dietary management in the extended care facility.
- assist a Registered Dietitian with the collection of the required basic guest data and implement a prescribed feeding plan including any required modification.
- plan and execute a catered event.
- demonstrate working knowledge of the factors involved in setting up and operating a food service establishment.
- establish and maintain high standards of sanitation.
- describe and implement a HACCP system of food safety.
- conform to professional standards and ethics, including personal appearance and attitude reflective of a service industry.
- describe the equipment available on the market and plan its arrangement, purchasing procedures, operation and maintenance for efficiency and safety.
- combine creativity, sound thinking, and problem solving to meet the challenge of day-to-day management.
- demonstrate the ability to keep accurate food services business records and understand the relationship between financial profits and good business ethics.
- use problem solving techniques in maintaining kitchen morale and team building.
- supervise employees and manage food service systems.
- apply basic knowledge of a variety of food service systems and evaluate their effectiveness for the individual facility.
- communicate effectively with patients, employees, families, administration and the community.
- define and adhere to federal, state, and local regulations governing extended care and health care feeding.
- qualify for the national certification exam of The Dietary Managers Association.

FIRST SEMESTER		Credits
FHD 106	Introduction to the Hospitality Industry	1
FHD 108	Foundations of Food Preparation	4
FHD 117	Purchasing	2
FHD 118	Sanitation	1
FHD 137	Introductory Baking	3
ENL 111	English Composition I	3
MTH 151	Structures of Mathematics	3
		<hr/> 17

SECOND SEMESTER		Credits
FHD 116	Nutrition Application	3
FHD 125	Menu Planning and Cost Control	3
FHD 140	Food Preparation, Application and Production	4
FHD 133	Tableservice	2
FHD 134	Tableservice Practicum	1
FHD 277	Advanced Garde Manger	1
CSC 110	Introduction to Information Technology	3
FIT 111	Cardiopulmonary Resuscitation (CPR)	1
		<hr/> 18

SUMMER SESSION		Credits
FHD 269	Culinary Internship	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 4

THIRD SEMESTER		Credits
FHD 225	Food Service Management and Systems	2
FHD 252	Spa and Nouvelle Cuisine	2
FHD 273	Breakfast and Brunch Lecture	1
FHD 274	Breakfast and Brunch Practicum	2
FHD 285	Dietary Management Practicum II	2
MGT 115	Principles of Management	3
SPC 201	Interpersonal Communication	3
		<hr/> 15

FOURTH SEMESTER		Credits
FHD 222	Diet Therapy and Application	3
FHD 266	Catering	3
FHD 268	Facilities Planning	3
FHD 284	Dietary Management Practicum I	2
ACC 113	Introduction to Financial Accounting	3
SCI 260	Biology and Modern Society (STS)	3
		<hr/> 17

Additional Information: When instruction takes place off campus, the student is responsible for his or her transportation to and from the facility and the campus.

Additional costs may include, but are not necessarily limited to: uniforms, kitchen tools, health insurance, liability insurance, inoculations, ACT 34 clearance investigations, ACT 13/160 criminal background check for working at long-term care facilities and travel.

Dietary Manager Technology degree students are required to maintain a GPA of 2.5 or better in major specific courses before entering the third or fourth semester of the major.

Prior to beginning the practicum portions of the major, the student must complete a medical examination by the physician of the individual student's choice. The program director should be contacted for the information relative to this requirement. Costs associated with medical examinations and inoculations are the responsibility of the student.

Findings of the medical examinations must indicate that the student's health condition will allow for the performance of all required practicum skills, and the mastery of the course objectives. The College reserves the right to require health clearances at any time within the parameters of the individual being able to meet objectives. Individual circumstances will be considered with

allowances for reasonable accommodations; however, accommodations will not negate the need for course objectives, objectives of the degree, and outcomes to be met by the student.

All developmental coursework must be completed before entering DI major. Developmental courses can be completed during the semester prior to the start of the school year.

Students will need to become junior members of the American Culinary Federation and student members of the Dietary Managers Association.

Dress Code: Professionalism is the signature of this degree, and is the expectation for performance and appearance. Uniform and personal appearance standards are strictly enforced. Students are required to be clean-shaven (neat mustache above the lip is allowed), have properly contained hair (top of ear and back of collar for men; tied up and under hat for women, utilizing a net if necessary - no protruding bangs). In labs, no excessive makeup and no jewelry are allowed, including rings, watches and earrings or visible piercings of any style. Students in Tableservice and/or Wine and Beverage Practicum may wear appropriate cosmetics, a watch, a single set of post-style earrings. Hair must be restrained - the utilization of a French braid or discrete pinning/styling is required.

Accreditation: Accredited by
The Dietary Managers Association



Early Childhood Education (EC)

Associate of Applied Science Degree (A.A.S.)

Early Childhood Education provides students with a sound foundation in theoretical and practical aspects of child care services. Courses in the curriculum will establish strengths in oral and written communication, problem solving, and evaluative skills. Students will have an understanding of the social and psychological factors that influence a child and which reflect the overall social environment. The fieldwork experience provides students with the opportunity to work directly with young children, drawing upon the principles and professional practices covered in the coursework.

Career Opportunities: Group supervisor, assistant group supervisor, Head Start teacher, Head Start home-based teacher, teacher's aide, house parent, child caseworker's aide, assistant teacher, family home day care operator, and group day care home operator. Individuals interested in establishing themselves as family home day care providers will receive excellent preparation.

Recommended High School Subjects: Three years of English, at least one year of child development.

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Any reading deficiencies should be corrected prior to beginning the major. Students will be expected to remediate any other deficiencies during their first year in the major.

Program Goals: The general goal of the Early Childhood Education major is to prepare students for employment in a variety of early childhood education organizations. Graduates are also prepared for advanced study in the profession.

Graduates of the Early Childhood Education major should be able to

- apply principles of psychology, sociology, mathematics, and natural science to personal and career situations.
- understand the interrelationship of physical, social, and psychological well-being and apply this knowledge.
- appreciate the value of physical fitness to the general well-being of themselves and children.
- identify indicators and norms (milestones) of typical and atypical child development: cognitive (language), psycho-social, and motor.
- apply the theoretical and methodological approaches to the development of the whole child.

- demonstrate the skills necessary for developing interpersonal relationships and effective parenting strategies and be able to assist others in the acquisition of these same skills.
- identify and respond appropriately to childhood conditions regarding health, safety, and nutrition.
- organize and deliver, utilizing a variety of techniques and materials, activities that are developmentally appropriate and that encompass aesthetics and creativity.
- utilize developmentally appropriate techniques for behavior management.
- comply with the variety of legal and organizational rules, regulations, and procedures associated with the provision of early childhood education services including proper report and document preparation.
- identify appropriate children's services and agencies as well as understand the referral process.
- act in an independent and professional manner in promoting the well-being of children.
- perform a wide variety of tasks that are part of the normal routine of a child care employee.
- adapt methods and materials to provide developmentally appropriate activities for multi-age children and young children with special needs.

FIRST SEMESTER	Credits
EDU 100 Child Development	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
PSY 111 General Psychology	3
SOC 111 Introduction to Sociology	3
	<u>15</u>

SECOND SEMESTER	Credits
EDU 101 Introduction to Early Childhood Education	3
EDU 125 Methods and Materials for Early Childhood Education I	3
PSY 210 Child Psychology	3
EDU 201 Health, Safety, and Nutrition for Early Childhood	3
ENL 121 English Composition II	3
Mathematics Elective	3
	<u>18</u>

THIRD SEMESTER	Credits
EDU 210 Observation and Communication with Young Children	3
EDU 225 Methods and Materials for Early Childhood Education II	3
EDU 268 Methods and Materials for Infants and Toddlers Education Elective	3
SPC 101 Fundamentals of Speech	3
FIT 204 First Aid, Responding to Emergencies	2
	<u>17</u>

FOURTH SEMESTER	Credits
EDU 256 Early Childhood Practicum	3
EDU 230 Young Child with Special Needs Education Elective	3
HSR 240 Management and Administration in Human Services	3
Open Elective	3
Science Elective	3
	<u>18</u>

Education Elective: EDU121, EDU262, EDU264, EDU266, EDU267, EDU270

Additional Information: CDA (Child Development Associate) - Two CDA national credentials are available to graduates when they complete additional center-based supervised field experience as well as the assessments required by the national CDA office. Penn College Early Childhood faculty are certified CDA trainers.

Electric Power Generation Technology (PG)

Associate of Applied Science Degree (A.A.S.)

This curriculum is designed to provide students with the skills necessary to install, service and maintain diesel and natural gas powered generator sets. This major emphasizes continuous power, peaking power, prime power and standby power generating units. Advanced instruction will be provided in the areas of electronically controlled diesel engines, gaseous fueled engines, troubleshooting and repair of electric power generators, engine governors, and the electronic switching components necessary in the generation, transmission and distribution of electric power. Students develop the practical skills needed to work with electrical machinery, electric and electronic machine control devices, and other electronic equipment.

Career Opportunities: Power generation technician, technical sales consultant, industrial maintenance, field service technician, sales representative, service manager.

Recommended High School Subjects: Four years of English; two years of algebra; two years of science.

Remediation Strategies: Triple deficient students must remediate before starting the major. The order of remediation will be math, reading and English.

Program Goals: The goal of the Electric Power Generation Technology major is to prepare students to manage, service, repair and install stand-by electric power generator units. The students are exposed to all facets of the career field with a particular focus on problem solving and transferability of technical knowledge and skills. A graduate of the Electric Power Generation Technology major should be able to:

- practice approved safety procedures in the work environment.
- read and interpret equipment manuals and write clear, accurate and complete service reports.
- demonstrate the correct usage of basic tools, specialty tools and testing equipment.
- interpret schematics applicable to installation of power generation sets.
- use appropriate test equipment to determine correct operation of the power generation systems.
- explain the principles of electronic control systems and demonstrate the ability to detect and repair faults in electronic controls used in power generation systems.
- interpret manufacturer specifications and determine if a power generator system has been installed correctly.
- demonstrate the ability to supplement existing power systems with portable power generators.
- demonstrate the proper skills in adjusting to specifications gaseous-fueled engines.
- demonstrate the proper skills in adjusting to specifications diesel-fueled engines.

FIRST SEMESTER	Credits
ELT 111 Direct Current Fundamentals	5
ELT 113 Accident Prevention	2
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
Fitness and Lifetime Sports Elective	1
MTH 180 College Algebra and Trigonometry I	3
	<u>17</u>

SECOND SEMESTER		Credits
DSM 113	Tools and Hardware	1
DSM 114	Applied Failure Analysis	1
DSM 115	Diesel Engines	4
DSM 116	Diesel Engines Laboratory	4
DSM 117	Introduction to Hydraulics	1
ELT 128	Electrical Drawing and Print Reading	2
ELT 122	Alternating Current Fundamentals	5
		<hr/> 18

SUMMER SESSION		Credits
DSM 152	Electric Power Generation Internship	2
		<hr/> 2

THIRD SEMESTER		Credits
DSM 118	Fuel Systems	2
DSM 249	Gaseous Fueled Engines	2
ELT 234	Electrical Motor Control	4
ELT 263	Electrical Power Generator Installations	2
PHS 114	Physics with Technological Applications	4
ENL 201	Technical and Professional Communication	3
		<hr/> 17

FOURTH SEMESTER		Credits
DSM 240	Electronic Fuel Systems Operation/ Diagnostics	3
ELT 248	Electrical Systems Analysis	3
ELT 264	Power Generation System Controls	5
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 14

Electrical Technology (EL)

Associate of Applied Science Degree (A.A.S.)

This curriculum prepares students for jobs in industry as electrical/electronic technicians. Students develop the practical skills needed to work with electrical machinery, electric and electronic machine control devices, and other electronic equipment. The coursework emphasizes electrical and electronic basics and includes theory and lab experience in troubleshooting, circuitry, industrial electronics, electrical machinery and electrical construction practices. A strong background in math, science and technical writing increases students' career opportunities.

Career Opportunities: Industrial maintenance, field service technician, electronic apparatus troubleshooter, electrical laboratory technician, electrical engineering technologist, design assistant, electrical layout facilitator, technical writer.

Recommended High School Subjects: Two years of algebra and one year of physical science (physics recommended). Electrical trade courses are desirable, but not necessary.

Remediation Strategies: Students testing at the Math 005 level must remediate before being admitted.

Program Goals: This major equips students with the skills needed to understand and apply electrical/electronics technology theory. The major includes practical skills and theoretical aspects of the trade. Graduates should also have the background needed to transfer to a four-year bachelor of technology program. Graduates of this major should be able to

- demonstrate the ability to use algebra, trigonometry, and physics in the design, development, and analysis of electrical and electronic circuits and systems.
- interpret and develop blueprints, schematic diagrams, wiring diagrams, and transform them into functioning systems that comply with the National Electrical code and/or other specifications.

- evaluate technical information and communicate verbally and/or in writing to others in or out of the field.
- demonstrate basic knowledge of construction procedures and electrical wiring techniques.
- demonstrate knowledge of advanced electrical/electronic theory through the use of complex numbers and network theorems.
- demonstrate knowledge of the theory and mechanics of rotating machinery, Programmable Logic Control (PLC) circuitry, transformer banks, and instrumentation.
- troubleshoot microprocessor-based industrial control devices such as PLC and electro-mechanical systems.
- demonstrate the ability to use test equipment and instrumentation to analyze, troubleshoot, repair, and operate electrical/electronic circuits, systems, and equipment.
- demonstrate technical skills in a variety of electrical fields and apply accepted OSHA safety standards.

FIRST SEMESTER		Credits
ELT 111	Direct Current Fundamentals	5
ELT 113	Accident Prevention	2
ELT 116	Construction Lab I-Residential	5
ENL 111	English Composition I	3
MTH 180	College Algebra and Trigonometry I	3
		<hr/> 18

SECOND SEMESTER		Credits
ELT 120	Construction Lab II-Commercial	5
ELT 122	Alternating Current Fundamentals	5
CSC 110	Introduction to Information Technology	3
MTH 182	College Algebra and Trigonometry II	3
EDT 120	Electrical Drawing and Print Reading	2
		<hr/> 18

THIRD SEMESTER		Credits
ELT 234	Electrical Motor Control	4
ELT 235	Industrial Electronics	6
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
PHS 114	Physics with Technological Applications	4
	Fitness and Lifetime Sports Elective	1
		<hr/> 18

FOURTH SEMESTER		Credits
ELT 244	Advanced Electrical Theory	3
ELT 245	Introduction to Programmable Logic Control	4
ELT 248	Electrical Systems Analysis	3
ELT 249	Programmable Logic Control Input/Output Devices	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 17

Electromechanical Maintenance Technology (MT)

Associate of Applied Science Degree (A.A.S.)

This major prepares students for a wide variety of employment opportunities in commercial and industrial settings. The major emphasizes skills and knowledge in troubleshooting and repair of electrical/electronic and mechanical equipment. Specialized coursework will include programmable logic control and its use in commercial and industrial applications.

Career Opportunities: Maintenance technician in commercial and industrial settings such as utilities, hospitals, schools, and manufacturing facilities; building superintendent and maintenance supervisory positions.

Recommended High School Subjects: Students entering this major should complete secondary courses in algebra, trigonometry, and science (physics recommended).

Remediation Strategies: Students testing deficient at the Math 005 level must remediate before being admitted.

Program Goals: Graduates of this major should be able to

- demonstrate safe work habits in performance of maintenance tasks.
- use knowledge of troubleshooting techniques to identify and solve problems with electromechanical devices found in industry.
- read blueprints, electrical and mechanical drawings; interpret related specifications.
- demonstrate knowledge of electrical principles and laws; apply mathematical formulas to solve electrical problems in both direct and alternating current equipment and systems.
- apply knowledge of electrical codes.
- demonstrate knowledge of general and OSHA safety practices.
- demonstrate basic skills in arc welding; oxy-acetylene welding and cutting; gas tungsten arc welding; gas metal arc welding.
- communicate in both written and verbal forms to successfully interact with peers and subordinates.
- write clear, concise, accurate technical reports.
- work with others in a cooperative and team effort in the solution of maintenance problems.
- demonstrate skill in the use of basic diagnostic and test equipment and measuring devices to analyze and problem solve.
- demonstrate knowledge in programmable logic control (PLC) and motor control.
- apply algebra and physics in the analysis and solution of maintenance problems.

FIRST SEMESTER	Credits
ELT 111 Direct Current Fundamentals	5
ELT 116 Construction Lab I-Residential	5
ELT 113 Accident Prevention	2
or	
SAF 110 Occupational Health and Safety	2
MTH 180 College Algebra and Trigonometry I	3
ENL 111 English Composition I	3
	<u>18</u>

SECOND SEMESTER	Credits
ELT 122 Alternating Current Fundamentals	5
WEL 100 Introduction to Welding Processes	3
MTT 106 Manufacturing Processes Survey	2
EDT 110 Technical Drawing and Print Reading	2
or	
ELT 128 Electrical Drawing and Print Reading	2
ENL 201 Technical and Professional Communication	3
CSC 110 Introduction to Information Technology	3
	<u>18</u>

THIRD SEMESTER	Credits
ELT 234 Electrical Motor Control	4
ELT 235 Industrial Electronics	6
PHS 114 Physics with Technological Applications	4
Fitness and Lifetime Sports Elective	1
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

FOURTH SEMESTER	Credits
IMT 221 Commercial/Industrial Equipment Installation and Troubleshooting	3
ELT 245 Introduction to Programmable Logic Control	4
ELT 248 Electrical Systems Analysis	3
Open Elective	3
	<u>13</u>

Electronics Technology Aviation Emphasis (AV)

Associate of Applied Science Degree (A.A.S.)

Students will gain knowledge and skill in removing, troubleshooting, repairing, installing and testing advanced aviation electronic equipment. The Electronics Technology, Aviation Emphasis graduate will have a balance of theory and hands-on practical work. The curriculum emphasizes electronic theory, airframes, communication, navigation, radar, and other related skills to be both a technician and a manager. The student also will be eligible to take the FCC License examination with radar endorsement upon completion of the program.

Career Opportunities: Avionics repair technician, electronics repair technician, airline maintenance, avionics research, communications, technical sales, and a variety of other technical positions in associated industries.

Recommended High School Subjects: Four years of English, two years of algebra and two years of physical science.

Remediation Strategies: All students must meet College standards for reading, communications, mathematics and keyboarding. Avionics candidates will be tested upon acceptance into the major in accordance with College policy. Any students identified as deficient will be admitted in the major, but must remediate deficiencies in the order of reading, mathematics, communications and keyboarding.

Program Goals: The general objective of the Electronics Technology, Aviation Emphasis major is to prepare the students to remove, troubleshoot, repair, install, and test all types of avionics equipment. Basic and advanced repair skills are stressed, coupled with an extensive hands-on approach. The successful student will be able to pursue careers in avionics, electronics, or communications.

A graduate of the Electronics Technology, Aviation Emphasis major should be able to

- diagnose, repair, and test malfunctions on common avionics equipment using avionics test equipment.
- remove and install avionics equipment in airframes using proper safety and approved procedures.
- perform basic aircraft electrical system tests and interpret test results in order to determine if an aircraft electrical system is in safe and reliable operating condition.
- interpret repair manuals and troubleshooting charts.
- apply electronic principles in troubleshooting and system designing.
- demonstrate knowledge of the theory and operation of solid state devices, digital integrated circuits and microprocessors.
- understand and follow written repair and test procedures.
- describe the underlying scientific principles in aerodynamics theory and the basics of aircraft flight control.

FIRST SEMESTER	Credits
AVC 102 Avionics Fundamentals and Flight Physics	1
EET 110 DC-AC Basics	3
EET 111 DC-AC Measurements	1
EET 112 Introduction to Solid State Devices	3
EET 113 Solid State Devices Applications	1
EET 114 Introduction to Digital Electronics	3
EET 115 Digital Circuits Applications	1
MTH 180 College Algebra and Trigonometry I	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SECOND SEMESTER		Credits
AVC 120	Aircraft Electrical and Instrumentation Systems	4
EET 150	DC-AC Circuit Analysis	3
EET 151	Advanced DC-AC Circuit Applications	1
EET 152	Intermediate Solid State Devices and Circuits	3
EET 153	Intermediate Devices Applications	1
MTH 182	College Algebra and Trigonometry II	3
CSC 110	Introduction to Information Technology	3
		<u>18</u>

THIRD SEMESTER		Credits
AVC 227	Aviation Navigation and Communication Theory	4
AVC 228	Aviation Navigation and Communication Applications	2
AVC 229	Flight Control Systems	2
ENL 111	English Composition I	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Science Elective	3
		<u>17</u>

FOURTH SEMESTER		Credits
AVC 234	Advanced Navigation	2
AVC 237	Advanced Avionics Systems Theory	2
AVC 238	Advanced Avionics Systems Applications	1
AVC 242	Avionics Airframe Applications	2
AVC 335	Aviation Microwave Pulse Theory	3
AVC 336	Aviation Microwave Pulse Applications	1
AVC 340	Avionics Integration	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
		<u>17</u>

Electronics Technology

Cisco Systems® Emphasis (CE)

Associate of Applied Science Degree (A.A.S.)

While this curriculum will prepare a student for a wide range of employment opportunities in the electronics industry, it is designed to provide the skills required to build and maintain modern computer and communications network infrastructure. A core of fundamental electronics courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid-state devices, and digital devices and systems. A series of lecture and laboratory courses are included from the Cisco Systems® Networking Academy Program, which will equip a student with detailed instruction in network switching and routing in preparation for the Cisco Certified Network Associate certification. Cisco, Cisco Systems, the Cisco Systems logo and the Cisco System Networking Academy mark are trademarks of Cisco Systems, Inc.

Career Opportunities: This major will prepare students for the wide range of job opportunities in both the electronics and computer networking industries while increasing those competencies identified as most crucial to future technological development and viable employment. In addition to the traditional positions held by our graduates, such as test technician/engineer, installation/maintenance technician and technical sales consultant, this major provides a new career path in local and wide area computer network infrastructure, installation and maintenance. It also provides the pathway for the student to pursue higher-level certification credentials, such as the Cisco Certified Network Professional, CCNP, and Cisco Certified Internet Expert, CCIE.

Recommended High School Subjects: Two years of algebra and one year of physics are recommended. Math and English deficiencies should be remediated before entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading. Students testing to MTH 004 or having three (3) areas of deficiencies are not permitted to take Electronics courses until at least one deficiency is cleared.

Program Goals: The primary objective of this major is to prepare electronics technicians in the specialty of computer networking, with the specific objective of enhancing career opportunities of graduates by providing the skills needed to design, build and maintain computer networks. A graduate should be able to:

- apply knowledge of DC and AC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of number systems, digital logic gates and combinational/sequential logic circuits.
- describe the internal structure of and data flow within a microprocessor-based system.
- interface external devices to a microprocessor-based system and develop software to obtain desired interface performance.
- perform accurate and valid parameter measurements with industry standard test equipment while observing conventional safety practices.
- apply knowledge of networking terminology, concepts and protocols to the design and documentation of Local and Wide Area Networks.
- install and configure LAN switches and routers in an internetwork environment.
- perform security procedures to control and audit access to network resources.
- communicate effectively with technical and non-technical professionals using verbal and written communication skills.

FIRST SEMESTER		Credits
EET 110	DC-AC Basics	3
EET 111	DC-AC Measurements	1
EET 112	Introduction to Solid State Devices	3
EET 113	Solid State Devices Applications	1
EET 114	Introduction to Digital Electronics	3
EET 115	Digital Circuits Applications	1
CSC 110	Introduction to Information Technology	3
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>

SECOND SEMESTER		Credits
EET 150	DC-AC Circuit Analysis	3
EET 151	Advanced DC-AC Circuit Applications	1
EET 152	Intermediate Solid State Devices and Circuits	3
EET 153	Intermediate Devices Applications	1
EET 154	Introduction to Microprocessors	3
EET 155	Microprocessor Applications I	1
ENL 111	English Composition I	3
MTH 182	College Algebra and Trigonometry II	3
		<u>18</u>

THIRD SEMESTER		Credits
EET 202	Microprocessor Interfacing	3
EET 203	Microprocessor Applications II	1
EET 240	Introduction to Computer Maintenance	3
EET 241	Computer Maintenance Applications I	1
EET 220	Cisco Systems I	3
EET 221	Cisco Systems Applications I	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
ENL 201	Technical and Professional Communication	3
	or	
ENL 121	English Composition II	3
		<u>18</u>

FOURTH SEMESTER		Credits
EET 286	Optical Communications	3
EET 287	Optical Communications Lab	1
EET 222	Cisco Systems II	3
EET 223	Cisco Systems Applications II	1
QAL 240	Quality and Reliability in Communication Systems	4
	Science Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

Additional Information: Students who have completed advanced courses in high school, in an area vocational-technical school program or as part of military training, as well as those with applicable work experiences, may be eligible for advanced standing in the first year of electronics courses. Students receiving advanced standing may enroll in advanced courses in the subjects in which they have received the advanced standing, or they may elect courses in other subjects. The procedure for receiving advanced standing is by competency evaluation in conjunction with past instructors or work supervisors.

Students who are graduates of the Cisco Networking Academy at the high school level and have passed the Cisco Certified Networking Associate exam (currently 640-507) are eligible for advanced placement in the Electronics Technology, Cisco Systems Emphasis major. Eligible students will receive credit for EET 220 and EET 221.



Electronics Technology Communications/Fiber Optics Emphasis (CF)

Associate of Applied Science Degree (A.A.S.)

While this curriculum will prepare a student for a wide range of employment opportunities in the electronics industry, value added skills are included in the area of the growing field of electronic communication. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. Coursework in both analog and digital communication systems, along with fiber optic and microwave systems, provides value added skills that will enhance employment opportunities in the growing communication industry.

Career Opportunities: Telecommunication technician, installation supervisor, fiber optic research technician, technical sales consultant, broadcast engineer, cellular phone technician, microwave technician, and other related technical positions in associated industries.

Recommended High School Subjects: Two years of algebra, one year of physics. Any math deficiencies should be remedied prior to entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority; mathematics, English, reading. Students testing MTH 004 or having three (3) areas of deficiencies are not permitted to take Electronics courses until at least one deficiency is cleared.

Program Goals: The purpose of the Communications/Fiber Optics major is to prepare students for a variety of careers in the electronic communications/fiber optics industry. Specifically, the major should prepare the students to

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.
- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standard test equipment while observing standard safety practices.
- construct and troubleshoot electronic circuits from schematic diagrams.
- demonstrate knowledge of RF circuits and components such as oscillators, amplifiers, mixers, antennas and transmission lines.
- attach connectors, splices and other passive components in a fiber optic system.
- demonstrate the operation and function of frequency and time division multiplex systems.
- perform measurements and troubleshooting on synchronous and asynchronous data communication equipment.
- perform test and measurements on satellite and terrestrial microwave communication equipment.
- install, test and troubleshoot baseband and broadband cable, radio and fiber optic local area networks.
- perform measurements of fiber optic cables at light frequencies.

FIRST SEMESTER		Credits
EET 110	DC-AC Basics	3
EET 111	DC-AC Measurements	1
EET 112	Introduction to Solid State Devices	3
EET 113	Solid State Devices Applications	1
EET 114	Introduction to Digital Electronics	3
EET 115	Digital Circuits Applications	1
CSC 110	Introduction to Information Technology	3
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>

SECOND SEMESTER		Credits
EET 150	DC-AC Circuit Analysis	3
EET 151	Advanced DC-AC Circuit Applications	1
EET 152	Intermediate Solid State Devices and Circuits	3
EET 153	Intermediate Devices Applications	1
EET 154	Introduction to Microprocessors	3
EET 155	Microprocessor Applications I	1
ENL 111	English Composition I	3
MTH 182	College Algebra and Trigonometry II	3
		<u>18</u>

THIRD SEMESTER		Credits
EET 202	Microprocessor Interfacing	3
EET 203	Microprocessor Applications II	1
EET 280	Analog Communications	3
EET 282	Digital Communications	3
EET 281	Analog Communications Lab	1
EET 283	Digital Communication Lab	1
	Fitness and Lifetime Sports Elective	1
	Science Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
EET 204	Network Installation and Maintenance	3
EET 205	Network Maintenance Laboratory	1
EET 284	Microwave Communications	3
EET 285	Microwave Communications Lab	1
EET 286	Optical Communications	3
EET 287	Optical Communications Lab	1
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>18</u>

Electronics Technology

Computer Automation Maintenance Emphasis (CM)

Associate of Applied Science Degree (A.A.S.)

While this curriculum will prepare a student for a wide range of employment opportunities in the electronics industry, value-added skills are included in the area of maintenance of computer and automation systems. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. The value added skills will enhance employment opportunities in the field of computer system repair and the maintenance of industrial automation systems.

Career Opportunities: Computer field service technician, automation electronics technical supervisor, technical sales consultant and other associated technical fields.

Recommended High School Subjects: Two years of algebra, one year of physics. Any math deficiencies should be remedied prior to entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading. Students testing MTH 004 or having three (3) areas of deficiencies are not permitted to take Electronics courses until at least one deficiency is cleared.

Program Goals: The purpose of the Computer Automation Maintenance major is to prepare students for a variety of careers in the electronic computer automation maintenance industry. Specifically, the major should prepare the student to

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.
- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standards test equipment while observing standard safety practices.
- construct and troubleshoot electronic circuits from schematic diagrams.
- perform service related administrative functions.
- service and maintain computerized equipment and subsystem and component level.

- perform basic operations on a variety of automated manufacturing equipment.
- demonstrate a working knowledge of hydraulics, pneumatics, gears and mechanics involved in automated manufacturing equipment.
- perform routine preventative maintenance procedures.
- operate and maintain automated manufacturing equipment.
- operate specialized test equipment required to service computers and automated manufacturing equipment.

FIRST SEMESTER		Credits
EET 110	DC-AC Basics	3
EET 111	DC-AC Measurements	1
EET 112	Introduction to Solid State Devices	3
EET 113	Solid State Devices Applications	1
EET 114	Introduction to Digital Electronics	3
EET 115	Digital Circuits Applications	1
CSC 110	Introduction to Information Technology	3
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>

SECOND SEMESTER		Credits
EET 150	DC-AC Circuit Analysis	3
EET 151	Advanced DC-AC Circuit Applications	1
EET 152	Intermediate Solid State Devices and Circuits	3
EET 153	Intermediate Devices Applications	1
EET 154	Introduction to Microprocessors	3
EET 155	Microprocessor Applications I	1
ENL 111	English Composition I	3
MTH 182	College Algebra and Trigonometry II	3
		<u>18</u>

THIRD SEMESTER		Credits
EET 202	Microprocessor Interfacing	3
EET 203	Microprocessor Applications II	1
EET 240	Introduction to Computer Maintenance	3
EET 241	Computer Maintenance Applications I	1
EET 250	Introduction to Sensing and Control	3
EET 251	Sensing and Control Applications I	1
	Fitness and Lifetime Sports Elective	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
EET 204	Network Installation and Maintenance	3
EET 205	Network Maintenance Laboratory	1
EET 242	Automated Systems Maintenance	3
EET 243	Automated Systems Maintenance Applications	1
CIM 150	CIM for Technicians	4
	Science Elective	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
		<u>18</u>

Electronics Technology

Electronics Engineering Emphasis (EG)

Associate of Applied Science Degree (A.A.S.)

While this curriculum will prepare a student for a wide range of employment opportunities in the electronics industry, it is designed to provide advanced level mathematics and science courses for transfer to B.S. programs in electronics technology. A core of fundamental courses and laboratory experiences will equip a student

with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and microprocessor systems.

Recommended High School Subjects: Two years of algebra, one year of physics. Any math deficiencies should be remedied prior to entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading. Students testing MTH 004 or having three (3) areas of deficiencies are not permitted to take Electronics courses until at least one deficiency is cleared.

Program Goals: The purpose of the Electronics Engineering Technology major is to prepare students for a wide range of employment opportunities within the electronics field. Specifically, the major should prepare the student to

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.
- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standards test equipment while observing standard safety practices.
- construct and troubleshoot electronic circuits from schematic diagrams.
- apply advance mathematical skills using calculus.
- demonstrate fundamental principles of physical phenomena.

FIRST SEMESTER	Credits
EET 110 DC-AC Basics	3
EET 111 DC-AC Measurements	1
EET 112 Introduction to Solid State Devices	3
EET 113 Solid State Devices Applications	1
EET 114 Introduction to Digital Electronics	3
EET 115 Digital Circuits Applications	1
CSC 110 Introduction to Information Technology	3
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

SECOND SEMESTER	Credits
EET 150 DC-AC Circuit Analysis	3
EET 151 Advanced DC-AC Circuit Applications	1
EET 152 Intermediate Solid State Devices and Circuits	3
EET 153 Intermediate Devices Applications	1
EET 154 Introduction to Microprocessors	3
EET 155 Microprocessor Applications I	1
ENL 111 English Composition I	3
MTH 182 College Algebra and Trigonometry II	3
	<u>18</u>

THIRD SEMESTER	Credits
EET 206 Linear Integrated Circuits	3
EET 207 Linear Circuits Applications	1
EET 202 Microprocessor Interfacing	3
EET 203 Microprocessor Applications II	1
MTH 240 Calculus I	4
PHS 115 College Physics I	4
or	
PHS 201 General Physics I	4
Fitness and Lifetime Sports Elective	1
	<u>17</u>

FOURTH SEMESTER	Credits
EET 204 Network Installation and Maintenance	3
EET 205 Network Maintenance Laboratory	1
MTH 242 Calculus II	4
PHS 125 College Physics II	4
or	
PHS 202 General Physics II	4
ENL 121 English Composition II	3
or	
ENL 201 Technical and Professional Communication	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

Electronics Technology Industrial Process Control Emphasis (IP) Associate of Applied Science Degree (A.A.S.)

While this curriculum will prepare a student for a wide range of employment opportunities in the electronics industry, value-added skills are included in the area of industrial process control systems. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. The value added skills will enhance employment opportunities in the continued automation of industrial processes. Specialized coursework will include the area of interfacing Programmable Logic Control systems to automation processes including extensive exploration of transducers and control systems.

Career Opportunities: Automation system technician in any industry with automated systems, automation development technician, robotics research technician, technical sales consultant for process control systems and other related technical areas.

Recommended High School Subjects: Two years of algebra, one year of physics. Any math deficiencies should be remedied prior to entering the major.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students should remediate deficiencies in the following order of priority: mathematics, English, reading. Students testing MTH 004 or having three (3) areas of deficiencies are not permitted to take Electronics courses until at least one deficiency is cleared.

Program Goals: The purpose of the Industrial Process Control major is to prepare the student for a variety of careers within the industrial process control industry. Specifically, this major will prepare the student to

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.
- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standard test equipment while observing standard safety practices.
- construct and troubleshoot electronic circuits from schematic diagrams.

- discuss the principle of operation, capabilities, limitations and typical applications of a variety of commonly used transducers.
- demonstrate understanding of signal conditioning circuits and devices used in automated manufacturing systems.
- demonstrate familiarity with power control systems.
- troubleshoot, diagnose and repair automation control systems.

FIRST SEMESTER	Credits
EET 110 DC-AC Basics	3
EET 111 DC-AC Measurements	1
EET 112 Introduction to Solid State Devices	3
EET 113 Solid State Devices Applications	1
EET 114 Introduction to Digital Electronics	3
EET 115 Digital Circuits Applications	1
CSC 110 Introduction to Information Technology	3
MTH 180 College Algebra and Trigonometry I	3
	<hr/> 18

SECOND SEMESTER	Credits
EET 150 DC-AC Circuit Analysis	3
EET 151 Advanced DC-AC Circuit Applications	1
EET 152 Intermediate Solid State Devices and Circuits	3
EET 153 Intermediate Devices Applications	1
EET 154 Introduction to Microprocessors	3
EET 155 Microprocessor Applications I	1
ENL 111 English Composition I	3
MTH 182 College Algebra and Trigonometry II	3
	<hr/> 18

THIRD SEMESTER	Credits
EET 206 Linear Integrated Circuits	3
EET 207 Linear Circuits Applications	1
EET 202 Microprocessor Interfacing	3
EET 203 Microprocessor Applications II	1
EET 250 Introduction to Sensing and Control	3
EET 251 Sensing and Control Applications I	1
Fitness and Lifetime Sports Elective	1
Science Elective	3
	<hr/> 16

FOURTH SEMESTER	Credits
EET 204 Network Installation and Maintenance	3
EET 205 Network Maintenance Laboratory	1
EET 252 Intermediate Sensing and Control	3
EET 253 Sensing and Control Applications II	1
EET 254 Process Control Theory	3
EET 255 Process Control Applications	1
ENL 121 English Composition II	3
or	
ENL 201 Technical and Professional Communication	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<hr/> 18

Electronics Technology Semiconductor Processing Technology (SC)

Associate of Applied Science Degree (A.A.S.)

Penn College is one of only a few in the nation offering this type of program, a cooperative effort between Penn College's School of Industrial and Engineering Technologies and The Pennsylvania State

University's Nanofabrication Facility at University Park. In the multimillion-dollar Nanofabrication Facility, students will work in a cleanroom environment and gain experience with the state-of-the-art tools that are used to produce the silicon "chips" that are at the heart of the computer, communications, and electronics industries. At Penn College, students will be grounded in the fundamentals of electronics and solid state devices. With three semesters at Penn College and their final semester at University Park, students will also have the opportunity to experience the culture of a college and that of a major public university.

Career Opportunities: Semiconductor manufacturing technologist positions found in the microelectronics, flat panel display, solar cell, sensor, and micro-electro-mechanical industries and in their supplier industries.

Recommended High School Subjects: Two years of algebra and one year of physics are recommended. In addition, chemistry is highly suggested. Math deficiencies must be remediated before entering the program.

Remediation Strategies: Students testing deficient in up to two subjects will be expected to remediate these prior to or during the first year. Students testing into all three areas (ENL001, MTH004 or MTH005 or MTH 006, RDG001 or RDG111) and those students who test into MTH 004 will not be allowed into the program until these deficiencies are remediated. In addition, if students for some reason have any remaining developmental requirements at the end of their third semester, they will not be allowed to transfer to University Park for the last semester.

Transfer Procedures: Courses taken that are less than 10 years old will be evaluated on course equivalency. Courses more than 10 years old will be evaluated to determine relevancy and content required in the program. A copy of the evaluation for transfer credit will be provided to the student.

Program Goals: The purpose of the Semiconductor Processing major is to prepare the student for a variety of technical positions found in the semiconductor industry. Specifically, this major should prepare the student to:

- apply working knowledge of AC and DC circuits and understand the physical principles of passive circuit devices.
- demonstrate knowledge of the physical principles, theory and operation of solid state devices.
- apply knowledge of digital number systems, logic gates, combination and sequential logic circuits.
- describe the internal structure of a microprocessor system and electrical signals.
- interface external devices to a microprocessor system and write appropriate software to obtain desired interface performance.
- solve mathematical problems relating to circuit analysis of linear and digital circuits.
- perform accurate and valid parameter measurements with industry standards test equipment while observing standard safety practices.
- demonstrate safe and appropriate use of basic semiconductor industry processing equipment.
- demonstrate safe and appropriate maintenance techniques for basic semiconductor industry processing equipment.
- identify material and physical hazards associated with basic semiconductor processing equipment.
- explain appropriate responses to safety hazards and environmental issues in material disposal.
- use horizontal and vertical furnaces to produce active and passive semiconductor regions such as source and drain regions, gate and field oxides, etc.
- explain the basics of thin films and demonstrate their production with a variety of current methods.
- explain the methods of etching processes including reactive ion etching, high ion-density reactions, and ion beam etching.
- explain the methods and materials to produce lithography on semiconductor wafers including substrate preparation, photoresists, and exposure techniques.
- explain the nature and behavior of photoresist materials.
- explain advanced lithographic techniques such as c-beam, x-ray, extreme ultraviolet, and ion beam lithography.

- explain the techniques of planarization such as deposition/etchback and chemical/mechanical polishing.
- demonstrate packaging procedures such as die separation, inspection bonding, sealing and final testing.
- use the basic concepts of statistical methods in quality control as they are applied in the semiconductor processing industry.
- explain the meaning of quality and continuous process improvement and why these are critical to the semiconductor processing industry.
- use the tools of SPC including (but not limited to) control charts, histograms, pareto diagrams, and fishbone diagrams.
- use special control charts as applied in the semiconductor processing industry such as empirical control charts, process capability indices, center band charts, and CUSUM and EWMA acceptance charts.
- explain the requirements of ISO9000 and the use of SPC techniques to support this certification.
- identify and demonstrate a working knowledge of terminology, basic procedures, and day-to-day operations of semiconductor processing facilities.
- explain autonomous work teams and individual work ethic.
- identify and analyze current trends in the industry and recognize the importance of these trends to professional development and future educational needs.

FIRST SEMESTER	Credits
EET 110 DC-AC Basics	3
EET 111 DC-AC Measurements	1
EET 112 Introduction to Solid State Devices	3
EET 113 Solid State Devices Applications	1
EET 114 Introduction to Digital Electronics	3
EET 115 Digital Circuits Applications	1
CSC 110 Introduction to Information Technology	3
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

SECOND SEMESTER	Credits
EET 150 DC-AC Circuit Analysis	3
EET 151 Advanced DC-AC Circuit Applications	1
EET 152 Intermediate Solid State Devices and Circuits	3
EET 153 Intermediate Devices Applications	1
EET 154 Introduction to Microprocessors	3
EET 155 Microprocessor Applications I	1
ENL 111 English Composition I	3
MTH 182 College Algebra and Trigonometry II	3
	<u>18</u>

THIRD SEMESTER	Credits
ENL 201 Technical and Professional Communication	3
CHM 108 Chemistry Survey	4
SAF 110 Occupational Health and Safety	2
QAL 220 Statistical Methods for Semiconductor Processing	4
EET 270 Professional Seminar in Semiconductor Processing	1
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Fitness and Lifetime Sports Elective	1
	<u>18</u>

FOURTH SEMESTER	Credits
EET 260 Semiconductor Industry Equipment and Materials Handling Procedures (PSU: ESC211)	3
EET 261 Thermal Processing: Oxidation, Diffusion, Ion Implementation & Epitaxy (PSU: ESC212)	3
EET 262 Thin Film Deposition and Etching (PSU: ESC213)	3
EET 263 Lithography for Nono- and Microfabrication (PSU: ESC214)	3
EET 264 Interconnects, Planarization, and Packaging (PSU: ESC215)	3
EET 265 Process Measurements, Material Characterization and Device Testing (PSU: ESC216)	3
	<u>18</u>

Environmental Technology (EV)

Associate of Applied Science Degree (A.A.S.)

The curriculum prepares students for a wide range of employment opportunities in the public and manufacturing segments of our economy. The coursework develops skills and knowledge in air pollution, water pollution, waste recovery and treatment, industrial processes, and compliance with environmental regulations and compliance strategies in the use, handling, storage and disposal of chemicals to minimize or eliminate damage to the environment.

Career Opportunities: The demand for specialists in the environmental field has never been greater. Students will find employment as compliance officers, environmental technicians, hazardous-materials managers, manufacturers' technicians, laboratory technicians, water/wastewater operators, etc. The demand is expected to continue to rise through the next 10 years.

Recommended High School Subjects: It is recommended that students entering this major have biology, chemistry, two years of algebra, and four years of English.

Remediation Strategies: All deficiencies must be remediated prior to acceptance into the major.

Program Goals: The general objective of the major is to provide students with knowledge and skills to be successful in the environmental career area. Students are exposed to testing, analyzing and problem solving techniques.

A graduate of the Environmental Technology major should be able to

- demonstrate a responsible attitude toward the efficient use of our natural resources.
- use math skills necessary for the development of procedural problem solving.
- keep a log of plant operations, record meter and gauge readings, make minor adjustments on valves, pumps and monitoring devices using common hand tools, standard electronic test equipment, and selected specialized tools.
- to conduct laboratory field investigations to determine contamination of air, water and soil samples, record test data, and prepare summaries and charts for review.
- set up and calibrate monitoring equipment to obtain information on water flow, turbidity, temperature, pressure, and other variables with accurate logging of data and reporting of results.
- prepare charts, reports, graphs or tables, perform computations and analyze computer printouts to display data and to aid in its analysis.
- identify and have a general understanding of all major Federal, State and Local Environmental Regulatory and Enforcement Agencies and their respective health, safety and regulatory laws.
- have an insight into environmental regulatory trends and be able to initiate discussion and make contributions toward the solving of future problems.

- assist control engineering personnel in the formulation of control strategies pertinent to management of hazardous, nonhazardous, and medical waste.
- recognize and explain functions of most types of instrumentation representing a cross section of industrial monitoring requirements beginning with sensing devices, signal conditions, data acquisition equipment, process controllers, and final elements.
- explain the fundamental operation of all major segments of the industry employing environmental technology personnel; including powerplant operations, municipal water treatment, and municipal and industrial wastewater treatment.
- demonstrate a responsible and cooperative work ethic.

FIRST SEMESTER		Credits
ENV 125	State and Federal Environmental Regulations	3
BIO 113	General Biology I	4
CHM 111	General Chemistry I	4
CSC 110	Introduction to Information Technology	3
MTH 180	College Algebra and Trigonometry I	3
		<u>17</u>

SECOND SEMESTER		Credits
ENV 135	Air Pollution Control	3
ENV 151	Source Reduction and Industrial Processes	4
BIO 123	General Biology II	4
	or	
BIO 201	Microbiology	4
	or	
BIO 208	Ecology	4
CHM 123	Introductory Organic and Biochemistry	4
	or	
CHM 203	Organic Chemistry I	4
ENL 111	English Composition I	3
		<u>18</u>

THIRD SEMESTER		Credits
ENV 161	Water Pollution and Treatment	4
ENV 170	Sampling and Analysis	3
ENL 201	Technical and Professional Communication	3
MTH 160	Elementary Statistics with Computer Applications	4
	or	
MTH 158	Elementary Statistics I	3
SAF 110	Occupational Health and Safety	2
		<u>16</u>

FOURTH SEMESTER		Credits
ENV 201	Waste and Waste Disposal	4
ENV 220	Environmental Compliance Plans	3
MGT 115	Principles of Management	3
PHL 210	Ethics	3
	Fitness and Lifetime Sports Elective	1
	Open Elective	3
		<u>17</u>

Floral Design/ Interior Plantscape (FD)

Associate of Applied Science Degree (A.A.S.)

This curriculum prepares graduates for a wide variety of jobs in ornamental horticulture. The curriculum has the unique feature of having its individual courses interrelate in such a way to give the graduate a strong education in three major areas: floral design, interior plantscaping and greenhouse production.

Career Opportunities: Interior plantscape, design, plant installation and maintenance, floral designer, shop manager, wholesale/retail flower sales, floral hard goods sales, greenhouse plant production, horticulture equipment

sales, horticulture chemical sales, garden center manager, government/university plant technician, owner/operator of a horticultural business.

Recommended High School Subjects: One year of algebra, two years of science and four years of English.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by the first year. The order of remediation will be reading, math and English.

Program Goals: The objective of the Floral Design/Interior Plantscape major is to prepare students for employment or self-employment in the retail florist, interiorscape and greenhouse industry or related business.

A graduate of the Interior Plantscape/Floral Design major should be able to

- apply basic knowledge of botany.
- demonstrate the use of plant growth media, soil amendments, and fertilizers.
- identify trees and shrubs, ground covers, various annuals, biennials, and perennials; summarize landscape, garden center, greenhouse, and interiorscape uses and cultural requirements of these plants.
- propagate by asexual and sexual methods.
- describe proper design and operation of greenhouse environmental systems and evaluate their advantages and disadvantages in commercial production.
- summarize and assess plant growth requirements for commercial production of greenhouse crops and economically produce a crop from seed or cutting to harvest and sales.
- prepare salable floral designs of fresh, dried, and silk flowers using design guidelines, working within the time and cost requirements of the retail floral industry.
- outline the management requirements of a flower shop including record keeping and employee/employer relations and demonstrate skills in designing and selling the types of arrangements and accessories used for special occasions.
- identify, describe and plan for proper control of problems caused by insects, disease, and physiological problems on plants; develop plans to control these problems.
- demonstrate knowledge of the operation and repair of equipment and mechanical systems used in the horticulture industry.
- demonstrate a responsible attitude in relationships with employers, colleagues and clients.
- identify foliage plants commonly used indoors, state distinguishing characteristics of each, and describe their use and culture in various indoor landscape areas.
- demonstrate the specific problems involved with the installation and maintenance of interior plantscape plants.
- demonstrate the basic principles of interior plantscape design concepts.
- demonstrate basic sketching and drawing skills and develop an interiorscape presentation.

FIRST SEMESTER		Credits
BIO 111	Basic Botany	3
HRT 110	Soils and Fertilizers	3
HRT 112	Horticulture Operations and Structures	3
HRT 113	Ornamental Plants	3
ENL 111	English Composition I	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
		<u>18</u>

SECOND SEMESTER		Credits
HRT 118	Herbaceous Plantscape Plants	3
HRT 122	Fresh and Permanent Floral Designs	3
HRT 213	Interior Plantscape Plants	3
ENL 121	English Composition II	3
	or	
SPC 101	Fundamentals of Speech	3
CSC 110	Introduction to Information Technology	3
		<u>15</u>

THIRD SEMESTER		Credits
HRT 210	Plant Propagation	3
HRT 217	Atrium/Greenhouse Techniques and Maintenance	3
HRT 239	Plant Insects and Diseases	3
HRT 240	Special Occasion, Dried and Sympathy Floral Designs	3
	Fitness and Lifetime Sports Elective	1
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
HRT 227	Interior Plantscape Design	3
HRT 228	Interior Plantscape Installation and Maintenance	3
HRT 229	Wedding Designs and Flower Shop Management	3
HRT 230	Landscape Accessories	3
	Open Elective	3
		<u>15</u>

Forest Technology (FR)

Associate of Applied Science Degree (A.A.S.)

The curriculum prepares students for technical and mid-management positions in forestry production, wood processing and manufacturing industries. The coursework emphasizes outdoor learning and practical hands-on experience. It provides both an academic and a specialized background needed for a variety of careers in forestry.

Career Opportunities: Forest fire control; wildlife habitat improvement; maintenance of forest roads, structures, and recreational areas; timber estimation, marking and stand improvement; pulpwood procurement; logging supervisor; location and survey of forest property lines; lumber inspector; dry kiln operator; lumber yard supervisor, quality control technician, mill manager and equipment sales.

Recommended High School Subjects: Two years of algebra, two years of science and four years of English.

Remediation Strategies: Triple-deficient students must remediate prior to starting the major. All students must remediate by the first year. The order of remediation will be math, reading, and English.

Program Goals: The general objective of the Forest Technology major is to prepare students for employment in forest industry and related businesses. The program provides an academic background and specialized skills for a variety of career opportunities.

A graduate of the Forest Technology major should be able to

- identify selected species of trees and shrubs by their scientific and common names, general uses, site characteristics, and geographic distribution.
- apply the fundamentals of plane surveying: including the use and care of surveying equipment, maps and map-making, and the theory of measurements.
- measure the volume and value of standing timber.
- prepare a forestland management plan for a property using the concepts of multiple use and sustained yield forest management.
- demonstrate knowledge of the silvicultural treatments used to regulate stand composition, regenerate stands, increase growth rates, and improve timber quality.
- apply the basic theories, principles, and techniques used in timber harvesting and demonstrate skills in the operation and maintenance of tools and equipment used to harvest a timber crop.
- describe the life history, food, and habitat requirement of the major game, non-game birds, and mammals of Pennsylvania.

- identify and describe the function of tree parts and of selected plants and describe their relation to soil.
- describe the manufacturing and uses of various forest products and describe the characteristics and structure of common wood species.
- describe the characteristics and control of various forest pests, diseases, and fire problems.
- grade hardwood and softwood logs and lumber based on industry standards.
- develop marketing and logistical skills for the forest industry.
- demonstrate familiarity with the principles of cutting logs into lumber.
- demonstrate basic skills in handling and drying of lumber.
- demonstrate the ability to discern the concepts of plant variability and diversity.
- apply computer skills to forestry related software.
- understand the ecosystem concept.
- apply basic GIS/GPS technology to field applications.

FIRST SEMESTER		Credits
FOR 111	Dendrology	3
FOR 113	Forest Mensuration	3
BIO 111	Basic Botany	3
ENL 111	English Composition I	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

SECOND SEMESTER		Credits
FOR 120	Forest Surveying I	2
FOR 122	Photogrammetry	2
FOR 124	Advanced Forest Mensuration	3
FOR 127	Forest Ecology	3
DSM 100	Equipment Operation and Safety	1
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
MTH 125	Technical Algebra and Trigonometry II	3
	or	
MTH 182	College Algebra and Trigonometry II	3
		<u>17</u>

THIRD SEMESTER		Credits
FOR 210	Forest Products (WRT)	3
FOR 232	Forest Surveying II	3
FOR 236	Silviculture	3
FOR 243	An Introduction to GIS/GPS	3
FOR 252	Timber Harvesting and Equipment	3
CSC 110	Introduction to Information Technology	3
		<u>18</u>

FOURTH SEMESTER		Credits
FOR 237	Forest Recreation	1
FOR 245	Wildlife Management	3
FOR 248	Forest Protection	3
FOR 249	Forest Land Management (WRT)	3
ECO 111	Principles of Macroeconomics	3
	Open Elective	3
		<u>16</u>

NOTE: MTH 180 and MTH 182 are recommended for Forest Technology students desiring to transfer to a four-year degree major.

Accreditation: The educational program in Forest Technology leading to an Associate of Applied Science in Forest Technology is recognized by the Society of American Foresters.

Graphic Communications Technology (GT)

Associate of Applied Science Degree (A.A.S.)

The Graphic Communications Technology major supports the human resource development needs of the printing and publishing industry. This major offers students an opportunity to develop skills and knowledge that will prepare them for entry-level positions in the field. Laboratory experiences reinforce theory by involving students with a variety of printing processes. Students will also have opportunities to work with digital media, such as CD-ROM publishing and internet site development. This major contributes to the development of realistic problem-solving skills and the application of communications, math, science, and technology concepts. Related courses and electives will improve the student's potential for advancement and prepare the graduate for additional education leading to a baccalaureate degree in Graphic Communications Management.

Career Opportunities: Digital prepress, preflight analysis and file repair, electronic page layout, color scanning and separation, image carrier output, digital media development, press operations, finishing and binding operations.

Program Goals: A graduate of the Graphic Communications Technology major should be able to

- practice safe, responsible work habits.
- identify and compare the major printing processes and their applications.
- demonstrate entry-level skill in offset lithography, flexography, and screen-printing production while gaining perspective on quality, cost, and production variables.
- demonstrate entry-level skills in the use of finishing and binding technologies.
- demonstrate proficiency in the use of digital vector, image-editing, multimedia, output production, and page layout software technologies.
- apply appropriate design concepts and procedures.
- make appropriate decisions in the process of troubleshooting software and equipment problems.
- create appropriate forms of digital media for specific applications.
- at a basic-user level, configure and coordinate networked computer systems for transmission of digital data.
- describe and apply established typographical principles and practices.
- apply color reproduction and management techniques and principles.
- identify and use appropriate instrumentation for quality control of printed products.
- track and assess technological trends in the graphic communications industry.
- apply mathematical and scientific concepts through the solution of printing production problems.
- identify and use a variety of informational resources such as libraries, on-line sources, databases, technical research, trade publications, etc.
- write clear, concise, and accurate technical reports.
- recognize and demonstrate a capacity for fulfilling the expectations associated with a workplace environment including respect for coworkers, cooperative work ethic, willingness to assume responsibility, and execution of assignments in a timely fashion.

FIRST SEMESTER		Credits
PNP 110	Introduction to Printing and Publishing Professions	2
PNP 114	Electronic Typography	3
PNP 123	Digital Imaging I	3
PNP 124	Offset Lithography	3
CSC 110	Introduction to Information Technology	3
OFT 101	Keyboarding and Its Applications	1
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

SECOND SEMESTER		Credits
PNP 125	Page Layout and Design	3
PNP 210	Digital Imaging II	3
PNP 234	Advanced Offset Lithography	3
ENL 111	English Composition I	3
PHO 101	Black-and-White Photography	3
		<hr/> 15

THIRD SEMESTER		Credits
PNP 212	Screen Printing	3
PNP 232	Finishing and Distribution	3
PNP 272	Digital Media Publishing	3
ENL 201	Technical and Professional Communication	3
MTH 113	Business Mathematics	3
	or	
MTH 153	Topics in Mathematics	3
		<hr/> 15

FOURTH SEMESTER		Credits
PNP 215	Flexography	3
PNP 220	Output Workflow	3
PNP 252	Production Printing	3
	or	
PNP 252	Production Printing (Co-Op)	3
	Science Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 15

Health Arts (HT)

Associate of Applied Science Degree (A.A.S.)

The associate of applied science in Health Arts is a flexible design, which can prepare students with a health care background to have a better understanding of the health care system in America, be better prepared to meet changes in the health care system in American society, and have a fundamental understanding of the process of setting and accomplishing goals through the use of appropriate resources.

College-level credit can be awarded for non-traditional training/education that has led to a recognized credential including (but not necessarily limited to) certification, licensure, and/or registration. The training and related work experience must equal at least nine (9) credits. Student credentials and experiences will be evaluated by the School of Health Sciences to determine the number of credits that can be awarded.

Practical nursing students studying in the Health Arts curriculum must meet all requirements and observe all procedures outlined in the PN program.

Career Opportunities: Students coming into this major are expected to be in, or have completed training for health care areas and already have jobs, or will be able to easily obtain a job in their original area of emphasis. Completion of this major and earning an associate of applied science degree could help them advance within an organization, create more job related options for them, or give them an advantage when they are in competition for a job or promotion.

Recommended High School Subjects: Students studying Practical Nursing via the Health Arts curriculum will need to meet PN requirements, which includes four units of high school English, three units of social studies, three units of mathematics (Algebra or Applied Math II; Algebra II recommended), and three units of science (at least one unit should be biology with a lab).

Recommended for other students are academic subjects with emphasis on science and three units of math with Algebra I or Applied Math II (Algebra II recommended). Students who do not meet these recommendations can work with a college advisor to prepare for the major.

Remediation Strategies: Students who complete this major can be eligible for transfer into the College's bachelor degree in Applied Health Studies or Technology Management. Developmental coursework must be remediated prior to Practical Nursing coursework. For other students in this major, developmental coursework must be remediated prior to, or in conjunction with regular coursework. All developmental work must be satisfied within the first 12 credits of the curriculum.

Transfer Procedures: All general education courses that meet College requirements will be eligible for transfer according to College policy. No less than 9 credits will be considered for eligibility for acceptance into the major. Students interested in Practical Nursing can enroll in this curriculum; however, completion of the required curriculum will be dependent upon their acceptance into the Practical Nursing major.

Program Goals: This major serves licensed/certified/registered health care providers who desire an academic credential. The AAS in Health Arts should prepare the student to

- appreciate and adapt to the changes facing health care delivery systems in the United States and a society in transition.
- manage the fundamentals of the process of setting and accomplishing goals through the use of appropriate resources.
- appreciate and understand the needs of the geriatric patient/client.
- demonstrate ability to use the library and other learning resources to gather, interpret, and report information.
- appreciate and apply general knowledge related to social sciences and their impact on society; relate this to the health care areas.
- appreciate the need for, understand the relation to, and apply knowledge of basic sciences to the health care professions and patient treatment.
- integrate and understand their role in the health care system.

FIRST SEMESTER		Credits
	Directed Health Arts Electives	9
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
	Science Elective	3
		<u>18</u>
SECOND SEMESTER		Credits
	Directed Health Arts Electives	6
MTH 113	Business Mathematics	3
	or	
MTH 124	Technical Algebra and Trigonometry I	3
	or	
	Math Elective (MTH150 or higher)	3
	Nutrition Elective	2
	Communication Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
		<u>18</u>
THIRD SEMESTER		Credits
	Directed Health Arts Electives	15
HTH 325	Health Care Delivery Systems	3
		<u>18</u>
FOURTH SEMESTER		Credits
	Directed Health Arts Electives	18
		<u>18</u>

Nutrition Elective: FHD116, HTH230, SCI301

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted. Please refer to a listing of special Health Sciences requirements in the Admissions section of this catalog. In addition, students in this major must be licensed, certified and/or registered as a health care provider and provide proof of the credential before acceptance. Related work experience for students not enrolled in a health related major must be current within the last five years. Students currently enrolled in a non-Penn College Health Sciences major may be given admission to this curriculum if the administrator in charge of the non-Penn College program, the Dean for Health Sciences, and the administrator in charge of the Health Arts major agree to allow the student to begin studies at Penn College, and all other College admissions requirements are met. A four-credit science course can use 1 credit to help satisfy 1 credit of Directed Electives. Acceptable selections to meet this requirement must include a science with a lab.

Directed electives include credit given for health care training as determined by the Program Director and/or Health Sciences Dean. Other courses appropriate to the student's career/educational goals are included in this category.

Students desiring other/additional degrees, especially any bachelor degree program, need to carefully consult with their advisor regarding the best option. MTH 113, MTH 124, MTH 151 may not be appropriate selections, especially for students desiring additional health sciences and/or bachelor degree studies.

PSY 111 recommended for Humanities/Social Sciences/Art/Foreign Language elective.

Health Information Technology (HI)

Associate of Applied Science Degree (A.A.S.)

The Health Information Technology (HI) program will prepare students to identify and use a variety of informational resources and technologies to effectively perform entry-level skills in health information positions. The program will provide students basic training in human sciences, computers, health information content and management, quality improvement, coding and reimbursement, and legal aspects of health information.

Career Opportunities: Entry-level coder, medical records technician, abstractor, transcriptionist, utilization management assistant, quality improvement assistant, data analyst and supervisor.

Recommended High School Subjects: Required: English/Communications. Biology with lab, anatomy and physiology, mathematics, keyboarding and some computer experience are beneficial.

Remediation Strategies: Students will be expected to remediate English, reading and math deficiencies by the end of the first semester.

Program Goals: The purpose of the Health Information Technology major is to prepare students to be able to collect, analyze, and maintain accurate health care data as part of total quality patient care. Specifically, graduates of this major should be able to:

- apply information literacy to personal, professional, and other related areas.
- recognize and develop the skills necessary for life long learning.
- develop critical thinking, analytical, problem solving, and decision-making skills.
- develop human relation skills and successfully apply those skills to a variety of business situations.
- evaluate and use professional literature.
- understand the fundamentals of good communications and apply those fundamentals in written, oral, and visual delivery methods.
- use, organize, analyze and evaluate health records according to established legal and accrediting agency guidelines and standards.
- compile, analyze, and present statistical and other health information for use by various health care professionals.
- perform quality measurement and control of health care data.
- code and abstract health care data for statistical and reimbursement purposes.

- file and retrieve health records and health information from patient files, indexes and registers for use in patient care, continuing education, research and health care planning.
- preserve the security and integrity of confidential patient information while maintaining access to information by those authorized to use patient information.
- develop and maintain systems to prepare, maintain, and provide timely access to needed health information, including computer-based patient record systems.

FIRST SEMESTER	Credits
BIO 115 Human Anatomy and Physiology I	4
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
HTH 115 Pathology and Disease Process I	3
MTR 104 Basics of Medical Terminology	3
OFT 101 Keyboarding and Its Applications	1
Fitness and Lifetime Sports Elective	1
	18

SECOND SEMESTER	Credits
BIO 125 Human Anatomy and Physiology II	4
HIT 110 Health Data Content and Structure	4
HIT 120 Computers in Health Care	3
HTH 125 Pathology and Disease Process II	3
MGT 230 Business Communications	3
	17

SUMMER SESSION	Credits
MGT 115 Principles of Management	3
MTH 113 Business Mathematics	3
or	
MTH 151 Structures of Mathematics	3
	6

THIRD SEMESTER	Credits
HIT 210 Healthcare Statistical Data	2
HIT 220 Healthcare Quality Improvement	3
HIT 230 Clinical Classification Systems	3
HIT 240 Health Information Internship I	3
HTH 325 Health Care Delivery Systems	3
DEN 204 Pharmacology	2
	16

FOURTH SEMESTER	Credits
HIT 231 Advanced Coding and Reimbursement	3
HIT 241 Health Information Internship II	3
HIT 250 Health Information Management	3
LAS 120 Legal Aspects of Health Information	3
SPC 101 Fundamentals of Speech	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
	18

Heating, Ventilation & Air Conditioning Technology (HP)

Associate of Applied Science Degree (A.A.S.)

This curriculum provides knowledge and skills training in air conditioning, hydronic heating, temperature and humidity control, air circulation, duct and pipe system design and layout, thermostats, ventilating equipment, automatic controls and plumbing. Students learn to install and repair equipment in the lab segments of the

major. The combination of lab practice and theory prepares students for employment and advancement in today's heating, ventilation, air conditioning (HVAC), and plumbing industries. Students in the commercial refrigeration option will have first preference in ACR 121 and ACR 123 courses. Exception may be granted by the Assistant Dean or Dean of the School.

Career Opportunities: Refrigeration and air conditioning, heating (HVAC) equipment mechanic, estimator, sales representative, air conditioning technician, industrial physical plant maintenance, plumber and environmental control specialist.

Recommended High School Subjects: Two years of algebra, one year of science, physics.

Remediation Strategies: Students will be required to remediate deficiencies.

Program Goals: The goal of this major is to prepare students for employment in the field of commercial, residential, and industrial heating, cooling, and plumbing and refrigeration installation, maintenance, and service.

Graduates of this major should be able to

- demonstrate the ability to do technical work in a variety of heating, cooling, and plumbing and refrigeration fields; apply safety standards and understand and work with technical developments in the industry.
- identify and demonstrate correct use of tools, materials, and equipment used in the trade.
- demonstrate the ability to read and interpret blueprints and use blueprints when installing equipment.
- troubleshoot heating, cooling, and refrigeration equipment using standard troubleshooting procedures.
- read and interpret electrical schematics; use schematics when installing and repairing equipment.
- estimate the cost of an installation and design; layout an effective system for a specific location use.
- demonstrate an awareness of and respect for customer/employer relations.
- demonstrate knowledge of the operation and use of hermetic and reciprocating compressors.
- apply basic knowledge of airflow, ventilation, and energy conservation concepts, the design of systems using modern building design and solar energy technology.
- install, service and repair hydronic heat systems, controls, and heat distributing units.
- install and troubleshoot residential and commercial electrical, pneumatic, and electronic HVAC control systems.
- demonstrate knowledge of gas and oil-fired boilers and heat pump installation and service.

FIRST SEMESTER	Credits
ACR 111 Introduction to Refrigeration	5
ELT 250 HVAC/R Electricity	5
PLH 111 Plumbing Skills-Residential	5
MTH 124 Technical Algebra and Trigonometry I	3
	18

SECOND SEMESTER	Credits
ACR 120 Blueprints and Specifications	2
PLH 121 Plumbing Skills-Commercial	5
PLH 123 Practical Plumbing Experience	3
BCT 254 Carpentry for the Trades	2
ENL 111 English Composition I	3
CSC 110 Introduction to Information Technology	3
	18

THIRD SEMESTER	Credits
ACR 237 Basic A/C Systems and Design	5
ELT 252 HVAC Controls I-Residential	4
PLH 239 Basic Heating Systems and Design	5
PHS 103 Physics Survey	3
Fitness and Lifetime Sports Elective	1
	18

FOURTH SEMESTER		Credits
ACR 243	HVAC Systems II	4
ELT 253	HVAC Controls II-Commercial	4
PLH 244	Hydronic Heating Systems	4
ENL 201	Technical and Professional Communication	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 18

Additional Information: Students planning to continue in the bachelor degree major (BHV) should take MTH 180, if placement test results indicate readiness; and, SOC111 for Social Science Elective requirement. Students taking WEL 101, 2 credits, can also earn a Plumbing certificate.



Heating, Ventilation & Air Conditioning Technology (HV)

Associate of Applied Science Degree (A.A.S.)

This curriculum provides knowledge and skills training in air conditioning, hydronic heating, temperature and humidity control, air circulation, duct and pipe system design and layout, thermostats, ventilating equipment, automatic controls and plumbing. Students learn to install and repair equipment in the lab segments of the program. The combination of lab practice and theory prepares students for employment and advancement in today's heating, ventilation, air conditioning (HVAC), and plumbing industries. Students in the commercial refrigeration option will have first preference in ACR 121 and ACR 123 courses. Exception may be granted by the Assistant Dean or Dean of the School.

Career Opportunities: Refrigeration and air conditioning, heating (HVAC) equipment mechanic, estimator, sales representative, air conditioning technician, industrial physical plant maintenance, plumber and environmental control specialist.

Recommended High School Subjects: Two years of algebra, one year of science, physics.

Remediation Strategies: Students will be required to remediate deficiencies.

Program Goals: The goal of this major is to prepare students for employment in the field of commercial, residential, and industrial heating, cooling, plumbing, and refrigeration installation, maintenance, and service.

Graduates of this major should be able to

- demonstrate the ability to do technical work in a variety of heating, cooling, and plumbing and refrigeration fields; apply safety standards and understand and work with technical developments in the industry.
- identify and demonstrate correct use of tools, materials, and equipment used in the trade.
- demonstrate the ability to read and interpret blueprints and use blueprints when installing equipment.
- troubleshoot heating, cooling, and refrigeration equipment using standard troubleshooting procedures.
- read and interpret electrical schematics; understand how to use schematics when installing and repairing equipment.
- estimate the cost of an installation and design; layout an effective system for a specific location and use.
- demonstrate an awareness of, and respect for customer/employer relations.
- demonstrate knowledge of the operation and use of hermetic and reciprocating compressors.

- apply basic knowledge of airflow, ventilation, and energy conservation concepts in the design of systems using modern building design and solar energy technology.
- install, service and repair hydronic heat systems, controls, and heat distributing units.
- install and troubleshoot residential and commercial electrical, pneumatic, and electronic HVAC control systems.
- demonstrate knowledge of gas and oil-fired boilers and heat pump installation and service.

FIRST SEMESTER		Credits
ACR 111	Introduction to Refrigeration	5
ELT 250	HVAC/R Electricity	5
PLH 111	Plumbing Skills-Residential	5
MTH 124	Technical Algebra and Trigonometry I	3
		<hr/> 18

SECOND SEMESTER		Credits
ACR 120	Blueprints and Specifications	2
ACR 121	Commercial Refrigeration Systems	5
ACR 123	Installation and Service-Commercial	5
ENL 111	English Composition I	3
CSC 110	Introduction to Information Technology	3
		<hr/> 18

THIRD SEMESTER		Credits
ACR 237	Basic A/C Systems and Design	5
ELT 252	HVAC Controls I-Residential	4
PLH 239	Basic Heating Systems and Design	5
PHS 103	Physics Survey	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 18

FOURTH SEMESTER		Credits
ACR 243	HVAC Systems II	4
ELT 253	HVAC Controls II-Commercial	4
PLH 244	Hydronic Heating Systems	4
ENL 201	Technical and Professional Communication	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<hr/> 18

Additional Information: Students planning to continue in the bachelor degree majors (BHV or BBT) should take MTH 180, if placement tests results indicate readiness; and, SOC 111 for Social Science Elective requirement.



Heavy Construction Equipment CAT Emphasis (CH)

Associate of Applied Science Degree (A.A.S.)



This major provides students with the skills necessary to maintain and repair several types of heavy construction equipment. Students will be provided additional skill development in the servicing, repairing and testing of late-model Caterpillar equipment. Advanced equipment maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. Specific instruction in equipment systems includes engine overhaul, manual transmission repair, chassis maintenance, hydraulic component testing and overhaul, hydrostatic and powershift transmission repair, electrical troubleshooting, electronic controls diagnostics and preventative maintenance.

Career Opportunities: Heavy construction equipment technician for a heavy construction equipment dealership, mine, quarry, forestry equipment dealer, leasing company or contractor, field service/sales representative for an equipment or engine distributor; service occupations such as service writer, warranty writer, parts manager, assistant service manager.

Recommended High School Subjects: Three years of English, two years of algebra, and one year of science.

Remediation Strategies: Students must remediate all deficiencies prior to admission to the major.

Program Goals: The objective of the Heavy Construction Equipment Technology/CAT Emphasis major is to prepare students in managing, maintaining and repairing Caterpillar heavy construction equipment. The student is exposed to all facets of the industry with emphasis on problem solving and transferability of skills. A student must serve an internship.

A graduate of the Heavy Construction Equipment Technology/CAT Emphasis major should be able to

- practice approved safety procedures in various work situations.
- read and interpret equipment manuals and write clear, accurate, and complete service reports.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- describe the operation of diesel engines, overhaul a diesel engine, and demonstrate skills in problem solving, maintaining, and repairing diesel engines.
- troubleshoot, maintain, adjust, and repair basic chassis systems including standard transmissions, clutches, drive lines, braking systems, tracks, steering systems, and differentials using problem solving skills.
- identify, troubleshoot, and repair various types of hydraulic systems, hydrostatic and powershift transmissions, torque converters, fuel systems, and electrical systems using problem solving skills.
- explain the principles of planned preventative maintenance and the economic benefits of proper equipment maintenance scheduling.
- diagnose and repair malfunction of engine and chassis electronic management systems found on Caterpillar equipment.
- retrieve and record accurate technical information from a computer-based system and demonstrate proper communication techniques for customer assistance and reporting.

FIRST SEMESTER	Credits
DSM 113 Tools and Hardware	1
DSM 114 Applied Failure Analysis	1
DSM 115 Diesel Engines	4
DSM 116 Diesel Engines Laboratory	4
DSM 117 Introduction to Hydraulics	1
CSC 110 Introduction to Information Technology	3
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>17</u>

SECOND SEMESTER	Credits
DSM 120 Basic Electricity	4
DSM 139 Hydraulic Components	5
DSM 141 Heavy Duty Brake Systems	2
DSM 142 Power Train and Brake Systems Lab	4
DSM 145 Construction Equipment Chassis	1
DSM 147 Principles of Power Trains	2
DSM 284 Introduction to CAT Vehicles	1
	<u>19</u>

SUMMER SESSION	Credits
DSM 153 Internship	2
	<u>2</u>

THIRD SEMESTER	Credits
DSM 118 Fuel Systems	2
DSM 241 Diesel Electronic Systems	2
DSM 242 Diesel Equipment Air Conditioning Systems	2
DSM 281 CAT Engine Management Systems	3
DSM 285 CAT Vehicles Laboratory	1
ENL 111 English Composition I	3
PHS 103 Physics Survey	3
or	
PHS 114 Physics with Technological Applications	4
	<u>16</u>

FOURTH SEMESTER	Credits
DSM 274 Equipment Maintenance Management	1
DSM 282 CAT Vehicle Chassis Electronics and Diagnostic Procedures	4
DSM 283 Specialized Hydraulics	6
ENL 201 Technical and Professional Communication	3
Fitness and Lifetime Sports Elective	1
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

Heavy Construction Equipment Heavy Construction Equipment Technology (HA)

Associate of Applied Science Degree (A.A.S.)

This curriculum provides students with the skills necessary to maintain, repair and operate several types of heavy construction equipment. Students will be provided additional skill development in the servicing, sales, and fleet operations of the heavy construction equipment industry. Advanced equipment maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. Specific instruction in equipment systems includes engine overhaul, manual transmission repair, chassis maintenance, hydraulic component testing and overhaul, hydrostatic and powershift transmission repair, electrical troubleshooting, and preventative maintenance. The operation component emphasizes the safe operation of common heavy construction equipment and proper site preparation and survey. Students may elect to take the operation courses over the summer term.

Career Opportunities: Heavy construction equipment technician/operator for a heavy construction equipment dealership, mine, quarry, farm equipment dealership, forestry equipment dealer, leasing company or contractor; field service/sales representative for an equipment or engine distributor; service occupations such as service writer, warranty writer, parts manager, assistant service manager.

Recommended High School Subjects: Three years of English, one year of algebra, and one year of science.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by the end of the first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Heavy Construction Equipment Technology major is to prepare students in managing, maintaining, repairing and operating heavy construction equipment. Instruction is broad based and exposes the student to all facets of the industry with particular emphasis on problem solving and transferability of skills. A graduate of the Heavy Construction Equipment Technology major should be able to

- practice approved safety procedures in various work situations.
- read and interpret equipment manuals and write clear, accurate, and complete service reports.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- describe the operation of diesel engines, overhaul a diesel engine, and demonstrate skills in problem solving, maintaining, and repairing diesel engines.
- troubleshoot, maintain, adjust, and repair basic chassis systems including standard transmissions, clutches, drive lines, braking systems, tracks, steering systems, and differentials using problem solving skills.
- identify, troubleshoot, and repair various types of hydraulic systems, hydrostatic and powershift transmissions, torque converters, fuel systems, and electrical systems using problem-solving skills.
- demonstrate the proper use of transits, hand levels, lasers, and blueprints in construction layouts.
- explain the principles of planned preventative maintenance and the economic benefits of proper equipment maintenance scheduling.
- demonstrate the safe and proper operation of representative examples of heavy construction equipment and practice accepted earth-moving techniques used in industry.

FIRST SEMESTER	Credits
DSM 113 Tools and Hardware	1
DSM 114 Applied Failure Analysis	1
DSM 115 Diesel Engines	4
DSM 116 Diesel Engines Laboratory	4
DSM 117 Introduction to Hydraulics	1
CSC 110 Introduction to Information Technology	3
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
Fitness and Lifetime Sports Elective	1
	<u>18</u>

SECOND SEMESTER	Credits
DSM 120 Basic Electricity	4
DSM 139 Hydraulic Components	5
DSM 141 Heavy Duty Brake Systems	2
DSM 142 Power Train and Brake Systems Lab	4
DSM 145 Construction Equipment Chassis	1
DSM 147 Principles of Power Trains	2
DSM 148 Heavy Equipment Operating Methods	1
	<u>19</u>

THIRD SEMESTER	Credits
DSM 220 Site Engineering	2
DSM 221 Operation of Crawler Tractors	2
DSM 222 Operation of Ditch and Trenching Equipment	2
DSM 223 Operation of Hauling and Finish Grade Equipment	2
ENL 111 English Composition I	3
PHS 103 Physics Survey	3
or	
PHS 114 Physics with Technological Applications	4
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>17</u>

FOURTH SEMESTER	Credits
DSM 118 Fuel Systems	2
DSM 241 Diesel Electronic Systems	2
DSM 242 Diesel Equipment Air Conditioning Systems	2
DSM 274 Equipment Maintenance Management	1
DSM 283 Specialized Hydraulics	6
ENL 201 Technical and Professional Communication	3
DSM 276 Site Modification	2
or	
WEL 100 Introduction to Welding Processes	3
	<u>18</u>

Hospitality Management (HM)

Associate of Applied Science Degree (A.A.S.)

The Hospitality Management program is an integral part of the Penn College School of Hospitality. It is designed to give students a solid foundation in hospitality operations and management. The focus of the program leads students to careers in commercial, institutional and private operations, including hotels, restaurants, inns, schools/universities, banquet facilities and clubs. It does this through practical, applied learning experiences, study of hospitality trends and theories, and through courses in general studies, business management, marketing and computer applications. This approach provides students with a comprehensive learning experience, preparing them to assume entry-level management responsibility in the dynamic field of hospitality management. The major is a partner with the National Restaurant Association's Professional Management Development Program.

Career Opportunities: Dining Room Supervisor, Front Office Supervisor, Guest Services Manager, Banquet Manager, Management Trainee, Food Service Director.

Recommended High School Subjects: A strong background in high school math, reading, and written communication is required, as is a working knowledge of keyboarding and computer science equipment and software. Strong manual dexterity and mechanical skills are highly desirable.

Remediation Strategies: Students must remediate all deficiencies in the order of English, math and reading.

Program Goals: Hospitality Management gives students a solid foundation in hospitality operations and management. Graduates should be able to

- establish and maintain high standards of sanitation as established by the ServSafe® program.
- demonstrate a solid foundation of techniques for food preparation, presentation and service.
- describe the equipment available on the market and plan its arrangement, operation and maintenance for efficiency and safety.
- plan menus, purchase, cost and price product for profit.
- demonstrate creativity and sound thinking in solving management problems and in merchandising techniques.
- conform to established codes of ethics and demonstrate a responsible attitude expected in the hospitality industry.
- demonstrate a working knowledge of the factors involved in setting up and operating a food service establishment.
- demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
- demonstrate a working knowledge of hotel front office management and hospitality industry marketing.
- plan and facilitate banquets and special events.
- demonstrate service techniques found in various segments of the restaurant industry, including fine dining, casual, and quick service.
- demonstrate a working knowledge of wine service including wine/food pairing, merchandising and wine list design.

- prepare a variety of alcoholic and non-alcoholic beverages.
- equip, stock, staff and control a bar operation.
- demonstrate a working knowledge of management, including service, people and facilities.
- demonstrate knowledge of fundamentals of microcomputers.
- develop a career portfolio.
- develop skills for and a commitment to the process of lifelong learning.
- develop skills for problem solving, decision making and critical thinking.

FIRST SEMESTER	Credits
FHD 106 Introduction to the Hospitality Industry	1
FHD 117 Purchasing	2
FHD 118 Sanitation	1
MGT 115 Principles of Management	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MTH 113 Business Mathematics	3
Fitness and Lifetime Sports Elective	1
	<hr/> 17

SECOND SEMESTER	Credits
FHD 125 Menu Planning and Cost Control	3
FHD 133 Tableservice	2
FHD 134 Tableservice Practicum	1
FHD 108 Foundations of Food Preparation	4
Communication Elective	3
Science Elective	3
Specified Foods Elective	1
	<hr/> 17

SUMMER SESSION	Credits
FHD 289 Hospitality Management Internship	1
	<hr/> 1

THIRD SEMESTER	Credits
FHD 268 Facilities Planning	3
FHD 140 Food Preparation, Application and Production	4
FHD 275 Front Office Management	3
FHD 135 Wine and Beverage Management	2
FHD 136 Wine and Beverage Practicum	1
ACC 113 Introduction to Financial Accounting	3
MKT 240 Principles of Marketing	3
	<hr/> 19

FOURTH SEMESTER	Credits
FHD 116 Nutrition Application	3
or	
FHD 266 Catering	3
FHD 255 Advanced Dining Room Management	3
FHD 310 Legal Issues and Applications in Hospitality	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Foods Management/Marketing Elective	3
Specified Hospitality Management	3
Computer Elective	3
	<hr/> 18

Specified Foods Elective: FHD105, FHD132, FHD138, FHD205, FHD206, FHD252, FHD258

Foods Management/Marketing Elective: MGT110, MGT231, MGT248, MGT249, MGT330, MGT340, MKT240, MKT243, MKT260

Specified Hospitality Management Computer Elective: CSC211, CSC221, OIS214

Additional Information: Dress Code: Professionalism is the signature of this degree, and is the expectation for performance and appearance. Uniform

and personal appearance standards are strictly enforced. Students are required to be clean-shaven (neat mustache above the lip is allowed), have properly contained hair (top of ear and back of collar for men; tied up and under hat for women, utilizing a net if necessary - no protruding bangs). In labs, no excessive makeup and no jewelry are allowed, including rings, watches and earrings or visible piercings of any style. Students in Tableservice and/or Wine and Beverage Practicum may wear appropriate cosmetics, a watch, a single set of post-style earrings. Hair must be restrained - the utilization of a French braid or discrete pinning/styling is required.

Accreditation: Accredited by CAHM.

ProMgmt.

Human Services (HS)

Associate of Applied Science Degree (A.A.S.)

Human Services trains students to provide general helping, supportive and preventive services for people with emotional, developmental, social or physical problems. Students develop skills in counseling, crisis intervention, group work and case management. Students apply these general skills in analyzing specific types of agencies and through internships in the field.

Career Opportunities: Entry-level positions in youth and aging programs, senior citizen centers, drug and alcohol counseling programs, child care development agencies, correctional facilities and other agencies.

Recommended High School Subjects: Three years of English with emphasis on writing, one year of biology, two years of algebra, and a course in computer science, keyboarding, psychology and health.

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate reading and English deficiencies during their first semester, and must remediate any math deficiency by the end of the first year in the major.

Program Goals: The general goal of the Human Services major is to train students as generalists in the helping professions. Graduates are also prepared for advanced study in social sciences and human service fields.

Graduates of the Human Services major should be able to

- provide generic therapeutic, supportive and preventive services for people with emotional, developmental, social or physical problems in a variety of social or human service settings.
- demonstrate knowledge of social and human services delivery systems and their role within the local and national community.
- identify and link clients with resources and services provided by local human service agencies.
- apply systematic procedures to identify problems.
- provide basic individual and group counseling techniques to address identified problems.
- serve as a client advocate, facilitating movement of clients through social service systems, within a variety of agency settings.
- contribute to developing systematic programs for personal change.
- maintain progress and case notes and write objective, accurate reports.
- listen actively to clients, colleagues and the community.
- apply mathematical skills to reports, agency budgets, and statistical interpretations.
- apply principles of psychology, sociology and biology to human issues.
- understand and respect cultural differences that affect behavior and beliefs.
- contribute to effective agency planning, budgeting and management.
- understand the interrelation of physical, social and mental well-being and apply this knowledge.

FIRST SEMESTER		Credits
HSR 115	Introduction to Human Services	3
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
MTH 153	Topics in Mathematics	3
PSY 111	General Psychology	3
		<u>15</u>

SECOND SEMESTER		Credits
HSR 121	Helping Process and Crisis Intervention	3
ENL 121	English Composition II	3
MTH 160	Elementary Statistics with Computer Applications	4
PSY 201	Abnormal Psychology	3
SOC 111	Introduction to Sociology	3
		<u>16</u>

THIRD SEMESTER		Credits
HSR 125	Fundamentals of Counseling	3
	Human Services Application Elective	3
BIO 103	Human Anatomy and Physiology Survey	4
PSC 241	State and Local Government	3
PSY 203	Developmental Psychology	3
FIT 204	First Aid, Responding to Emergencies	2
		<u>18</u>

FOURTH SEMESTER		Credits
HSR 240	Management and Administration in Human Services	3
HSR 241	Group Processes	3
HSR 255	Human Services Internship I	3
	Human Services Application Elective	3
SPC 101	Fundamentals of Speech	3
SOC 231	Marriage and the Family	3
		<u>18</u>

Human Services Application Electives include courses numbered HSR 260 - HSR 299.

Individual Studies (IS)

Associate of Applied Science Degree (A.A.S.)

Individual Studies is the most flexible major offered by the College. Designed for students whose goals are not met by any other curriculum, Individual Studies offers students an opportunity to explore more than one career area at a time or simply to follow a program for personal enrichment while earning a degree or to upgrade work-related skills and knowledge. Although not specifically intended for students planning to transfer, it may serve the needs of those students as well. Although primarily elective, the Individual Studies program does require students to complete a minimum of 12 semester hours of credit in one academic discipline or area of concentration.

Recommended High School Subjects: Students should take a traditional academic program including English literature and composition, mathematics (including at least algebra), social studies, science, and relevant electives.

Remediation Strategies: All entering students will be tested in English, mathematics and reading. Students will be expected to remediate all deficiencies during their first semester in the major.

Transfer Procedures: Courses that students have successfully completed while enrolled in another program will automatically transfer if they satisfy designated distribution requirements in Communications, Mathematics, Humanities, Social Sciences, Art, or Science. All other courses will be evaluated to determine their fit with the student's goals. Students must complete a minimum of the last 12 semester hours of credit while enrolled in the Individual Studies major.

Program Goals: Students in Individual Studies select courses based on their individual goals. Advisors assist students with their course selection and the sequencing of courses that fit the students' goals and that provide students with the skills and knowledge related to their specified area of concentration.

Graduates of the Individual Studies major should be able to

- explain the relationship between personal goals/objectives and academic subject matter.
- formulate and apply critical questions and comments in a variety of situations.
- communicate effectively in personal and professional situations.
- value and respect a culturally diverse environment.
- demonstrate an awareness of the inter-relationships of various disciplines.
- demonstrate knowledge of the fundamental principles and theoretical issues/questions of at least one academic area.
- apply logic and organizational skills essential to a successful academic and professional experience.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
	Mathematics Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Liberal Arts/Core Elective	3
	General Elective	3
		<u>15</u>

SECOND SEMESTER		Credits
	Communication Elective	3
	Mathematics Elective	3
	General Elective	3
	Science Elective	3
	General Elective	3
		<u>15</u>

THIRD SEMESTER		Credits
	Fitness and Lifetime Sports Elective	1
	Individual Studies Discipline Elective	12
	General Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
	Fitness and Lifetime Sports Elective	1
	General Elective	3
CSC 110	Introduction to Information Technology	3
	General Elective	3
	General Elective	3
	Cultural Diversity Elective	3
		<u>16</u>

Landscape/Nursery Technology (LN)

Associate of Applied Science Degree (A.A.S.)

Landscape/Nursery Technology offers rewarding careers to students who enjoy working with plant materials in an innovative and constructive environment. Students study landscape design, landscape construction, installation and maintenance of landscape materials, nursery crop production, garden center sales, and several plant information and identification courses. The courses and laboratory activities will include operation of landscape and nursery equipment, landscape construction including retaining walls, walkways, patios, decks and general landscape operations.

Career Opportunities: Landscape design, plant propagation, and nursery production of trees and shrubs in field or container; retail salesperson; utility forester; arborist; small business owner; landscape foreman; supervisor; landscape management; garden center manager; estate gardening; nursery stock buyer; horticulturist with a government agency or private establishment.

Recommended High School Subjects: Two years of algebra, four years of English, and two years of science.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by the end of the first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Landscape/Nursery Technology major is to prepare students for employment or self-employment in areas of landscape design, landscape installation, nursery plant production, retail/garden center management and sales. A graduate of the Landscape/Nursery Technology major should be able to

- demonstrate the safe and effective use of hand tools, small power equipment and other equipment common to the landscape/nursery industry.
- apply basic knowledge of botany.
- summarize and apply knowledge in the use of plant growth media, soil amendments, and fertilizers.
- identify trees and shrubs; summarize their functional landscape use and maintenance.
- identify various herbaceous plants and summarize their functional landscape use and maintenance.
- summarize the various types of landscape/nursery growing structures, materials and equipment common to the landscape/nursery industry.
- develop production schedules for growing commercial plants in field and container operations.
- identify and evaluate problems of plants caused by insects, diseases, and physiopath, and plan for proper control of these problems; develop a plant health care/integrated pest management plan.
- use and evaluate various techniques for reproducing plants.
- appraise and plan for the effective use of landscape plant materials in developing public, commercial and residential landscape areas.
- demonstrate the skills necessary to professionally install landscapes.
- design and develop landscape features such as waterfalls, pools, steps, lighting, walks, walls, and patios using materials like flagstone, brick, landscape timbers, mountain stone, and other common landscape construction materials.
- design functional and aesthetically pleasing residential landscapes.
- identify turfgrass varieties and their uses and demonstrate an understanding of the establishment and maintenance of turf areas.
- apply skills in pruning, fertilizing, and spraying for managing landscapes and ornamental plants.
- demonstrate a responsible and professional attitude in relationships with employers, colleagues and clients.

FIRST SEMESTER	Credits
HRT 110 Soils and Fertilizers	3
HRT 112 Horticulture Operations and Structures	3
HRT 113 Ornamental Plants	3
BIO 111 Basic Botany	3
ENL 111 English Composition I	3
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

SECOND SEMESTER	Credits
HRT 119 Herbaceous Plant Production	3
HRT 121 Landscape Plants	3
CSC 110 Introduction to Information Technology	3
ENL 201 Technical and Professional Communication	3
or	
SPC 201 Interpersonal Communication	3
Directed Horticulture Business Elective	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>18</u>

THIRD SEMESTER	Credits
HRT 210 Plant Propagation	3
HRT 215 Landscape Plants and Design Applications	3
HRT 216 Turf Management	3
HRT 218 Landscape/Nursery Operations	3
HRT 239 Plant Insects and Diseases	3
DSM 100 Equipment Operation and Safety	1
Fitness and Lifetime Sports Elective	1
	<u>17</u>

FOURTH SEMESTER	Credits
HRT 224 Landscape Construction	3
HRT 225 Landscape Design	3
HRT 226 Landscape Management	3
HRT 230 Landscape Accessories	3
Directed Horticulture Business Elective	3
Open Elective	3
	<u>18</u>

Directed Horticulture Business Elective: ACC113, MGT110, MGT115, MGT230, MGT231, MGT241, MGT248, MGT249, MKT110, MKT240, MKT243, MKT248

Landscape/Nursery Technology Turfgrass Management Emphasis (TM) Associate of Applied Science Degree (A.A.S.)

The turfgrass industry continues to become more professional and competitive. College degrees are becoming more desirable and in some cases required for golf course superintendent positions. Many students in the Turfgrass Management Technical program at Penn State become golf course superintendents. These students will be encouraged to complete an associate degree at Penn College.

This program is available only to students who have earned a Turf Management Technology Certificate from The Pennsylvania State University.

Program Goals: The objective of the Landscape/Nursery Technology: Turfgrass Management Emphasis is to prepare students for professional careers in the turfgrass industry. This major is designed for students in the Penn State Turfgrass Management Technical program to complete an associate degree in Landscape/Nursery Technology.

A graduate of the Landscape/Nursery Technology: Turfgrass Management Emphasis major should be able to

- apply basic knowledge of botany.
- master the skills needed to organize thoughts and ideas and to communicate verbally and in writing.
- identify trees and shrubs; summarize their functional landscape use and maintenance.
- identify various herbaceous plants and summarize their functional landscape use and maintenance.
- identify and evaluate problems of plants caused by insects, diseases, and physiopath; plan for proper control of these problems.
- explain the proper and effective use of woody and herbaceous plant materials in developing public landscape areas.
- apply skills in pruning, fertilizing, spraying, and maintaining existing landscapes and ornamental plants.
- demonstrate knowledge in the operation of equipment used in the landscape nursery industry.
- demonstrate a responsible and professional attitude in relationships with employers, colleagues, and clients.

PRE. PROGRAM	Credits
Pennsylvania State University	30
Turf Management Technology Program	30
	<u>30</u>

THIRD SEMESTER		Credits
CSC 110	Introduction to Information Technology	3
ENL 111	English Composition I	3
HRT 113	Ornamental Plants	3
HRT 218	Landscape/Nursery Operations	3
HRT 215	Landscape Plants and Design Applications	3
HRT 239	Plant Insects and Diseases	3
		<u>18</u>

FOURTH SEMESTER		Credits
ENL 201	Technical and Professional Communication	3
	or	
SPC 201	Interpersonal Communication	3
	Fitness and Lifetime Sports Elective	1
HRT 226	Landscape Management	3
HRT 230	Landscape Accessories	3
MTH 124	Technical Algebra and Trigonometry I	3
	or	
MTH 180	College Algebra and Trigonometry I	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>16</u>

Legal Assistant/Paralegal (LA)

Associate of Applied Science Degree (A.A.S.)

The American Bar Association approved Legal Assistant/Paralegal curriculum prepares students to assist attorneys, either in private practice or in public service, in the performance of their professional duties. Paralegals operate under the supervision of a licensed attorney and are prohibited from practicing law. The curriculum will provide the students with a core of paralegal courses, a variety of courses in specialized areas of law, and a series of related courses. A professional practicum will give students on-the-job experience as a legal assistant. This in-depth coverage of the paralegal's role in the field of law will provide the background necessary for successful employment in this rapidly growing field. (The Legal Assistant major uses an A, B, C, and F grading scale.)

Career Opportunities: Legal assistants (paralegals) are employed in private law firms, offices of public defenders, court systems, government agencies, corporate legal departments, insurance companies, banks, real estate companies, community services programs, consumer organizations, and health care facilities.

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading, and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Legal Assistant major is to provide students with the academic and practical experience needed to assist attorneys in the performance of their professional duties. Graduates of this major should be able to

- define and use terminology common to the legal industry.
- learn the basic principles of the American legal system, including the sources of law, jurisdiction, civil case procedure, and the structure of state and federal court systems.
- understand the nature of a law firm and the duties performed by an attorney.
- possess the knowledge to perform the duties of a paralegal in various specialized areas of law.
- possess the ability to read and understand legal documents and to assist the attorney with the drafting of such documents.
- demonstrate the ability to communicate effectively with attorneys and clients, court personnel, and co-workers, both orally and in writing.

- learn the ethical rules and standards of practice pertaining to the paralegal and develop a framework for resolving ethical dilemmas.
- identify and respond appropriately to legal ethical issues, including conflicts of interest, client confidentiality, and unauthorized practice of law.
- learn how to conduct effective factual and legal research and prepare legal correspondence, memoranda, documents, and exhibits.
- possess analytical reasoning capability.
- possess competent writing skills, including the mechanics of grammar, punctuation, etc.
- demonstrate good organizational and time management skills.
- demonstrate a working knowledge of microcomputers.

FIRST SEMESTER		Credits
LAS 100	Introduction to Paralegal Studies	3
LAS 110	Business Organizational Law	3
MGT 230	Business Communications	3
ENL 111	English Composition I	3
MTH 151	Structures of Mathematics	3
OFT 101	Keyboarding and Its Applications	1
		<u>16</u>

SECOND SEMESTER		Credits
LAS 150	Legal Research and Writing	3
LAS 160	Civil Practice and Procedures	3
LAS 170	Real Property Law	3
CSC 110	Introduction to Information Technology	3
SPC 101	Fundamentals of Speech	3
	Fitness and Lifetime Sports Elective	1
		<u>16</u>

THIRD SEMESTER		Credits
LAS 210	Civil Litigation	3
LAS 220	Family Law	3
LAS 230	Estate and Trust Administration	3
ACC 113	Introduction to Financial Accounting	3
	Science Elective	3
	Humanities Elective	3
	or	
	Social Science Elective	3
		<u>18</u>

FOURTH SEMESTER		Credits
LAS 250	Criminal Law and Procedures	3
LAS 260	Bankruptcy	3
	or	
LAS 270	Administrative Law	3
	or	
LAS 300	Interviewing, Counseling, Negotiation and Alternative Dispute Resolution	3
	or	
LAS 360	Advanced Legal Writing and Analysis (WRT)	3
	or	
LAS 371	Legal Ethics	3
LAS 280	Legal Assistant Internship	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Foreign Language Elective	3
	or	
ENL 121	English Composition II	3
	or	
MTH 153	Topics in Mathematics	3
		<u>13</u>

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this major. Please refer to a listing of special Legal Assistant Requirements in the Admissions section of this catalog. Students who begin the major in January will require at least 5 semesters to complete the major.

LAS 280 - Co-op in a paralegal position is an approved substitution.

Approved by American Bar Association (ABA)

Mass Communications (MC)

Associate of Applied Arts Degree (A.A.A.)

Mass Communications prepares students for entry-level positions in journalism, advertising and public relations, as well as in business and industrial communications. Students may elect to take an internship with various advertising and public-relations organizations for on-the-job experience. They may also select instruction in electronic and print media with further hands-on experience in broadcasting and journalism. A pervading emphasis on business and management theory also is an important aspect of the program. Practical courses in journalism, electronic publishing and design, advertising, media and technical and professional communication, photography, and public relations create a solid foundation for a successful career in communications. Related studies in political science, sociology and psychology are considered essential.

Career Opportunities: Newspaper reporter; feature writer; rewrite person; news, public relations, and general photographer; advertising layout staff; company newsletter/house publication researcher and writer; advertising sales; media planning and purchasing; editorial/production assistant; public relations researcher/writer; corporate public relations staff; corporate researcher; technical writer.

Recommended High School Subjects: Academic subjects with strong emphasis on communication (especially composition and grammar), analytical skills and aesthetics are helpful. Typing is especially beneficial. (A course in journalism or participation in the production of a publication will increase the possibility of success at the college level.)

Remediation Strategies: Students must remediate English and reading deficiencies (RDG 111 level) within the first semester of the major and must remediate math deficiencies by the end of the first year. Students who test at the RDG 001 level will not be accepted until they pass the College's reading placement test.

Program Goals: The general goal of the Mass Communications program is to prepare students for employment in small- or mid-sized organizations involved in magazine and newspaper production, advertising, public relations, and in business and industrial communications.

Graduates of the Mass Communications program should be able to

- evaluate their roles as individual citizens in a community as well as their unique importance as trained mass media professionals with the potential to influence the lives of others in the community.
- analyze the power and the responsibilities of the mass media.
- state ethical canons and governmental regulations or laws which govern the production of mass media.
- distinguish the philosophical and practical standards and goals of various forms of mass media.
- explain examples of the impact of mass media on United States history and on the media's various publics.
- electronically produce properly formatted text and appropriately designed graphics required by modern print communication.
- gather information needed to write specialized material for the media - including press releases, feature stories, newsletters, and comprehensive documents such as annual reports.
- produce basic photographic assignments used by the various media and differentiate among the types of photographs used for public relations, news, advertising, and formal reports.
- produce preliminary advertising and public relations copy and layouts for small publications or small agencies.
- explain the dynamics involved in the media's establishing philosophical goals while addressing the considerations of an effective business practice.
- delineate the different roles within the organizational structures of various mass media.
- state and provide examples of effective management practices, especially as they relate to businesses involved in journalism and public relations.

FIRST SEMESTER		Credits
MCM 111	Introduction to Mass Communications	3
ENL 111	English Composition I	3
MTH 151	Structures of Mathematics	3
	or	
MTH 158	Elementary Statistics I	3
PSC 231	American Government-National	3
CSC 110	Introduction to Information Technology	3
SOC 111	Introduction to Sociology	3
		<u>18</u>

SECOND SEMESTER		Credits
MCM 120	News Writing	3
MCM 121	Principles of Advertising	3
MCM 122	Media and Law	3
ENL 121	English Composition II	3
	or	
ENL 201	Technical and Professional Communication	3
	Fitness and Lifetime Sports Elective	1
PSC 241	State and Local Government	3
		<u>16</u>

THIRD SEMESTER		Credits
PHO 101	Black-and-White Photography	3
MCM 244	Advanced Media Writing	3
MGT 115	Principles of Management	3
PNP 134	Electronic Publishing and Design	3
	Fitness and Lifetime Sports Elective	1
PSY 111	General Psychology	3
		<u>16</u>

FOURTH SEMESTER		Credits
MCM 243	Public Relations	3
	Directed Mass Communication Elective	3
SPC 101	Fundamentals of Speech	3
	or	
SPC 201	Interpersonal Communication	3
	Science Elective	3
	General Elective	3
		<u>15</u>

Directed Mass Communication Elective: MCM130, MCM131, MCM132, MCM135, MCM152, MCM220, MCM225, MCM232, MCM250, MCM253, PHO220

Nursing (NR)

Associate of Applied Science Degree (A.A.S.)

This curriculum prepares graduates to assume beginning staff nurse positions in hospitals, nursing homes, and other health related institutions. Upon successful completion of the major, the graduate is eligible to take the registered nurse licensing examination (NCLEX-RN). With work experience and continuing education, the graduate may develop the ability to assume responsibility for administering or directing the health care of a group of patients/clients. This curriculum prepares the foundation to pursue a baccalaureate degree.

Applicants not having a "C" or better in high school chemistry with a lab (within the past 10 years) must take CHM 100 or CHM 108 prior to admission.

Advanced placement is available for Licensed Practical Nurses. Upon completion of additional required related courses, the Licensed Practical Nurse may complete requirements for an associate degree in nursing within two semesters or one academic year.

Career Opportunities: Graduates find jobs in hospitals, long-term care facilities, home health agencies, state and federal health related facilities, the armed services, private duty nursing agencies, and within the office practice of physicians, surgeons, and dentists.

Recommended High School Subjects: Prepare extensively in oral and written communication skills; Take math every year, including Algebra II; Science every year, including one year of Chemistry (with lab and grade of “C” or better) and one year of Human Anatomy and Physiology; Social studies every year, Psychology recommended; Score at least proficient on the State PSSA assessment in Writing, Mathematics, and Reading.

Remediation Strategies: Any deficiencies identified from placement testing must be remediated prior to admission to the Nursing curriculum.

Transfer Procedures: Graduates of this major can transfer to Penn College’s BSN major. This major will subscribe to the transfer standards established by the College.

Program Goals: The nursing major prepares graduates for care-giving positions in any setting requiring the services of a licensed nurse. At the completion of the associate degree major in nursing the graduate will:

- integrate knowledge from biological, social, and nursing sciences when applying the nursing process to clients with actual or potential health problems in a variety of settings.
- utilize effective verbal, written, and nonverbal communication processes with clients, support persons, and other members of the health care team.
- utilize the nursing process to provide individualized caring interventions to clients of all ages and of differing cultural, ethnic, religious and socioeconomic backgrounds, and developmental levels.
- collaboratively develop, implement, and evaluate teaching plans to assist the client in achieving adaptation, restoration, and/or maintenance of optimal health.
- utilize standards of nursing practice, employ legal and ethical behaviors, and demonstrate accountability for nursing care provided by self and/or delegated to others.
- recognize responsibility for lifelong learning and professional growth through exploration of regional, national, and/or technology-based educational opportunities.

FIRST SEMESTER	Credits
NUR 180 Foundations of Nursing	8.0
BIO 115 Human Anatomy and Physiology I	4.0
PSY 111 General Psychology	3.0
Math Elective (124 or Higher)	3.0
	<u>18.0</u>

SECOND SEMESTER	Credits
NUR 181 Adult Medical-Surgical Nursing I	8.0
BIO 125 Human Anatomy and Physiology II	4.0
ENL 111 English Composition I	3.0
PSY 203 Developmental Psychology	3.0
	<u>18.0</u>

SUMMER SESSION	Credits
ENL 121 English Composition II	3.0
	<u>3.0</u>

THIRD SEMESTER	Credits
NUR 219 Adult Medical-Surgical Nursing II	5.0
NUR 226 Adult Medical-Surgical Nursing III	5.0
NUR 284 Essentials of Pharmacology I	.5
NUR 285 Essentials of Pharmacology II	.5
BIO 201 Microbiology	4.0
Fitness and Lifetime Sports Elective	1.0
	<u>16.0</u>

FOURTH SEMESTER	Credits
NUR 280 Childbearing Nursing	3.0
NUR 281 Nursing Care of Children	3.0
NUR 282 Psychosocial Nursing	3.0
NUR 283 Topics for Nursing Practice	2.0
CSC 110 Introduction to Information Technology	3.0
SOC 111 Introduction to Sociology	3.0
	<u>17.0</u>

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this major. Please refer to a listing of special Health Sciences requirements in the Admissions section of this catalog.

The following course credits must be completed prior to admission to advanced placement status in the major: NUR 117 - Credential Proven by Licensure (13 credits), NUR 223 - Transition into Registered Nursing (3 credits), BIO 115 - Human Anatomy and Physiology I (4 credits), BIO 125 - Human Anatomy and Physiology II (4 credits), PSY 111 - General Psychology (3 credits), PSY 203 - Developmental Psychology (3 credits); and a minimum of nine (9) credits of the remaining 20 credits of related courses.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

In accordance with The Professional Nurse Law, Act of 1951, P.L. 317, No. 69, as amended, The Pennsylvania Board of Nursing shall not issue a license to an applicant who has been convicted of a felonious act prohibited by the Act known as “The Controlled Substance, Drug, Device and Cosmetic Act” or convicted of a felony relating to a controlled substance in a court of law of the United States or any other state, territory or country unless at least ten (10) years have elapsed from the date of the conviction.

Accreditation: The associate degree nursing major is fully accredited by the National League for Nursing Accrediting Commission (NLNAC) and approved by the State Board of Nursing. For further information, contact the National League for Nursing Accrediting Commission at 61 Broadway, New York, NY 10006, 1-800-669-9656.

Occupational Therapy Assistant (OC) Associate of Applied Science Degree (A.A.S.)

Occupational Therapy provides opportunities to assist people facing challenges in everyday life. Through guided and goal-directed participation in occupations of leisure, work and activities of daily living, individuals can realize their potential and restore their ability to engage in productive and meaningful living.

Occupational therapy practitioners contribute to improving independence and quality of life for people of all ages in a variety of settings concerned with health care, education, community and social services. Occupational therapy assistants work in collaboration with supervising occupational therapists to serve individuals or groups who experience impairment, loss of activity or ability to participate fully in meaningful occupations secondary to genetic disorders, chronic conditions, illness, accidents, mental impairment, or social conditions such as poverty and violence.

Study in the major includes topics in biological science, social science, communications, mathematics and technologies. These studies are integrated with core requisites in the major and with community and clinical fieldwork experiences. The major uses a wide variety of state-of-the-art equipment and tools that are reflective of current practice in occupational therapy. Through extensive hands-on laboratory experiences, the student has opportunities for application of knowledge learned in the classroom. Level I Fieldwork experiences provide exposure and practice within clinical environments, schools and community settings. Level II Fieldwork provides a full-time working experience under the

supervision of an occupational therapy practitioner in a variety of practice areas, following successful completion of academic coursework. The Occupational Therapy Assistant major is fully accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA). Students can request evaluation for entry into the School of Health Sciences B.S. in Applied Health Studies. Graduates will be eligible to sit for the National Certification Exam that is administered by the National Board for Certification in Occupational Therapy (NBCOT). For further information, contact: NBCOT, 800 South Frederick Avenue, Suite 200, Gaithersburg, MD 20877-4150, (301) 990-7979, www.nbcot.org

Following successful completion of this exam, the individual will be a Certified Occupational Therapy Assistant (COTA). Most states, including Pennsylvania, require licensure in order to practice; however, state licenses are usually based on results of the NBCOT Certification Exam.

Students interested in pursuing the bachelor degree should refer to the Applied Health Studies information listed in the bachelor degree section of the catalog. In addition, it is advised that a meeting be arranged with the occupational therapy assistant program director to discuss this option.

For further information, refer to the OTA web site at www.pct.edu.

Career Opportunities: Certified occupational therapy assistants work in highly diversified settings. Examples include: hospitals, rehabilitation centers, nursing homes, home health agencies, community mental health centers and inpatient psychiatric units, vocational rehabilitation programs, sheltered workshops, drug and alcohol programs, prison systems, adult day care centers, schools for handicapped children and the mentally retarded and public school systems.

Recommended High School Subjects: Competency in English, reading and math is expected. In addition, taking high school biology is highly recommended.

Remediation Strategies: All deficiencies during college placement tests must be remediated prior to being considered for entry. These tests will evaluate adequate competency in English, reading, and math.

Transfer Procedures: Graduates of this associate degree major are also eligible for admission to the College's Applied Health Studies (BAH) completer program. See the program director for details.

Program Goals: Upon completion of the Occupational Therapy Assistant major, graduates should possess the knowledge, skills and attitudes to effectively perform those OTA roles defined in the Occupational Therapy Roles Document published by AOTA. General goals of the major should enable the student to

- demonstrate accurate and effective written and oral communications adaptive to the demands of the profession.
- establish and maintain effective relationships and work cooperatively as a member of a team.
- integrate therapeutic use of self into practice.
- demonstrate ability to use teaching-learning processes with consumers, health care practitioners, and the public.
- appreciate and adapt to diverse/alternative cultures, processes, and ideas.
- appreciate the need for and produce work that is accurate, thorough, and organized.
- investigate and critique current professional and community resources and synthesize information for application to OT practice.
- demonstrate resourcefulness and creativity.
- value and participate in plans for personal and professional growth.
- foster the philosophy of occupational therapy and serve as an effective role model for the profession.
- define and integrate the Principles of Occupational Therapy Ethics, as defined by the American Occupational Therapy Association, into practice.
- understand and appreciate the role of occupation in the promotion of health and the prevention of disease and disability for the individual, family, and society.

- identify and differentiate the roles of occupational therapy practitioners and other health care providers.
- evaluate and apply the principles of group process to therapeutic settings.
- integrate and apply theoretical principles to OT practice relevant to the role of a COTA.
- analyze skills, components of skills, and the environmental context of occupational performance.
- evaluate positive and adverse effects on occupational performance throughout the lifespan.
- recognize and describe pathology of selected physical, psychosocial, and developmental dysfunctions.
- demonstrate competence in administration of selected assessments relevant to the role of a COTA.
- record relevant data and prioritize for clinical decision-making.
- collaborate with patients, caregivers, occupational therapists and other health professionals in assessment, program planning, and implementation.
- select, prioritize, and sequence occupations, purposeful activity, and treatment techniques relevant to the goals and interests of individuals served in OT settings.
- demonstrate competence in instruction, application, adapting, and grading of activities and techniques to meet the needs of clients and their sociocultural context.
- evaluate the need for and demonstrate applications of compensatory strategies when desired life tasks cannot be performed.
- evaluate and consistently demonstrate principles and techniques to ensure safety of the patient, and oneself in clinical settings.
- explore and employ community resources to promote occupational function of clients in least restrictive environments.
- understand the effectiveness of health care delivery and the past and present roles of OT as it serves individuals in a varied and changing environment.
- assume roles of leadership and management of OT services relevant to the role of an entry level COTA.
- understand federal and state regulatory and legislative actions and their effect on delivery of health services.
- demonstrate maturity and professionalism in response to the supervisory process.
- explore employment opportunities and environments and develop processes for employment acquisition.

FIRST SEMESTER	Credits
OCT 100 Foundations of Occupational Therapy	4
OCT 101 Human Occupations	2
BIO 115 Human Anatomy and Physiology I	4
ENL 111 English Composition I	3
MTR 100 Medical Terminology Survey	1
PSY 111 General Psychology	3
	17

SECOND SEMESTER	Credits
OCT 120 Developmental Habilitation	5
OCT 121 Analysis of Movement	2
BIO 125 Human Anatomy and Physiology II	4
PSY 203 Developmental Psychology	3
SPC 101 Fundamentals of Speech	3
	17

THIRD SEMESTER	Credits
OCT 201 Physical/Social Rehabilitation Methods	2
OCT 202 Physical Dysfunction Rehabilitation	5
OCT 203 Clinical Conditions	3
OCT 204 Occupational Therapy Practice Skills	2
CSC 110 Introduction to Information Technology	3
PSY 201 Abnormal Psychology	3
	18

FOURTH SEMESTER		Credits
OCT 220	Psychosocial Rehabilitation	5
OCT 221	Psychosocial Rehabilitation Methods (WRT)	2
OCT 222	Occupational Therapy Management	2
OCT 224	Clinical Reasoning in Occupational Therapy	3
	Math Elective (MTH150 or higher)	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

SUMMER SESSION		Credits
OCT 251	Level II-A Fieldwork	3
OCT 252	Level II-B Fieldwork	3
		<hr/> 6

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this curriculum. Please refer to a listing of special Health Sciences Requirements in the Admissions section of this catalog.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

The Pennsylvania State Board of Education and Licensure and NBCOT advise that a drug-related conviction and/or conviction of a felonious act may result in denial and/or revocation of a license to practice occupational therapy.

OCT 251 & OCT 252 - Students must complete Level II fieldwork within 18 months of completion of academic coursework.

Accreditation: The Occupational Therapy Assistant major is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). For further information, contact: AOTA, 4720 Montgomery Lane, PO Box 31220, Bethesda, MD 20824-1220, (301) 652-AOTA, www.aota.org

Office Information Systems (OS)

Associate of Applied Science Degree (A.A.S.)

Students acquire a background in business and learn the specialized skills used in office information systems, such as microcomputer and mainframe word processing, desktop publishing, spreadsheets, database and lead operator techniques. Graduates are qualified for jobs as office information systems specialists and as first-line supervisors in business using these systems.

Career Opportunities: Office information systems operators and supervisors. These jobs include the operation and supervision of office information systems, desktop publishing, spreadsheet, database, and minicomputer and mainframe lead operations.

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Office Information Systems major is to prepare students for positions as office information operators, desktop publishers, and first-line supervisors of word processing and desktop publishing centers. Specifically graduates of this major should be able to

- demonstrate proficiency in using/operating a variety of word processing and desktop publishing software and hardware.
- possess skill in using current technology and knowledge of how it relates to an office environment.
- demonstrate proficiency in written and oral communications skills.
- demonstrate the ability to design and prepare an effective office procedures manual.
- possess extensive knowledge of developing, editing, organizing, proofing, and publishing a variety of business documents.
- demonstrate the ability to manage workflow using prioritization and planning principles.
- assess and influence behavior among supervisors, peers, and subordinates.
- recognize the importance of business ethics and its relationship to the office environment.

FIRST SEMESTER		Credits
OIS 111	Word Processing I	3
CSC 110	Introduction to Information Technology	3
MGT 115	Principles of Management	3
ENL 111	English Composition I	3
OFT 111	Keyboarding and Formatting	3
	Fitness and Lifetime Sports Elective	1
		<hr/> 16

SECOND SEMESTER		Credits
OIS 122	Word Processing II	3
	Communication Elective	3
CSC 221	Business Computer Applications Using Database	3
MGT 230	Business Communications	3
MTH 113	Business Mathematics	3
		<hr/> 15

THIRD SEMESTER		Credits
OIS 214	OIS Desktop Publishing	3
OIS 216	Office Network Productivity	1
ACC 113	Introduction to Financial Accounting	3
OFT 126	Machine Transcription	2
	or	
OFT 128	Machine Transcription	3
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Open Elective	3
		<hr/> 15

FOURTH SEMESTER		Credits
OIS 325	OIS Advanced Applications	3
CSC 211	Business Computer Applications Using Spreadsheet	3
MGT 248	Supervision and Human Relations	3
	Science Elective	3
	Open Elective	3
		<hr/> 15

Office Technology

Executive Emphasis (OP)

Associate of Applied Science Degree (A.A.S.)

Office Technology is an associate degree major that will prepare the office workers of tomorrow. In doing so, this curriculum will provide a foundation in office related courses and a series of specialized courses to ready the future office workers for specific positions, such

as office administration specialist. Responsibilities include supervision, management and decision-making. In addition to possessing good office skills, this person will provide leadership within the office structure, direct and coordinate support services, and determine ways to increase efficiency and productivity in the office.

Career Opportunities: Assistant to office manager, coordinator of office functions, word/information processing supervisor, supervisor of office operations and general office workers.

Recommended High School Subjects: While this is an open enrollment curriculum, students will be expected to be prepared in the basic English and mathematics courses in high school.

Remediation Strategies: All students entering the major will be tested for English, reading and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Executive Emphasis in Office Technology major is to provide students with a foundation in office-related courses to prepare them for a variety of office support positions. Specifically, graduates of this major should be able to

- demonstrate proficiency in administrative office skills.
- possess skill in using current technology and knowledge of how it relates to the office environment.
- demonstrate proficiency in transcription accuracy and productivity standards.
- possess extensive knowledge of office procedures and applications.
- demonstrate effective business communication skills and abilities.
- demonstrate an awareness of the dynamics of the work environment and the importance of professional development.
- recognize the importance of business ethics and its relationship to the office environment.
- assess and influence behavior among supervisors, peers, and subordinates.

FIRST SEMESTER	Credits
OFT 111 Keyboarding and Formatting	3
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
MGT 230 Business Communications	3
MTH 113 Business Mathematics	3
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SECOND SEMESTER	Credits
OFT 121 Document Preparation I	3
OFT 125 Office Procedures and Applications	3
OFT 128 Machine Transcription	3
CSC 211 Business Computer Applications Using Spreadsheet	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Specified Communication Elective	3
	<u>18</u>

THIRD SEMESTER	Credits
OFT 216 Executive Office Practice	3
OFT 225 Office Computer Applications	3
OFT 265 Office Systems and Design	3
CSC 221 Business Computer Applications Using Database	3
OIS 214 OIS Desktop Publishing	3
OIS 216 Office Network Productivity	1
	<u>16</u>

FOURTH SEMESTER	Credits
OFT 210 Records Management	3
OFT 250 Professional Internship	3
or	
Specified Business Elective	3
OFT 260 Office Management	3
ACC 113 Introduction to Financial Accounting	3
IDC 260 Professional Development	1
Science Elective	3
	<u>16</u>

Specified Communication Elective: ENL121, ENL201, SPC101, SPC201

Specified Business Elective: ACC123, MGT110, MGT115, MGT216, MGT231, MGT340, MKT240

OFT 250 - Internship is for those students who have little or no office experience. Students already employed in full-time office positions should choose a business elective in place of internship. The decision should be made in consultation with the academic advisor, and the elective should be chosen from the following three-credit courses: ACC 123 - Introduction to Managerial Accounting; MGT 110 - Principles of Business; MGT 115 - Principles of Management; MGT 216 - International Business; MGT 231 - Business Law I; MGT 340 - Human Resource Management; MKT 240 - Principles of Marketing

Office Technology Medical Emphasis (OL)

Associate of Applied Science Degree (A.A.S.)

Office Technology is an associate degree major that will prepare the office workers of tomorrow. In doing so, this curriculum will provide a foundation in office related courses and a series of specialized courses to ready the future office workers for specific positions, such as medical office assistant. Health care facilities abound and create a real need for office support personnel. Evidence indicates this trend will continue indefinitely. The medical office assistant must be able to handle office duties, possess a working knowledge of medical terminology, and be adequately prepared to act as a liaison between the medical professional and other offices and between the medical professional and the client.

Career Opportunities: Secretarial positions in health care offices, physicians' offices, dentists' offices, and other related sites where medical care is administered and services are rendered. These graduates also may seek employment as administrative assistants in the same environments.

Recommended High School Subjects: Students should have English and mathematics courses (including algebra).

Remediation Strategies: All students entering the major will be tested for English, reading and mathematics deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the Medical Emphasis in Office Technology is to provide students with a foundation in office related and health science courses to prepare them for a variety of medical office support positions. Specifically, graduates of this major should be able to

- demonstrate proficiency in medical office skills.
- possess skill in using current technology and knowledge of how it relates to the medical office environment.
- demonstrate proficiency in medical transcription accuracy and productivity standards.
- demonstrate the ability to use medical references and other resources for research and practice.
- possess a general knowledge of human anatomy and physiology.
- demonstrate knowledge of medical terminology.
- demonstrate a general knowledge of common human diseases and conditions.
- possess extensive knowledge of office procedures and applications.

- demonstrate effective business communication skills and abilities.
- demonstrate an awareness of the dynamics of the work environment and the importance of professional development.
- recognize the importance of business ethics and its relationship to the office environment.
- assess and influence behavior among supervisors, peers, and subordinates.

FIRST SEMESTER	Credits
OFT 111 Keyboarding and Formatting	3
BIO 103 Human Anatomy and Physiology Survey	4
ENL 111 English Composition I	3
MGT 230 Business Communications	3
MTR 101 Medical Terminology I	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SECOND SEMESTER	Credits
OFT 121 Document Preparation I	3
OFT 125 Office Procedures and Applications	3
OFT 128 Machine Transcription	3
CSC 110 Introduction to Information Technology	3
HTH 115 Pathology and Disease Process I	3
MTR 102 Medical Terminology II	3
	<u>18</u>

THIRD SEMESTER	Credits
OFT 215 Medical Office Practice	3
OFT 220 Medical Transcription	3
OFT 225 Office Computer Applications	3
CSC 221 Business Computer Applications Using Database	3
HTH 125 Pathology and Disease Process II	3
Specified Communication Elective	3
	<u>18</u>

FOURTH SEMESTER	Credits
OFT 250 Professional Internship	3
or	
Specified Business Elective	3
OFT 260 Office Management	3
CSC 211 Business Computer Applications Using Spreadsheet	3
IDC 260 Professional Development	1
OIS 216 Office Network Productivity	1
MTH 113 Business Mathematics	3
Humanities Elective	3
or	
Social Science Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
	<u>17</u>

Specified Communication Elective: ENL121, ENL201, SPC101, SPC201

Specified Business Elective: ACC123, MGT110, MGT115, MGT216, MGT231, MGT340, MKT240

OFT 250 - Internship is for those students who have little or no office experience. Students already employed in full-time office positions should choose a business elective in place of internship. The decision should be made in consultation with the academic advisor, and the elective should be chosen from the following three-credit courses: ACC 123 - Introduction to Managerial Accounting; MGT 110 - Principles of Business; MGT 115 - Principles of Management; MGT 216 - International Business; MGT 231 - Business Law I; MGT 340 - Human Resource Management; MKT 240 - Principles of Marketing

Paramedic Technology (PP)

Associate of Applied Science Degree (A.A.S.)

This two-calendar year major is designed to provide the student with the knowledge base and skills needed to successfully achieve national registry of Emergency Medical Technicians-Paramedic certification. Extensive classroom and clinical/fieldwork experiences prepare the student in the area of EMT-Paramedic. Students must maintain a GPA of at least 2.0 and must earn a grade of at least "C" in BIO 115 and BIO 125 and each paramedic course before they can progress to the next semester. Opportunities for B.S. study in Applied Health Studies are available.

Career Opportunities: EMT-Paramedics are employed by fire, police, rescue squads, private ambulance services and hospitals. Opportunities exist in the private sector and in the military.

Recommended High School Subjects: Students should take four (4) units of high school English, three (3) units of social studies (preferably one psychology or one sociology), three (3) units of mathematics (one of which is Algebra I or Applied Math II, with Algebra II preferred). Students who do not meet these recommendations can work with a College advisor to prepare for the program.

Remediation Strategies: Developmental needs will be remediated prior to entering the Paramedic Technology major.

Transfer Procedures: Students who complete this major can be eligible for acceptance in the College's Applied Health Studies (BAH) major and into the Technology Management (BTM) major. Students desiring to transfer into a bachelor degree program upon completion of or while in the process of working on their AAS degree should work closely with an advisor to choose appropriate, transferable courses. This program will subscribe to the transfer standards of the College.

Program Goals: The EMT-Paramedic major prepares students for care giving in a variety of settings. Upon completion of this major, the student should be able to

- demonstrate and apply appropriate EMT-Paramedic treatment procedures; react appropriately while in various field settings and situations.
- develop an understanding of and apply treatment procedures and communications relative to the procedures from the EMT-Paramedic perspective.
- value and apply knowledge of interpersonal skills and communications when working with patients, patients' significant others, colleagues, other members of the health care team, and members of the community.
- operate all equipment safely, effectively, and efficiently while using appropriate protocols.
- value and demonstrate knowledge of EMT-Paramedic capabilities, roles, responsibilities, ethical guidelines, scope of practice, and skills in a variety of settings.
- value and apply skills for problem solving, decision making and critical thinking.
- value and demonstrate ability to use the library and other learning resources to gather, interpret, and report information.
- develop an appreciation for and participate in life long learning activities.
- develop an understanding of and value their place in the health care system, as well as doing so for other health care professions.
- demonstrate EMT-Paramedic skills following established criteria, protocols and objectives in the cognitive, affective and psychomotor domains.

FIRST SEMESTER	Credits
BIO 115 Human Anatomy and Physiology I	4
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
PSY 111 General Psychology	3
or	
SOC 111 Introduction to Sociology	3
	<u>16</u>

SECOND SEMESTER		Credits
BIO 125	Human Anatomy and Physiology II	4
MTH 124	Technical Algebra and Trigonometry I or Math Elective (MTH150 or higher)	3
PMP 121	Introduction to Emergency Medical Care	9
		<hr/> 16
SUMMER SESSION		Credits
PMP 132	Pre-Hospital Environment and Patient Assessment	8
	Fitness and Lifetime Sports Elective	1
		<hr/> 9
THIRD SEMESTER		Credits
PMP 242	Pharmacology and Shock	6
PMP 246	Cardiopulmonary Emergencies	10
PMP 249	Intermediate Clinical Practicum	1
		<hr/> 17
FOURTH SEMESTER		Credits
PMP 252	General Medical Emergencies	5
PMP 255	Obstetric and Pediatric Emergencies	5
PMP 258	Trauma and Behavioral Emergencies	5
PMP 259	Advanced Clinical Practicum	1
		<hr/> 16
SUMMER SESSION II		Credits
PMP 269	Summative Clinical Practicum	2
		<hr/> 2

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this curriculum. Contact the Program Director or Dean of Health Sciences for further information. Students who enter the program must earn a GPA of at least 2.0 the first semester and in BIO 115 to be able to progress to the second semester and the paramedic courses themselves.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

The Pennsylvania Department of Health advises that a drug abuse or criminal record can result in ineligibility to take the Emergency Medical Technician-Paramedic certification exam, thereby limiting employment opportunities as an EMT-P.

PSY 111 - This course is recommended.

FIT - Cardiopulmonary Resuscitation is required within Paramedic modules; students can challenge FIT 111 for this credit.

PMP 121 - Students gaining advanced credit in this course, via examination, will take PMP 100 - Emergency Training Assessment and PMP 101 - Emergency Clinical Practice.

Accreditation: The Paramedic Technology major is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP), and the Pennsylvania Department of Health, Division of Emergency Services.

Physical Fitness Specialist (FS)

Associate of Applied Science Degree (A.A.S.)

This major prepares the graduate to have knowledge and skills to become trained leaders in the business aspect of the physical fitness industry. Opportunities to study the B.S. in Applied Health Studies are available.

Career Opportunities: Based upon reports from the field and program research, graduates will find jobs in wellness centers, fitness centers, health care agencies, rehabilitation centers and agencies, convalescent homes, vacation/resort areas with fitness facilities, and with fitness equipment manufacturing/sales companies. Entrepreneurial activities also are anticipated. Types of jobs/job titles projected include health/fitness business owner, health/fitness director, health/fitness instructor, exercise leader, personal trainer, fitness equipment salesperson, fitness program salesperson, business manager (for fitness equipment production and sales).

Recommended High School Subjects: College preparatory coursework is recommended. A program including at least three units of sciences (at least one unit should be biology), at least three units of math with Algebra I or Applied Math II taken (and Algebra II recommended), at least four units of English and at least four units of social studies. Development of good oral and written communication skills is recommended. Students who have not taken the above program of study can work with a college advisor to develop preparation for this major.

Remediation Strategies: Double deficient students choosing to enter this major are advised to take a less-than-full load and work closely with an advisor to select appropriate classes. Triple deficient students are required to completely remediate prior to admission into the major, but, with Department Head permission and close work with an advisor, these students might be allowed to take selected major courses. All deficiencies for all students must be remediated within the first year of entering the major.

Transfer Procedures: AAS graduates from this major can transfer into Penn College's Technology Management BS major. AAS graduates with certification can request evaluation for entry into Penn College's BS in Applied Health Studies (BAH). Students desiring to transfer for a bachelor degree need to work closely with an advisor to maximize transferable credits.

Program Goals: The Physical Fitness Specialist major prepares graduates for employment within the fitness industry. A graduate of the Physical Fitness Specialist major should be able to

- describe the basic structures of bone, skeletal muscle, and connective tissues.
- describe the basic anatomy of the heart and cardiorespiratory system.
- identify the major bones and muscles and their actions.
- describe and demonstrate exercises designed to enhance muscular strength and/or endurance of specific muscle groups.
- describe and demonstrate exercises for enhancing musculoskeletal flexibility.
- describe the structure and nature of movement of the major joints.
- locate the common sites for measurement of skinfold thickness, girth measurement for estimation of body composition; the anatomic landmarks for palpation of peripheral pulses; the brachial artery and then correctly place the cuff and stethoscope in position of blood-pressure measurement.
- define aerobic and anaerobic metabolism.
- list the physiological adaptations associated with strength training in men and women.
- discuss the physiological basis of the major components of physical fitness: flexibility, cardiovascular fitness, muscular strength, muscular endurance, and body composition.
- explain the concept of detraining or reversibility of conditioning and its implications in fitness programs.
- list the benefits and risks associated with exercise training in the pre-and post-pubescent youth.
- identify benefits and precautions associated with resistance and endurance training in the older adult.
- demonstrate and apply knowledge and a practical understanding of programming techniques as they relate to markets of all ages.
- define the psychological principles that are critical to health behavior change (i.e. behavior modification, reinforcement, goal-setting, social support and peer pressure.)
- describe and apply the personal communication skills necessary to develop rapport in order to motivate individuals to begin exercise, enhance adherence, and return to exercise.
- describe and apply the specific strategies aimed at encouraging the initiation, adherence, and return to participation in an exercise program or any other healthy lifestyle behaviors.

- demonstrate the ability to conduct group field assessments such as Cooper 12-minute test, step test, strength and muscular endurance, and flexibility assessment.
- demonstrate the types of test for cardiorespiratory fitness, evaluation of strength and flexibility, and the techniques used to determine body composition and the purposes for which each may be used.
- demonstrate skills necessary to obtain basic life support and cardiopulmonary certification.
- demonstrate basic first-aid procedures for exercise related injuries.
- identify the components that create and maintain a safe environment.
- demonstrate knowledge of safety plans, emergency procedures, and first-aid techniques needed during fitness evaluations, exercise testing, and exercise training.
- discuss the relationship between body composition and health.
- explain the concept of energy balance as it relates to weight control.
- list the six essential nutrients and describe their nutritional role.
- discuss guidelines for caloric intake for the individual desiring to lose or gain weight.
- design and evaluate fitness programs based on individual need.
- develop skills for problem solving, critical thinking, and decision-making.
- demonstrate the ability to apply modern business practices, decision-making techniques, and potential for managerial growth.
- integrate, appreciate, and understand their role in modern health care and physical fitness.

FIRST SEMESTER	Credits
BIO 103 Human Anatomy and Physiology Survey	4
CSC 110 Introduction to Information Technology	3
ENL 111 English Composition I	3
PFS 170 Specialist Resistance Training	2
FIT 192 Walking and Physical Fitness	1
PFS 210 Fitness and Wellness: Behavior Self Management	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

SECOND SEMESTER	Credits
ENL 201 Technical and Professional Communication	3
or	
SPC 101 Fundamentals of Speech	3
or	
SPC 201 Interpersonal Communication	3
MGT 115 Principles of Management	3
Mathematics Elective	3
PFS 216 Physical Fitness Tests and Measurements	3
PFS 225 Fundamentals of Human Performance	3
FHD 116 Nutrition Application	3
	<u>18</u>

THIRD SEMESTER	Credits
PFS 172 Specialist Aerobic Training	2
FIT 204 First Aid, Responding to Emergencies	2
PFS 220 Organization and Leadership of Fitness Programs	3
Directed Physical Fitness Specialist Elective	3
Directed Physical Fitness Specialist Elective	3
PSY 111 General Psychology	3
	<u>16</u>

FOURTH SEMESTER	Credits
FIT 173 Aerobic Cross Training	1
PFS 230 Management and Operation of Facilities and Equipment	2
PFS 250 Professional Fieldwork	3
Directed Physical Fitness Specialist Elective	3
Open Elective	3
Open Elective	3
	<u>15</u>

Directed Physical Fitness Specialist Elective: ACC113, MGT110, MGT248, MGT249, MGT340, MKT240, SPN222, SPN224, SPN228

Special Admissions Requirements: Students bear full costs for taking physical fitness/aerobic certification exams. Because of the physical requirements of the major and the potential for physical contact in courses and fieldwork experiences in this program, it is necessary that students be in exceptionally good health. Prior to entry into the major, students must have thorough health checkups and required vaccinations, and bear full financial responsibility for these expenses. Students required to have special legal/character clearances for fieldwork experiences will bear full financial responsibility for expenses. Students will be fully responsible for their own transportation, including to fieldwork sites. Fieldwork sites might not be readily available in the Williamsport area and students might have to travel and/or relocate to be able to complete fieldwork requirements. Students are required to carry health insurance and might be required to carry liability insurance at fieldwork sites, and will be financially responsible for costs of the bonding. Proof of health checkups will be required before entering this major. Proof of legal/character clearances, and/or liability insurance may be required before entering the major or before laboratory/field experiences, whichever is deemed to be most appropriate by the Department Head. Students should be aware that fieldwork sites can demand criminal background checks and can refuse to allow students access to fieldwork with them if there is a history of criminal activity and/or drug abuse. Inability to access or complete fieldwork experiences will result in inability to meet program and course objectives and required outcomes.

BIO 103 and Math Elective - Students desiring entry into other associate degree programs (especially Health Sciences related programs) or any bachelor degree program need to consult with their advisor regarding best options in these areas.

Plastics and Polymer Technology (PS)

Associate of Applied Science Degree (A.A.S.)

Students will gain knowledge in plastics (polymer) materials and the processing techniques commonly used in conjunction with these materials. A graduate in plastics technology will have a working knowledge of polymeric materials and processing techniques such as injection molding, extrusion, vacuum forming, injection blow molding and extrusion blow molding.

Career Opportunities: The successful associate degree candidate will be able to accept entry-level operator positions in industry. With two years of industrial experience, this individual should be promotable to positions such as setup technician, QC technician, etc.

Recommended High School Subjects: Algebra, physics, chemistry, and, if possible, mechanical drawing.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Plastics and Polymer Technology major is to prepare students for a variety of positions found in the plastics industry. Specifically, this major should prepare the students to

- identify and participate in the selection of polymeric materials including thermoplastics, thermoset plastics, thermoset elastomers, and thermoplastic elastomers.
- read and interpret blueprints as they relate to part design.
- read and interpret electric schematic drawings as they relate to plastic processing equipment.
- describe and discuss in detail the various manufacturing processes used to form, compound, and handle polymeric materials.
- generate designs via a computer aided design (CAD) system.
- properly hang a mold in an injection molder.
- start up an injection molder; establish and troubleshoot a molding cycle.
- troubleshoot a mold-material/machine combination for common processing problems in injection molding.

- set up an extrusion line for simple extrudates such as strands and ribbons.
- discuss at length the safety practices required when working with the common plastic/polymer processing methods.
- disassemble, clean and/or replace worn components, and reassemble an injection mold.
- perform or specify minor machining functions.
- describe polymer behavior during melting, flow and cooling for semicrystalline and amorphous polymers.
- design experiments in Statistical Process Control (SPC) and use the data to solve process problems.

FIRST SEMESTER	Credits
PPT 115 The Plastics Industry	2
PPT 120 Polymer Processing Survey	4
CHM 100 Fundamentals of Chemistry	4
CSC 110 Introduction to Information Technology	3
EDT 110 Technical Drawing and Print Reading	2
ENL 111 English Composition I	3
	18

SECOND SEMESTER	Credits
PPT 130 Plastics and Elastomers	4
CAD 116 Introduction to 2D CAD	3
ECO 111 Principles of Macroeconomics	3
ENL 201 Technical and Professional Communication	3
MTT 105 Manufacturing Processes and Toolmaking Survey	4
Fitness and Lifetime Sports Elective	1
	18

THIRD SEMESTER	Credits
PPT 235 Injection Molding	4
PPT 245 Mold Design/Maintenance	4
MET 311 Computer Solutions of Engineering Problems	3
MTH 180 College Algebra and Trigonometry I	3
QAL 230 Process Improvement (SPC)	4
	18

FOURTH SEMESTER	Credits
PPT 250 Industrial Blow Molding	4
PPT 248 Extrusion	4
PPT 249 Industrial Project Management	3
MTH 182 College Algebra and Trigonometry II	3
Physics/Chemistry Elective	4
	18

Accreditation: Accredited by the Accreditation Board for Engineering and Technology, Technology Accreditation Commission, 111 Market Place, Suite 1050, Baltimore, MD 21202, Telephone (410) 347-7700.

Pre-Engineering (ES)

Associate of Science Degree (A.S.)

This major prepares students to transfer into bachelor degree majors in aerospace, agricultural, civil, industrial, mechanical, or nuclear engineering. Depending on the specific transfer institution, students may need to take one or two courses beyond the associate degree requirements to achieve full junior status at the transfer institution. Accordingly, all elective courses should be planned carefully with the help of a faculty advisor.

Recommended High School Subjects: Two years of algebra, geometry, trigonometry, biology, chemistry, physics, computer science and courses requiring writing. If available at high school, students should take additional higher-level mathematics courses that cover analytic geometry and introduce calculus.

Remediation Strategies: Any deficiencies in English, mathematics or reading must be remediated prior to admission.

Program Goals: Graduates of the Pre-Engineering program should be able to

- have an academic background that facilitates transfer into B.S. programs in the physical sciences or engineering.
- be adept at applying principles of critical thinking, quantitative and qualitative logic, analysis, and synthesis to real comprehensive problems of the types arising in the physical sciences and engineering disciplines.
- demonstrate understanding of the epistemological bases of the natural sciences.
- demonstrate an understanding of the interrelationships between the historical, social and natural/environmental influences on humans.
- understand the social and ethical responsibilities of scientists and engineers in the modern world.
- demonstrate an understanding of, and an ability to apply, interdisciplinary scientific paradigms.
- meet all discipline-specific objectives of the individual courses in the curriculum.

FIRST SEMESTER	Credits
MTH 240 Calculus I	4
CHM 111 General Chemistry I	4
Social Science Elective	3
ENL 111 English Composition I	3
Fitness and Lifetime Sports Elective	1
	15

SECOND SEMESTER	Credits
MTH 242 Calculus II	4
PHS 201 General Physics I	4
Art Elective	3
EGS 101 Engineering Graphics	3
English/Communications Elective	3
	17

THIRD SEMESTER	Credits
MTH 340 Calculus III	4
PHS 202 General Physics II	4
CSC 110 Introduction to Information Technology	3
Humanities Elective	3
EGS 201 Statics	3
	17

FOURTH SEMESTER	Credits
Math Elective	3
EGS 202 Strength of Materials	3
Social Science Elective	3
or	
Humanities Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
Fitness and Lifetime Sports Elective	1
Engineering/Science/Math Elective	3
Engineering/Science/Math Elective	3
	16

Engineering/Science/Math Elective: BIO111, BIO113, BIO115, BIO123, BIO125, BIO201, BIO208, EGS250, EGS260, MTH250, MTH255, PHS125, PHS201, PHS202, PHS203, PHS204, PHS236, PHS251, SCI155, SCI280
 MTH Elective - MTH 346 Ordinary Differential Equations recommended.

Radiography (RD)

Associate of Applied Science Degree (A.A.S.)

Radiography prepares the student to become a registered medical radiographer (X-ray technician). Students receive their training on campus and in the radiology departments of affiliate hospitals. The departments of radiology are equipped with state-of-the-art radiographic equipment. On campus, students practice their newly acquired skills in a modern radiographic laboratory and learning center under the direct supervision of qualified staff. Students receive instruction in mathematics, physics, anatomy and physiology, humanities and social sciences, communications, microcomputer fundamentals, and all radiographic theories and procedures, which when successfully completed will have prepared the student to sit for the American Registry of Radiologic Technologists' (ARRT) registry examination. The program is fully accredited by the Joint Review Committee on Education in Radiologic Technology.

As a registered radiographer, the graduate will join other allied health professionals educated and experienced in the latest technical procedures requiring the use of X-rays and other imaging modalities for the diagnosis of medical conditions. Radiographers serve a vitally important role as a "hands-on" technical assistant to the radiologist, a physician who specializes in applications of all forms of ionizing radiation. Students enrolled in this major must earn a minimum final grade of "C" in each of their radiography courses. Failure to do so will result in termination from the major. Any deficiencies identified from placement testing must be remediated prior to admission to Radiography.

Approximately 1,600 clinic practicum hours are included to qualify students for registry examinations.

Career Opportunities: Clinical radiographer in acute health care setting, physician/surgeon offices, specialty clinics, armed services.

Recommended High School Subjects: Two years of algebra. Physics and/or a general science survey course also are suggested.

Remediation Strategies: All developmental needs must be cleared before admission to this major will be considered. It is strongly recommended that students attempt to remediate math deficiencies in the summer session prior to the first semester in the major. This will allow for proper MTH 180 and PHS 112 sequencing in the fall and spring. Failure to remediate math will delay acceptance into the major.

Transfer Procedures: Graduates of this major may be eligible to enter the College's Applied Health Studies (BAH) major. This major will subscribe to transfer standards established by the College. Refer to the Applied Health Studies major in the bachelor degree section for more details.

Program Goals: The general objective is to provide students with academic and practical experiences, which will enable them to sit for the national examination of the American Registry of Radiologic Technologies and to qualify for employment as registered radiographers.

Upon completion of the two-year Radiography major, students should be able to

- practice radiation protection for the patient, self, and others.
- use knowledge of anatomy, positioning, and radiographic techniques to accurately show anatomical structures on a radiograph.
- determine exposure factors needed to produce the best radiographs possible with minimum radiation exposure to the patient.
- recognize differences between diagnostic quality and inferior radiographs.
- exercise discretion and good judgment in all aspects of work.
- provide basic patient care and comfort, anticipate patient needs as well as provide appropriate patient education.
- recognize patient emergencies and initiate lifesaving first aid.
- apply knowledge of mathematics in determining exposure factors.
- use effective communication skills.
- use correct medical and anatomical terminology in radiography work.

- apply the necessary knowledge of basic electronics and physics to radiographic work.
- anticipate and provide basic patient care and comfort.
- apply principles of body mechanics.
- operate radiographic imaging equipment and accessory devices.
- process radiographs.
- adapt exposure factors for various patient conditions, equipment, accessories, and contrast media to maintain appropriate radiographic quality.
- evaluate the performance of radiographic systems, know the safe limits of equipment operation and report malfunctions to proper authority.
- demonstrate knowledge and skills relating to quality assurance.
- apply the necessary knowledge of basic trauma and pediatric radiography positioning techniques to show anatomical structures on a radiograph.
- use knowledge of cross-sectional anatomy to accurately show anatomical structures on an MRI or CT scanned image.
- demonstrate knowledge of interventional radiographic techniques.
- demonstrate an understanding of and support of the profession's code of ethics and comply with the profession's scope of practice.

FIRST SEMESTER		Credits
RAD 101	Radiographic Anatomy and Positioning I	2.5
RAD 102	Principles of Radiographic Exposure I	3.0
RAD 103	Radiography Ethics and Orientation	1.5
RAD 104	Radiographic Darkroom and Processing	1.5
RAD 105	Radiography Practicum I	1.0
BIO 115	Human Anatomy and Physiology I	4.0
MTH 180	College Algebra and Trigonometry I	3.0
MTR 100	Medical Terminology Survey	1.0
		<u>17.5</u>

SECOND SEMESTER		Credits
RAD 113	Radiographic Anatomy and Positioning II	2.5
RAD 114	Principles of Radiographic Exposure II	3.0
RAD 115	Radiographic Equipment and Maintenance	1.0
RAD 116	Radiographic Nursing Procedures	1.5
RAD 117	Contrast Media and Operating Room Procedures	1.0
RAD 118	Radiography Practicum II	1.0
BIO 125	Human Anatomy and Physiology II	4.0
PHS 112	Introductory Physics	4.0
		<u>18.0</u>

SUMMER SESSION		Credits
RAD 201	Practicum I	1.0
		<u>1.0</u>

THIRD SEMESTER		Credits
RAD 220	Radiographic Anatomy and Positioning III	2.5
RAD 221	Principles of Radiographic Exposure III	3.5
RAD 222	Radiation Protection	2.0
RAD 223	Interventional Radiography	1.0
RAD 224	Introduction to Mammography	1.0
RAD 225	Radiography Practicum III	1.0
ENL 111	English Composition I	3.0
PHS 222	Imaging Physics	4.0
	Fitness and Lifetime Sports Elective	1.0
		<u>19.0</u>

FOURTH SEMESTER		Credits
Humanities Elective	or	3.0
Social Science Elective	or	3.0
Art Elective	or	3.0
Foreign Language Elective		3.0
CSC 110 Introduction to Information Technology		3.0
BIO 209 Radiation Biology		1.0
RAD 246 Radiographic Anatomy and Positioning IV		1.5
RAD 247 Introduction to CT and MRI Imaging		3.0
RAD 248 Pathology		1.0
RAD 249 Cross Sectional Anatomy for Radiographers		1.0
RAD 250 Pediatric and Trauma Radiography		1.0
RAD 251 Radiography Practicum IV		1.0
SPC 201 Interpersonal Communication		3.0
		<u>18.5</u>
SUMMER SESSION II		Credits
RAD 202 Practicum II		1.0
		<u>1.0</u>

Special Admissions Requirements: Students must meet special admissions requirements prior to being accepted into this curriculum. Please refer to a listing of special Health Sciences requirements in the Admissions section of this catalog. Due to Federal guidelines, students under the age of 18 will not be allowed to begin clinical education.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing. Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

Students must comply with the "Rules of Ethics" contained in the ARRT Standards of Ethics. The Rules of Ethics are standards of minimally acceptable professional conduct for all Registered Technologists and applicants. The Rules of Ethics are intended to promote the protection, safety and comfort of patients. Registered Technologists and applicants engaging in any of the conduct or activities noted in the Rules of Ethics, or who permit the occurrence of said conduct or activities with respect to them, have violated the Rules of Ethics and are subject to sanctions as described. One issue addressed by the Rules of Ethics is the conviction of a crime, including a felony, a gross misdemeanor, or a misdemeanor with the sole exception of speeding and parking violations. All alcohol- and/or drug-related violations must be reported. Conviction as used in this provision includes a criminal proceeding where a finding or verdict of guilt is made or returned but the adjudication of guilt is either withheld or not entered, or a criminal proceeding where the individual enters a plea of guilt or nolo contendere. All potential violations must be investigated by the American Registry of Radiographic Technologists (ARRT) in order to determine eligibility.

Registered technologists and applicants who violate the Rules of Ethics must provide the ARRT with a written explanation, including court documentation of the charges, with the application for examination. The court documentation must verify the nature of the conviction, the nature of the sentence imposed by the courts, and the current status of the sentence. If an applicant is convicted between the time of application and the exam administration date, it is the applicant's responsibility to inform the ARRT immediately and begin the review process. Additional information may be found in the ARRT Rules and Regulations (Appendix D) and in the ARRT Standards of Ethics (Appendix E). These can be obtained from ARRT.

Individuals who have violated the Rules of Ethics may request a pre-application review of the violation in order to obtain a ruling of the impact on their eligibility for ARRT examination. The individual may submit a pre-application form at any time either before or after entry into an approved educational program. This review may enable the individual to avoid delays in processing the application for examination that is made at the time of graduation. The pre-application must be requested directly from the ARRT. Submission of a pre-application request form does not waive the application for examination, the examination fee, the application deadline or any other application procedures.

Accreditation: The Radiography major is fully accredited by the Joint Review Committee on Education in Radiologic Technology (JRC-ERT).

Surveying Technology (SU)

Associate of Applied Science Degree (A.A.S.)

The goal of Surveying Technology is to prepare students for entry-level positions in the survey field and to qualify them to sit for the Survey certification test.

Career Opportunities: Graduates will be employed by the Department of Transportation, surveying firms, government agencies, land-use planners, and similar employers.

Recommended High School Subjects: A strong preparation in math, science, and computer technology is recommended but not required. Drafting and CAD also would be helpful.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Surveying Technology major is to prepare the student for technical-level positions in the field of surveying. The major also provides an overview of the surveying field and prepares students for advanced study and for the Surveyor-In-Training exam which is the first step in the process for registration as a Professional Land Surveyor (PLS). Specifically, this program should prepare the student to

- distinguish between various types of surveys; select and use the proper instruments and methods for each type of survey. These will include boundary, control, construction, topographic, and geodetic surveys.
- construct cartographic and topographic maps using recognized mapping procedures.
- use aerial photographs in making engineering measurements and topographic maps.
- apply basic criteria used to design and locate highways and estimate earthwork quantities for highway construction.
- demonstrate a working knowledge of the mechanics of compressible and incompressible fluid flow and their applications in piping systems, pumps, open channels, and reservoirs.
- predict the effects of rainfall runoff on engineering systems; design inlets, gutters, retention/detention basins and sedimentation control devices using accepted procedures.
- understand surveying law and sources of information needed for the location and relocation of land boundaries.
- understand and use the procedures for the development of land.
- understand and compute the loads on basic structures.
- demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD), and perform basic drawing functions with CAD equipment to create surveying drawings.
- use algebra, trigonometry, analytic geometry, and statistics to solve problems related to surveying.
- apply scientific procedures learned in physics in solving surveying problems.
- prepare and use the computer programs needed to solve surveying problems.

FIRST SEMESTER		Credits
CAD 116 Introduction to 2D CAD		3
CET 113 Introductory Surveying		2
CET 114 Civil Drafting		2
CSC 110 Introduction to Information Technology		3
ENL 111 English Composition I		3
MTH 180 College Algebra and Trigonometry I		3
CSC 108 Introduction to Computer Programming Concepts		1

SECOND SEMESTER		Credits
CET 122	Topographic Drawing and Cartography	3
CET 123	Plane Surveying	3
ENL 201	Technical and Professional Communication	3
MTH 158	Elementary Statistics I	3
	or	
MTH 160	Elementary Statistics with Computer Applications	4
MTH 182	College Algebra and Trigonometry II	3
	Humanities Elective	3
	or	
	Social Science Elective	3
		<u>18</u>

THIRD SEMESTER		Credits
CET 233	Statics	3
CET 234	Highway Engineering Technology	3
CET 235	Computer Applications in Civil Engineering	1
CET 237	Route Surveying	3
CET 239	Land Development and Legal Aspects	3
PHS 115	College Physics I	4
	Fitness and Lifetime Sports Elective	1
		<u>18</u>

FOURTH SEMESTER		Credits
CET 242	Fluid Mechanics	3
CET 247	Boundary and Control Surveying	3
CET 249	Stormwater Management	2
CET 344	Photogrammetry	3
MTH 230	Applied Calculus	3
PHS 125	College Physics II	4
		<u>18</u>

MTH180 - Eligible students may substitute MTH240/MTH242 for MTH 180/182

MTH230/PHS125 - Students taking the MTH 240/242 option may substitute PHS201/202 for PHS 115/125, and are not required to take MTH230

Note: Optional cooperative education experiences are encouraged to provide actual work experience in the student's chosen area of interest.

Accreditation: Accredited by the Accreditation Board for Engineering and Technology, Technology Accreditation Commission, 111 Market Place, Suite 1050, Baltimore, MD 21202, Telephone (410) 347-7700.

Toolmaking Technology (TT)

Associate of Applied Science Degree (A.A.S.)

This curriculum prepares students to work with engineers and shop superintendents. Students develop skills in machine operation and theory, blueprint reading and mechanical drawing in the program's labs and shops. Training in job routing and the order in which operations are performed is included. In the third semester, the emphasis is on computer numerical control (CNC) systems and computer part programming capabilities. The coursework includes discussions of such topics as robotics, graphics, group technology, future trends, and numerical control terms, definitions and standards. Related courses in mathematics, science and physics improve students' advancement potential.

Career Opportunities: Toolmaker; computer numerical control (CNC) technician; production technician; manufacturing assistant.

Recommended High School Subjects: Two years of algebra, one year of science.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Toolmaking Technology major is to prepare the student for a variety of positions in the machine tool industry. Specifically, this major should prepare the student to

- demonstrate safe work habits and be conscious of safety when working with machinery.
- read blueprints, interpret drawings, understand specifications, and work within tolerances.
- apply mathematics in the machine tool trade (speeds, feeds, thread measurement, sine bar, etc.)
- apply the principles of physics and metallurgy to the science of heat treatment operations, including hardening of steel; carburizing; case hardening; temp ring; annealing.
- operate basic machine tools and demonstrate knowledge of their construction in relation to the metal industry.
- describe the construction and operation of production machinery, including turret lathes, screw machines, automatic tappers, etc.
- demonstrate skills on numerical control machine, electrical discharge machine, electrical chemical grinder, diemaking, jig grinding, jigs and fixtures.
- operate abrasive cutting machinery and select and plan machining operations on this equipment.
- demonstrate skills in quality control, inspection, gaging methods, and production control as they relate to manufacturing design and production.

FIRST SEMESTER		Credits
MTT 113	Basic Metalworking I	3
MTT 114	Basic Metalworking II	2
MTT 116	Lathe Applications I	3
MTT 117	Lathe Applications II	2
CSC 110	Introduction to Information Technology	3
MTH 180	College Algebra and Trigonometry I	3
SAF 110	Occupational Health and Safety	2
		<u>18</u>

SECOND SEMESTER		Credits
CIM 101	Basic Machine Tool Programming	3
MTT 123	Machining Processes	4
MTT 126	Metrology/Quality Control	5
ENL 111	English Composition I	3
MTH 182	College Algebra and Trigonometry II	3
		<u>18</u>

THIRD SEMESTER		Credits
CIM 123	CNC Programming and Machining	4
MTT 210	Tool Technology	5
PHS 114	Physics with Technological Applications	4
ENL 201	Technical and Professional Communication	3
	Fitness and Lifetime Sports Elective	1
		<u>17</u>

FOURTH SEMESTER		Credits
CIM 205	Electrical Discharge Machining	3
CIM 220	CAD/CAM	3
MTT 215	Abrasive Machining and Heat Treatment	5
MSC 106	Introduction to Metallurgy	4
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
		<u>18</u>

Co-op Options: Alternating, Parallel, Summer

Additional Information: National Institute of Metalworking Skills (NIMS) Certification

Welding Technology (WA)

Associate of Applied Science Degree (A.A.S.)

This curriculum offers practical skills and theory in welding, quality assurance, welding design, robotic welding, CNC plasma cutting, non-destructive testing, plus the mathematics and language skills necessary to mature to a technical or management career in the welding and fabrication industries.

Career Opportunities: Jobs are available in welding applications, welding technicians, welding supervisor, welding inspector, quality assurance and non-destructive testing, welding estimator, and engineering functions.

Recommended High School Subjects: Welding degree students would benefit from industrial or vocational welding or metalworking courses, blueprint reading or drafting, technical math or descriptive geometry.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Welding Technology major is to prepare the student for a variety of technical and welding positions found in the welding industry. Specifically, this major should prepare the student to

- weld safely in shop and field operations.
- work safely and avoid practices that are unsafe to others.
- weld using oxy-fuel, electric, and inert gas shielded methods.
- distinguish the types of welding power sources, their characteristics, uses, and limitations.
- inspect welding jobs using visual, destructive, and non-destructive testing methods.
- construct weldments from sketches, blueprints, or verbal instructions.
- interpret welding symbols.
- select the proper welding process, procedure, supplies, etc., based on cost limitations.
- identify ferrous and non-ferrous metals.
- test the physical and mechanical properties of metals, as related to weldability.
- follow welding qualification tests/procedures according to specifications of the AWS, ASTM, API, and ASME codes.
- program and operate CNC plasma/oxy-fuel cutting equipment.
- program and operate a robotic weld station.
- apply the principles of metallurgy to the selection of a welding procedure.

FIRST SEMESTER	Credits
WEL 113 Oxy-Fuel Welding and Cutting I	2
WEL 114 Shielded Metal Arc I	2
WEL 115 Oxy-Fuel Welding and Cutting II	2
WEL 116 Shielded Metal Arc II	2
EDT 107 Blueprint Reading for Welders	2
ENL 111 English Composition I	3
SAF 110 Occupational Health and Safety	2
MTH 124 Technical Algebra and Trigonometry I	3
or	
MTH 180 College Algebra and Trigonometry I	3
	<u>18</u>

SECOND SEMESTER	Credits
WEL 120 Gas Metal Arc I	2
WEL 123 Gas Tungsten Arc I	2
WEL 124 Gas Metal Arc II	2
WEL 129 Gas Tungsten Arc II	2
QAL 237 Non-Destructive Testing I	3
ENL 201 Technical and Professional Communication	3
CSC 110 Introduction to Information Technology	3
Fitness and Lifetime Sports Elective	1
	<u>18</u>

THIRD SEMESTER	Credits
WEL 210 Flux Cored and Sub-Arc I	2
WEL 213 Gas Tungsten Arc III	2
WEL 214 Flux Cored and Sub-Arc II	2
WEL 219 Gas Tungsten Arc IV	2
WEL 240 Basic CNC Programming	3
QAL 247 Non-Destructive Testing II	3
MSC 106 Introduction to Metallurgy	4
	<u>18</u>

FOURTH SEMESTER	Credits
WEL 230 Shielded Metal Arc III	2
WEL 233 Shielded Metal Arc IV/Pipe Welding	2
WEL 234 Shielded Metal Arc V	2
WEL 239 Shielded Metal Arc VI/Pipe Welding	2
WEL 247 Welding Design	3
WEL 248 Robotic Welding	3
ECO 111 Principles of Macroeconomics	3
	<u>17</u>

Welding Core Courses: WEL 113 - WEL 239 are two-credit, eight-week classes.

Additional Information: American Welding Society (AWS) Certification

Transfer (Associate) Degrees



ASSOCIATE DEGREES

For two-year students intending to transfer into baccalaureate majors, the Associate of Arts and Associate of Science credentials offer college-university parallel courses.

The College awards two types of associate transfer degrees.

The **Associate of Arts (A.A.)** degree is designed to parallel the first two years of a liberal arts education at a four-year college.

The **Associate of Science (A.S.)** degree is designed to parallel the first two years of a scientific or professional-related baccalaureate major.

Students who plan to transfer are encouraged to work closely with faculty advisors to ensure appropriate course selection. In addition, the Counseling, Career and Academic Support office offers assistance.

Access our online catalog at www.pct.edu
for the most current information.

Biology (BL)

Associate of Science Degree (A.S.)

The A.S. in Biology has as its primary objective the preparation of its students to transfer into (a) a bachelor of science degree major in biology or related field, (b) a Doctor of Chiropractic program, or (c) a health-related bachelor of science major. Students should work closely with their advisors. This A.S. major will have a heavy emphasis on the investigative view and will prepare a student for appreciation of the mysteries of the natural world.

Career Opportunities: The Biology major will provide the first two years of instruction that will permit students to transfer into a number of life science and health majors, including chiropractic and pre-medical.

Recommended High School Subjects: Two years of algebra, geometry, trigonometry, biology, chemistry, physics, computer science and courses requiring writing. If available at the high school, students should take additional higher-level mathematics courses that cover analytic geometry and introduce calculus.

Remediation Strategies: Any deficiencies in English, mathematics, or reading must be remediated prior to admission to this major.

Program Goals: Graduates of the Biology major should be able to

- acquire a rigorous investigative and quantitative focus and have an academic background that facilitates transfer into Bachelor of Science programs in biology and related disciplines.
- be adept at applying principles of critical thinking, quantitative and qualitative logic, analysis and synthesis of real comprehensive problems of the types occurring in the biological sciences.
- demonstrate an understanding of the epistemological bases of the natural sciences.
- develop the skills to track and evaluate recent advances in biology.
- understand the social and ethical responsibilities of scientists.
- use the computer for quantitative and analytical purposes.
- demonstrate an understanding of, and an ability to apply, interdisciplinary scientific paradigms.
- meet all discipline-specific objectives of the individual courses in the curriculum.

FIRST SEMESTER	Credits
BIO 113 General Biology I	4
ENL 111 English Composition I	3
MTH 190 Pre-Calculus	4
CHM 111 General Chemistry I	4
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SECOND SEMESTER	Credits
BIO 123 General Biology II	4
ENL 121 English Composition II	3
MTH 240 Calculus I	4
CHM 121 General Chemistry II	4
Fitness and Lifetime Sports Elective	1
	<u>16</u>

SUMMER SESSION	Credits
Communication Elective	3
BIO 201 Microbiology	4
or	
BIO 208 Ecology	4
	<u>7</u>

THIRD SEMESTER	Credits
MTH 242 Calculus II	4
or	
Science/Technology/Society Elective	3
CHM 203 Organic Chemistry I	4
CSC 110 Introduction to Information Technology	3
Social Science Elective	3
or	
Humanities Elective	3
or	
Art Elective	3
or	
Foreign Language Elective	3
BIO 210 Genetics	3
	<u>17</u>

FOURTH SEMESTER	Credits
MTH 242 Calculus II	4
or	
BIO 201 Microbiology	4
or	
BIO 115 Human Anatomy and Physiology I	4
or	
BIO 125 Human Anatomy and Physiology II	4
CHM 204 Organic Chemistry II	4
Humanities Elective	3
Social Science Elective	3
Art Elective	3
	<u>17</u>

Additional Information: ARTICULATION AGREEMENTS

New York Chiropractic College, Seneca Falls, NY. Graduates of the Biology major who satisfy the terms of the agreement between NYCC and Penn College will be accepted into the Doctor of Chiropractic degree major for the entrance date of their choice.

The terms of the agreement include (1) completion of the A.S. in Biology, (2) completion of PHS 115 and 125, (3) completion of six additional credits: PSY 111 and one Social Sciences/Humanities elective, (4) cumulative G.P.A. of 3.25, and (5) grade of "C" or better in science courses.

Sherman College of Straight Chiropractic, Spartanburg, SC. Graduates of the Biology major who satisfy the terms of the agreement between Sherman and Penn College will be granted tentative acceptance upon completion of the first academic year of the A.S. in Biology (minimum 30 semester hours) with full approval granted upon receipt of the final semester's transcript.

The terms of the agreement include (1) completion of the A.S. in Biology, (2) completion of PHS 115 and 125, (3) completion of six additional credits: PSY 111 and one Social Sciences/Humanities elective, (4) cumulative GPA of 2.25, and (5) grade of "C" or better in science and English courses.

Students interested in articulation must work closely with their faculty advisors.

Science, Technology & Society Elective - A biological elective, such as SCI 260, is recommended for transfer students.

SUMMER SESSION - These seven credits are required. BIO 201 could also be scheduled during the fall or spring semesters. BIO 208 could also be scheduled during the spring semester.

General Studies (GS)

Associate of Arts Degree (A.A.)

This major offers the equivalent of the first two years in a four-year bachelor of arts or bachelor of science major. The curriculum is flexible—students select courses based on the requirements of the four-year college to which they plan to transfer. (We recommend that students identify the college to which they plan to transfer as soon as possible.) A faculty advisor works with each student to design a course sequence that best meets the student’s future plans. Cooperative education options are available to students in General Studies.

Recommended High School Subjects: Students should take a traditional academic program including English literature and composition, mathematics (including at least algebra), social studies, science, and relevant electives.

Remediation Strategies: All entering students will be tested in English, mathematics, and reading. Students will be expected to remediate all deficiencies during their first semester in the major.

Evening Completion - Courses required for the associate degree in General Studies also are available in the evenings for the convenience of part-time students. Students may be able to complete the courses required for a degree in General Studies by enrolling in evening courses only.

Program Goals: Upon completion of the General Studies program, the student should have an academic background sufficient to transfer into a baccalaureate degree program and should be able to

- reason logically; analyze, synthesize, and evaluate information.
- recognize the inter-relationships among various academic disciplines.
- in oral and written presentations, display increased awareness of the social, cultural, and natural environments; an awareness of cultural diversity; and an appreciation for the cultural beliefs, artifacts, and behaviors of others.
- use research skills in both preparation and presentation of written and oral projects.
- write with the proficiency sufficient to pursue upper-level coursework or meet entry-level professional requirements.
- communicate effectively, applying verbal and non-verbal communication theory to a variety of situations, including interpersonal and public scenarios.
- use critical thinking skills to facilitate further study of the humanities or arts.
- establish a focus for upper-class studies.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
	Math Elective (MTH150 or higher)	3
	Foreign Language Elective	3
	Science Elective	3
	Fitness and Lifetime Sports Elective	1
CSC 110	Introduction to Information Technology	3
		<u>16</u>

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
	Math Elective (152 or Higher)	3
SPC 101	Fundamentals of Speech	3
	or	
SPC 201	Interpersonal Communication	3
	Social Science Elective	3
	Science Elective with lab	4
	Fitness and Lifetime Sports Elective	1
		<u>17</u>

THIRD SEMESTER		Credits
	Humanities Elective	3
	Art Elective	3
	Liberal Arts/Core Elective	3
	Liberal Arts/Core Elective	3
	Liberal Arts/Core Elective	1
	Open Elective	3
		<u>16</u>

FOURTH SEMESTER		Credits
	Humanities Elective	3
	or	
	Social Science Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Liberal Arts/Core Elective	3
	Liberal Arts/Core Elective	3
	General Education Diversity Elective	3
	Open Elective	3
		<u>15</u>

Most bachelor programs require at least one history course. A World Civilization I and/or II (HIS 115, HIS 125) will satisfy that requirement as well as the diversity requirement.

Curriculum Guides

Listed below are the baccalaureate majors most frequently selected by Penn College GS students when they transfer. For each major, specific electives are recommended, all of which have been accepted for transfer by various colleges/universities. The listings represent specific course choices from which to select — choices that fit the intended majors. Because the requirements for baccalaureates do vary among colleges and universities, consult the catalogs of the transfer institution/s and review choices with the faculty advisor and/or with the College transfer counselor.

Electives for Communications major:

- ENL 235 Creative Writing
- PNP 134 Electronic Publishing and Design
- HIS 115 or HIS 125 World Civilization I/II
- or
- HIS 135 or HIS 145 United States Survey
- MCM 111 Introduction to Mass Communications
- MCM 120 News Writing
- MCM 121 Principles of Advertising
- MCM 243 Public Relations
- PSY 111 General Psychology
- SOC 111 Introduction to Sociology
- SPC 201 Interpersonal Communication
- SPC 302 Intercultural Communication

Electives for Criminal Justice major:

- HIS 135 and HIS 145 United States Survey
- PSC 231 American Government-National
- PSC 241 State and Local Government
- PSY 111 General Psychology
- PSY 201 Abnormal Psychology
- SOC 111 Introduction to Sociology
- SOC 241 Urban Sociology
- SOC 242 Criminology

Electives for Elementary or Secondary Education major:

- EDU 111 Introduction to Education
- EDU 121 Children’s and Young Adult Literature
- EDU 299 Special Topic-Field Experience/Observation
- HIS 115 World Civilization I
- or
- HIS 135 United States Survey to 1877
- HIS 125 World Civilization II
- or
- HIS 145 United States Survey Since 1877
- PHL 111 Introduction to Philosophy Analysis
- PSC 231 American Government-National
- PSY 111 General Psychology
- PSY 203 Developmental Psychology
- PSY 210 Child Psychology
- PSY 231 Educational Psychology

Electives for English major:

ART 133 Introduction to Art
 EDU 121 Children's and Young Adult Literature
 ENL 235 Creative Writing
 ENL 261 Writing Nonfiction
 Any of the Literature courses (ENL-designated)
 HIS 115 and HIS 125 World Civilization I/II

or

HIS 135 and HIS 145 United States Survey
 HIS 250 Popular Culture in the U.S.
 HUM 223 American Indian Perspectives
 HUM 225 Fairy Tales and Fables
 MUS 111 Introduction to Music
 PHL 111 Introduction to Philosophy Analysis
 PHL 210 Ethics
 PSY 111 General Psychology
 SOC 111 Introduction to Sociology
 SOC 112 General Anthropology

Electives for History major:

HIS 115 and HIS 125 World Civilization I and II

or

HIS 135 and HIS 145 United States Survey
 HIS 310 Historical Investigation
 PHL 111 Introduction to Philosophy Analysis
 PHL 220 Social and Political Philosophy
 PSC 231 American Government-National

Electives for Mathematics major:

MTH 160 Elementary Statistics with Computer Applications
 MTH 170 Matrix Algebra
 MTH 172 Introduction to Geometry
 MTH 240, 242, 340 Calculus I, II, III
 MTH 250 Discrete Mathematics
 MTH 255 Linear Algebra
 MTH 346 Ordinary Differential Equations
 MTH 360 Quantitative Statistical Methods with Applications
 PHS 201, 202, 204 General Physics I, II, III

Electives for Political Science major:

HIS 115 and HIS 125 World Civilization I and II
 HIS 135 and HIS 145 United States Survey
 PHL 111 Introduction to Philosophy Analysis
 PHL 220 Social and Political Philosophy
 PSC 210 International Relations
 PSC 231 American Government-National

Electives for Psychology major:

BIO 113 and 123 General Biology I and II
 CSC 110 Introduction to Information Technology (in first semester)
 MTH 151 Structures of Mathematics
 MTH 160 Elementary Statistics with Computer Applications
 MTH 164 Elementary Statistics II
 PHL 111 Introduction to Philosophy Analysis
 PHL 210 Ethics
 PSY 111 General Psychology
 PSY 201 Abnormal Psychology
 PSY 203 Developmental Psychology
 PSY 231 Educational Psychology

Electives for Science, Technology and Society major:

HIS 115 and HIS 125 World Civilization I and II
 HIS 262 Technology and Society
 PHL 111 Introduction to Philosophy Analysis
 PHL 210 Ethics
 PSC 231 American Government-National
 SCI 175 Issues in Nuclear Energy
 SCI 260 Biology and Modern Society
 SCI 280 Natural Disasters and Civilization

GENERAL STUDIES

NUCLEAR MEDICINE TECHNOLOGY

Articulation Emphasis

Associate Degree/A.A.

The Nuclear Medicine Technology Articulation Program permits students to transfer to the Nuclear Medicine Institute at the University of Findlay, Findlay, Ohio, to pursue a certificate, associate or baccalaureate degree. Courses in this major have been reviewed and approved for transfer by the University of Findlay. Admission into the Nuclear Medicine Institute and the University of Findlay requires an application by the student no later than the prior January. Students must receive a "C" or better in each course that is listed as a prerequisite (*i.e., the list of courses in Certificate Articulation Option*). Every attempt will be made to save seats to accommodate students enrolled at Penn College. If sufficient seats are not available, a new class might be started in spring semester (enrollment of five or more).

Career Opportunities: At this time, there is a shortage of nuclear medicine technologists. The present demand for qualified individuals far exceeds the number of students entering the field. While the majority work in a hospital setting, job opportunities also exist in such diversified areas as private clinics, industry, research centers, business and government.

Recommended High School Subjects: One to two years of algebra, as well as introductory science and chemistry courses.

Remediation Strategies: Students entering the articulation may need to remediate math, reading and/or English deficiencies. The director of the radiography major will act as advisor to all prospective Nuclear Medicine Technology students and will plan a proper strategy for remediation of deficiencies.

Course Requirements for Transfer

Penn College Course	Certificate at Findlay	Associate Degree at Findlay	Bachelor of Arts at Findlay
BIO 115	X	X	X
BIO 125	X	X	X
CHM 100	X	X	
CHM 111		X	X
CHM 121			X
CHM 203			X
CHM 204			X
CSC 110	X	X	X
ENL 111	X	X	X
ENL 121			X
MTH 158			X
MTH 180	X	X	X
MTH 182	X	X	X
MTR 101	X	X	
PHS 112	X	X	
PHS 115	X	X	X
PHS 125			X
PSY 111	X	X	X
SOC 111	X	X	X
SPC 101	X	X	X
FIT (1 Cr.)			X
Humanities (6 Cr.)			X
Nat. Sciences (3 Cr.)			X

X—Indicates that the student must take the identified Pennsylvania College of Technology courses to be considered for acceptance at Findlay University.

Transfer Evaluation

The transfer evaluation below illustrates how the following courses from Pennsylvania College of Technology will transfer into The University of Findlay.

Pennsylvania College of Technology	The University of Findlay
BIO 115	BIOL 202
BIO 125	BIOL 203
CHM 100	CHEM 111
CHM 111	CHEM 130
CHM 121	CHEM 131
CHM 203	CHEM 310
CHM 204	CHEM 311
CSC 110	CSCI 150
ENL 111	ENGL 100
ENL 121	ENGL 102
MTH 158	MATH 123
MTH 180	MATH 110
MTH 182	MATH 115
MTR 101	ELECTIVE
PHS 112	PHYS 111
PHS 115	PHYS 250
PHS 125	PHYS 251
PSY 111	PSYC 100
SOC 111	SOCI 105
SPC 101	SPCH 110

*Please note that a maximum of 62 semester hours may transfer into The University of Findlay.

Pre-Engineering (ES)

Associate of Science/A.S.

This major prepares students to transfer into bachelor degree majors in aerospace, agricultural, civil, industrial, mechanical, or nuclear engineering. Depending on the specific transfer institution, students may need to take one or two courses beyond the associate degree requirements to achieve full junior status at the transfer institution. Accordingly, all elective courses should be planned carefully with the help of a faculty advisor.

Recommended High School Subjects: Two years of algebra, geometry, trigonometry, biology, chemistry, physics, computer science and courses requiring writing. If available at high school, students should take additional higher-level mathematics courses that cover analytic geometry and introduce calculus.

Remediation Strategies: Any deficiencies in English, mathematics or reading must be remediated prior to admission.

FIRST SEMESTER		Credits
MTH 240	Calculus I	4
CHM 111	General Chemistry I	4
	Social Science Elective	3
ENL 111	English Composition I	3
	Fitness and Lifetime Sports Elective	1
		<u>15</u>

SECOND SEMESTER		Credits
MTH 242	Calculus II	4
PHS 201	General Physics I	4
	Art Elective	3
EGS 101	Engineering Graphics	3
	English/Communications Elective	3
		<u>17</u>

THIRD SEMESTER		Credits
MTH 340	Calculus III	4
PHS 202	General Physics II	4
CSC 110	Introduction to Information Technology	3
	Humanities Elective	3
EGS 201	Statics	3
		<u>17</u>

FOURTH SEMESTER		Credits
	Math Elective	3
EGS 202	Strength of Materials	3
	Social Science Elective	3
	or	
	Humanities Elective	3
	or	
	Art Elective	3
	or	
	Foreign Language Elective	3
	Fitness and Lifetime Sports Elective	1
	Engineering/Science/Math Elective	3
	Engineering/Science/Math Elective	3
		<u>16</u>

Engineering/Science/Math Elective: BIO111, BIO113, BIO115, BIO123, BIO125, BIO201, BIO203, BIO208, EGS250, EGS260, MTH250, MTH255, MTH260, PHS125, PHS201, PHS202, PHS203, PHS204, PHS236, PHS251, SCI155, SCI280

MTH Elective - MTH 346 Ordinary Differential Equations recommended.

Program Goals: Graduates of the Pre-Engineering program should be able to

- have an academic background that facilitates transfer into B.S. programs in the physical sciences or engineering.
- be adept at applying principles of critical thinking, quantitative and qualitative logic, analysis, and synthesis to real comprehensive problems of the types arising in the physical sciences and engineering disciplines.
- demonstrate understanding of the epistemological bases of the natural sciences.

- demonstrate an understanding of the interrelationships between the historical, social and natural/environmental influences on humans.
- understand the social and ethical responsibilities of scientists and engineers in the modern world.
- demonstrate an understanding of, and an ability to apply, interdisciplinary scientific paradigms.
- meet all discipline-specific objectives of the individual courses in the curriculum.

Vocational Teacher Education Endorsement (EVT)

Endorsement

This is a cooperative program between Pennsylvania College of Technology and The Pennsylvania State University leading to a baccalaureate degree (B.S.). Students complete an associate degree (A.A.S.) at Penn College following the outline below and also receive the Vocational Teacher Education Endorsement.

This Endorsement prepares graduates to transfer to a B.S. degree in Vocational Teacher Education at The Pennsylvania State University. During the first two years, the emphasis is on the development of a vocational-technical specialty supplemented with early professional teacher education experience. To complete the B.S. degree, the remainder of the program is delivered on the campus of Penn State and focuses on the development of skills in teaching, curriculum development, student service, and classroom management. Following this path will lead to technical competence in a career area leading to certification required to teach secondary vocational education. Students considering this option should consult with their academic advisor early in their technical program. Coordination of the Endorsement is the responsibility of the School of Industrial and Engineering Technologies. To assist in this coordination, students must communicate in writing their intent to complete this Endorsement to the Dean of the School of Industrial and Engineering Technologies. Students also must qualify to complete Pennsylvania state teaching certification requirements; this is done at Penn State.

Career Opportunities: Primary employment will be in secondary public education. Additional career paths may include proprietary schools, community colleges and technical postsecondary schools. Opportunity also exists in manufacturing, business and service industries with customer and personnel training departments.

1. Students enroll in any Associate of Applied Science major at Penn College. Students must complete all requirements of that major.

2. Students desiring to complete a Vocational Teacher Education Endorsement must also: Complete these courses in their technical major: ENL111, ENL 201, SOC111, ECO111 or ECO112, Science Elective (3 or 4 credits), MTH180, MTH182, and a Fitness Elective (1 credit).

Since these classes are from the General Education core, for some majors the main difference will be the mathematics level.

Program Goals: Graduates of this major should be able to

- understand the role of vocational education in the United States and the preparation required to work in the profession.
- develop a plan for professional development and transfer to the Pennsylvania State University, Adult Workforce Education program.
- observe several current vocational education sites and prepare written evaluations of these experiences.

FIRST SEMESTER	Credits
VOC 100 Vocational Education	3
VOC 101 Early Field Experience	1
ENL 111 English Composition I	3
SOC 111 Introduction to Sociology	3
MTH 180 College Algebra and Trigonometry I	3
ECO 111 Principles of Macroeconomics	3
or	
ECO 112 Principles of Microeconomics	3
Fitness and Lifetime Sports Elective	1
	<u>17</u>

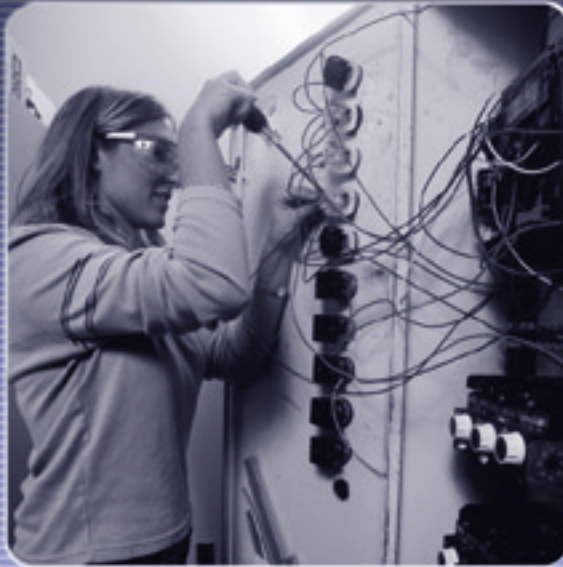
SECOND SEMESTER	Credits
VOC 250 Vocational Education Co-Op Work Experience	1
VOC 251 Vocational Education Co-Op Work Experience	1
ENL 201 Technical and Professional Communication	3
MTH 182 College Algebra and Trigonometry II	3
Science Elective	3
or	
Science Elective with lab	4
Science/Technology/Society Elective	3
	<u>14</u>

The VOC 250 and VOC 251 co-op courses are satisfied by a co-op related to the technical major. One two-credit co-op class during the first summer would satisfy the requirement. After completion of the degree and the additional courses, the student must have at least a 2.5 GPA (cumulative) for transfer to Penn State.

Co-Op Voc Ed Experience: Credit for life/work experience may meet this requirement.

— Notes —

Certificates & Credentials



CERTIFICATE

In Special Field of Study

These majors are occupational in nature and heavily skills oriented. They are not primarily for transfer, but in certain cases can be transferred to some colleges. Certificate majors vary in length, but do not exceed two years of coursework.

A feature of these majors is the optional elective. As the name implies, an optional elective can be chosen to broaden the basic academic work required of all college students. You are urged to make use of the opportunity to enrich your educational experience.

Access our online catalog at www.pct.edu
for the most current information.

COMPETENCY CREDENTIAL

Purpose: The competency credential provides specialized training programs to respond to needs of individuals, business and industry. The credential offers formal recognition for competence in an area of specialization. Each credential is equivalent to no more than one semester of full-time college work.

Structure: Competency credentials consist of nine-18 credits.

An **Individual Competency Credential** is developed to meet a student's personal goals. Advisors work with the student to develop a planned sequence of courses.

Standard Competency Credentials have been developed to provide training in well-established areas for professional upgrading or retraining. Standard Competency Credentials are listed in this Catalog.

Admission Requirements for Competency Credential

Admission: Apply for admission through the Admissions Office. Some students may be asked to take placement tests to assure readiness for the competency credential.

Admission Fee: Applicants must submit the same applicant fee as degree-seeking students.

Previous Coursework: Courses that have been completed at the time of petition can be used to fulfill the requirements of the standard competency credential as long as the petition occurs within one year of leaving the College. Grades of "C" or higher are required. Credit-by-exam, transfer credit, or credit for work, and work/life experience may represent 1/3 of the required credits.

To develop an Individual Competency Credential, contact the Dean of the school that houses similar courses/curriculums. For additional information regarding fees and requirements, contact the Office of Admissions.

Automotive Service Technician (AM)

Certificate

This curriculum includes advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The coursework emphasizes the development of skills in service, repair, and test procedures. Students are also prepared for State Inspection license exams and for optional national Automotive Service Excellence tests.

Career Opportunities: General auto technician in a dealership, independent garage, fleet operation, service station, self-employment.

Recommended High School Subjects: Three years of English, one year of algebra and one year of science.

Remediation Strategies: Students may enter any of the majors with one deficiency. If the student is deficient in MTH 004 and RDG 001, the student must remediate before entering any of the majors. The order of remediation will be math, reading, and English.

Program Goals: The goal of this major is to prepare the student for jobs in the automotive field. The major prepares students to take written certification exams (e.g., the National Institute for Automotive Service Excellence exam and the Pennsylvania Vehicle Safety Inspection exams, written and practical) for certification as vehicle safety inspectors.

A graduate of the Automotive Service Technician major should be able to

- diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
- diagnose and repair malfunctions of engines.
- test, adjust and repair engine electrical, fuel and emission control components.
- interpret wiring diagrams, test and repair starting, charging, lighting and accessory systems of vehicles.
- demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

FIRST SEMESTER	Credits
AMT 111 Manual Transmission and Transaxle Principles	3
AMT 112 Brake Systems	3
AMT 113 Steering and Suspension	3
AMT 119 Fundamentals of Automatic Transmissions	3
MTH 011 Career Mathematics	3
	<u>15</u>

SECOND SEMESTER	Credits
AMT 122 Engine Principles	3
AMT 123 Basic Fuel and Emission Control Systems	3
AMT 124 Automotive Electrical/Electronic Principles	3
AMT 126 Engine Electrical Systems	4
ENL 010 Communications	3
	<u>16</u>

THIRD SEMESTER	Credits
AMT 235 Engine Service	4
AMT 238 Emissions Inspection	2
AMT 239 Engine Repair and Overhaul	4
AMT 273 Powertrain Computer Systems Analysis	2
CSC 110 Introduction to Information Technology	3
	<u>15</u>

FOURTH SEMESTER	Credits
AMT 241 Automotive Chassis Service	5
AMT 242 Vehicle Safety Inspection	1
AMT 274 Automotive Air Conditioning Systems and Service	3
AMT 275 Automotive Electrical Accessories Service	3
Open Elective	3
	<u>15</u>

Accreditation: The automotive major is master accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Aviation Maintenance Technician (AC)

Certificate

This curriculum prepares students for employment as airframe and powerplant maintenance technicians. The coursework stresses practical application and troubleshooting of powerplants and airframe structures. This major is approved under Title 14 of the Code of Federal Regulations (CFR) Part 147. As graduates, students will be eligible to take the required examinations for the Airframe and Powerplant Maintenance Certificate.

Career Opportunities: Employment as maintenance technicians for commercial aviation, general aviation, aviation repair stations and manufacturer's services. With technician experience, a graduate may advance to positions as maintenance supervisor, manufacturer service representative, product development technician and accident/equipment failure investigators.

Recommended High School Subjects: Three years of English, one year of algebra and one year of science.

Remediation Strategies: The sequence of remediation will be mathematics, reading, English.

Program Goals: The objective of the Aviation Maintenance Technician major is to prepare students for entry-level aviation maintenance upon successful completion of the written, oral, and practical Federal Aviation Administration (FAA) Examination. The major provides the student a unique combination of theory and practical applications on a wide variety of aircraft.

A graduate of the Aviation Maintenance Technician major should be able to

- prepare FAA maintenance forms accurately.
- locate specific information in various aviation publications.
- read and understand aircraft and powerplant service publications.
- recognize the need for accuracy and thoroughness in work.
- demonstrate professional skills in inspection, maintenance and repair.
- observe and practice safety habits at all times.
- demonstrate correct use of basic hand tools, special tools, and required testing.
- use mathematics in aviation maintenance work.
- list, define, and correctly use aviation maintenance terminology.
- maintain high professional standards - as established by the FAA, the aviation industry and studied in the program - in aviation maintenance work.
- troubleshoot and systematically identify problems in aircraft systems.
- interpret plans and schematics.

FIRST SEMESTER	Credits
AVC 101 Basic Electricity	2.5
AVC 104 Federal Air Regulations, Records and Publications	1.5
AVC 105 Flight Line Servicing and Corrosion Control	2.5
AVC 108 Aircraft Materials, Process, Fluid Lines and Fittings	3.0
AVC 115 Aircraft Basic Science	3.0
AVC 125 Engine Ignition Systems	2.0
AVC 132 Engine Fuel Metering	2.0
MTH 011 Career Mathematics	3.0
	<u>19.5</u>

SECOND SEMESTER		Credits
AVC 116	Turbine Engines	3.5
AVC 128	Engine Induction and Exhaust Systems	1.5
AVC 134	Propellers	3.0
AVC 137	Reciprocating Engine Installation and Operation	3.0
AVC 138	Reciprocating Engine Overhaul	4.0
AVC 144	Aircraft Drawings	1.5
ENL 010	Communications	3.0
		<u>19.5</u>

THIRD SEMESTER		Credits
AVC 177	Engine Cooling, Lubrication and Inspection	2.0
AVC 178	Engine and Airframe Fuel and Fire Protection	1.5
AVC 181	Engine Electrical	3.5
AVC 182	Aircraft Instrument Systems	1.5
AVC 201	Aircraft Electrical	4.0
AVC 205	Aircraft Assembly and Flight Control Rigging	2.0
AVC 207	Airframe Covering, Finishes and Welding	3.0
		<u>17.5</u>

FOURTH SEMESTER		Credits
AVC 208	Aircraft Landing Gear, Hydraulics, Pneumatics and Position Warning	5.5
AVC 209	Sheet Metal Applications	4.0
AVC 210	Composite and Wood Applications	1.5
AVC 212	Rotary Wing Aircraft Applications	1.5
AVC 213	Airframe Inspection	.5
AVC 214	Aircraft Atmosphere Control and Ice/Rain Control	2.0
AVC 215	Navigation and Communication Applications	2.0
		<u>17.0</u>

Accreditation: Approved under Title 14 of the Code of Federal Regulations (CFR) Part 147.

Cabinetmaking and Millwork (CK)

Certificate

Cabinetmaking and Millwork will provide education and skills required for casework design, construction and installation. Courses will include materials specifications, estimating, joinery techniques, millwork, laminate and solid surfaces, finishing, and tool and shop maintenance. Graduates should be qualified to work in all phases of finish carpentry, custom cabinet and millwork fabrication and installation. A great deal of emphasis will be placed on hands-on training in the shop environment.

Career Opportunities: Cabinetmaker, project manager, finish carpenter, pattern maker, cabinet millwork occupations, furniture millwork occupations, fixture maker/installer, independent craftsman, finishing specialist, manufacturing representative, estimator, kitchen salesperson/designer, architectural millwork occupations, industrial specialty millwork occupations, model maker, material/equipment sales, custom furniture builder, systems specialist/designer.

Recommended High School Subjects: One year of algebra and/or geometry.

Remediation Strategies: Students will be required to remediate deficiencies.

Program Goals: The primary objective of the Cabinetmaking and Millwork major is to prepare graduates for employment in all phases of the commercial cabinetmaking industry.

Graduates of this major should be able to

- display the ability to define problems, analyze alternatives, and choose effective solutions to various construction problems encountered in the design and construction of custom cabinetwork and architectural millwork.
- demonstrate advanced abilities in setup and usage of a wide variety of shop equipment.
- list the characteristics of materials, both natural and manmade, and include these characteristics in the process of choosing materials for the construction of various projects.
- demonstrate the ability to select and apply both laminates and solid surface materials.
- analyze and discuss in depth the characteristics of different systems used for construction of cabinets and architectural millwork.
- demonstrate a command of the basic elements of quality design and proportioning.
- apply “form and function” constraints to design and execution of a wide variety of projects.
- systematically plan projects and communicate with others to facilitate ongoing projects.
- estimate costs of material and labor to establish budgets and determine economic feasibility.
- produce and utilize cut lists and working drawings.
- demonstrate advanced skills in production and utilization of a wide variety of joinery techniques.
- produce quality cabinetwork and millwork from conception and design stages through selection of materials, fabrication, finishing, and installation.
- demonstrate the ability to use the metric system.

FIRST SEMESTER		Credits
ARH 102	Basic Architectural Drafting	3
BCT 102	Construction Safety and Equipment	2
BCT 103	Construction Hand and Power Tools	1
BCT 109	Framing Principles	4
BCT 119	Blueprint Reading and Specifications	3
MTH 011	Career Mathematics	3
		<u>16</u>

SECOND SEMESTER		Credits
BCC 236	Interior Finish Materials	4
BCC 247	Interior Trim	5
BCC 250	Computers in Construction	2
BCC 251	Introduction to Home Remodeling	3
ENL 010	Communications	3
		<u>17</u>

THIRD SEMESTER		Credits
CCM 200	Cabinet Materials	3
CCM 211	Cabinet Design, Estimating, and Planning	3
CCM 221	Joinery Techniques	5
CCM 227	Architectural Millwork	5
		<u>16</u>

FOURTH SEMESTER		Credits
CCM 202	Cabinet Hardware	2
CCM 231	Abrasives and Finishes	2
CCM 241	Shop Management and Maintenance	3
CCM 249	Cabinet Construction	5
CCM 257	Installation - Materials and Methods	5
		<u>17</u>



Collision Repair Technician (CL)

Certificate

Students learn to apply advanced auto body techniques and principles in diagnosing damage and prescribing corrective work. The coursework emphasizes the theory and skills of metal and plastic repair, MIG welding, unibody straightening, hazardous-material handling, computer estimating and modern paint systems.

Career Opportunities: Auto body technician in a dealership, independent auto body shop, fleet operation or self-employment.

Recommended High School Subjects: Three years of English, one year of algebra and one year of science.

Remediation Strategies: Deficient students may start the program. The order of remediation will be math, reading, English. Keyboarding will not be necessary due to OFT 101.

Program Goals: The general objective of the Collision Repair Technician major is to give the students the entry-level skills necessary to perform a variety of tasks using modern repair and paint technologies.

A graduate of the Collision Repair Technician major should be able to

- write clear, concise, legible, and accurate repair orders and technical reports.
- diagnose and repair collision damage to sheet metal and plastics.
- diagnose common paint problems and make necessary repairs.
- assess damage to mechanical areas caused by collision.
- perform unibody frame straightening operations.
- understand the health hazards of modern paint systems, proper handling, records maintenance, and protective procedures.
- demonstrate both efficiency and quality in automotive refinishing work.
- demonstrate a responsible attitude toward the collision repair service and manufacturing industry.
- mix and apply modern multi-component paints and paint systems.
- test, adjust, and align modern automotive suspension systems.
- diagnose basic mechanical damage and perform basic removal and installation of affected parts.

FIRST SEMESTER	Credits
ABC 111 Introduction to Auto Body	2
ABC 113 Basic Unibody Repair	3
ABC 114 Introduction to Body and Chassis	5
MTH 011 Career Mathematics	3
WEL 100 Introduction to Welding Processes	3
	16

SECOND SEMESTER	Credits
ABC 121 Introduction to Repair Procedures	5
ABC 122 Basic Refinish	5
OFT 101 Keyboarding and Its Applications	1
ENL 010 Communications	3
SAF 110 Occupational Health and Safety	2
	16

THIRD SEMESTER	Credits
ABC 203 Advanced Unibody Repair	5
AMT 113 Steering and Suspension	3
CSC 110 Introduction to Information Technology	3
Open Elective	3
	14

FOURTH SEMESTER	Credits
ABC 204 Advanced Refinishing	5
ABC 222 Basic Auto Body Mechanics	4
Science Elective	3
Open Elective	3
	15

The Collision Repair program is a member of the I-CAR Industry Training Alliance.

Accreditation: The collision repair major is accredited by the National Automotive Technician's Education Foundation and meets the standards for Automotive Service Excellence.



Computer Applications Technology (CX)

Certificate

Computer Applications Technology prepares students to use computer applications technologies. A broad spectrum of computing applications will be required with extensive "hands-on" experiences. The major also allows for a selection of electives to provide some specialization.

Career Opportunities: Any location where microcomputers are in use could be potential sites for graduates, who will be able to perform jobs using basic word processing, spreadsheet, database, and desktop publishing. They also will be comfortable in stand-alone and networking environments. The elective sequence a student chooses could lead to office positions in different types of businesses and industries (government offices, hospitals, schools, etc.). Finally, students with a technical skill in a noncomputing area (trades, legal, health care) will balance the technical expertise with computer literacy. Small businesses, in particular, need employees who are entirely comfortable with microcomputers and who can begin working on their computer systems almost immediately with little or no worksite training. The graduate should be able to fill the applications needs of the small business; depending upon the skill of the individual, some could assume positions providing applications software training to co-workers.

Recommended High School Subjects: Required high school English and mathematics. Some keyboarding and computer experience is beneficial.

Remediation Strategies: All students entering the major will be tested for English, mathematics, and reading deficiencies. Students will be expected to remediate any deficiencies during their first semester.

Program Goals: The purpose of the certificate in Computer Applications Technology is to prepare students to be able to use a broad spectrum of computer applications in stand-alone and networking environments. Specifically, graduates of this program should be able to

- become familiar with a variety of computer applications over different platforms.
- recognize software applications and how they can be applied to the various work environments.
- apply basic application fundamentals to a variety of situations.
- use problem-solving techniques to build skill in the operation of microcomputer hardware and software.
- communicate effectively in groups.
- demonstrate the proper attitude in the workplace.
- understand ethical and social responsibilities of using computer hardware and software.
- understand basic computer programming concepts.
- understand and apply database concepts to a variety of business environments.
- understand and use electronic spreadsheet applications in different business settings.

FIRST SEMESTER	Credits
CSC 110 Introduction to Information Technology	3
Specified Computer Applications Elective	2
EET 105 Microcomputer Maintenance	1
OFT 111 Keyboarding and Formatting	3
ENL 111 English Composition I	3
MTH 113 Business Mathematics	3
	15

SECOND SEMESTER		Credits
CSC 040	Computer Applications Internship	1
CSC 211	Business Computer Applications Using Spreadsheet	3
CSC 221	Business Computer Applications Using Database	3
	Specified Computer Applications Elective	2
OIS 214	OIS Desktop Publishing	3
OIS 216	Office Network Productivity	1
MGT 230	Business Communications	3
		<hr/> 16

Specified Computer Applications Elective: ABC224, ACC113, BCC250, CAD116, CSC128, CSC140, CSC161, CSC300, MGT110, MGT115, MGT231, MGT241, MGT248, MKT240, OFT125, OFT260, OIS325

NOTE: Students must have the appropriate school permission to enroll in the following elective courses: CSC 300 - Computer Law, Ethics & Society; OIS 325 - OIS Advanced Applications

Construction Carpentry (CN)

Certificate

This curriculum prepares a graduate with job entry competencies in the construction industry, specifically in carpentry and masonry skills. Students develop skills in the correct use of hand tools, portable power tools and portable power equipment. The major includes classroom instruction in construction methods, procedures and materials and an introduction to electrical and plumbing and heating principles and methods. Students gain experience with on-campus and off-campus construction projects under the supervision of qualified instructors. The third semester contains an option of home remodeling or commercial construction, depending on student interest.

Career Opportunities: Apprentice carpenters or masons, with advancement possibilities; employment in plants or factories where building units, components or building materials are made or sold.

Recommended High School Subjects: Mathematics; building trades courses are desired, but not necessary.

Remediation Strategies: Students are required to remediate all deficiencies in the first year. The order of remediation should be reading, math, and English.

Program Goals: The primary objectives of the Construction Carpentry major will prepare graduates with the skills necessary for employment as a tradesperson in the residential and light commercial building industry.

A graduate of the Construction Carpentry major should be able to

- practice safe work habits, identify work hazards, demonstrate responsible attitudes, and produce high quality work.
- demonstrate basic knowledge and skills in the use of the builder's level, transit, and other measuring devices for site preparation and building layout.
- demonstrate basic knowledge and skills in masonry and concrete construction.
- demonstrate basic knowledge and skills in the installation or exterior siding, roofing, trim and millwork, and building insulation.
- demonstrate basic knowledge and skills in the installation of interior finish, floors, walls, and ceilings.
- demonstrate basic knowledge and skills in the installation of doors and interior trim; build and/or install cabinetwork and finish stairways.
- demonstrate basic knowledge and skills of electrical, plumbing and heating, and other trades related to the building construction industry.
- apply carpentry, masonry, electrical, plumbing, heating, and material salvage skills in home remodeling projects.

- demonstrate and apply construction estimation and project management skills.
- demonstrate the basic manipulative skills needed to layout and plan work.
- interpret plans, drawings, specifications, lines, symbols, and abbreviations on working drawings or blueprints.
- demonstrate the ability to layout and erect residential and light commercial structures.
- prepare preliminary architectural working drawings and sketches.
- describe various types of materials and methods used in the construction trade.
- solve building construction problems using mathematics.
- identify the building codes related to all the various aspects of residential building industry.
- look for, secure, and keep a job; understand the factors involved in self-employment and the importance of customer service; develop and work toward personal goals.

FIRST SEMESTER	Credits
BCC 130 Masonry Construction	5
BCT 102 Construction Safety and Equipment	2
BCT 103 Construction Hand and Power Tools	1
BCT 109 Framing Principles	4
BCT 110 Site Preparation and Layout	2
MTH 011 Career Mathematics	3
	<hr/> 17

SECOND SEMESTER	Credits
BCC 124 Roof Construction	5
BCC 140 Brick and Stone Construction	4
BCT 119 Blueprint Reading and Specifications	3
BCT 238 Concrete Construction	3
ARH 102 Basic Architectural Drafting	3
	<hr/> 18

THIRD SEMESTER	Credits
BCC 235 Exterior Finishing	5
BCC 236 Interior Finish Materials	4
BCC 239 Introduction to Commercial Construction	3
or	
BCC 251 Introduction to Home Remodeling	3
ELT 110 Electricity for the Trades	3
ENL 010 Communications	3
	<hr/> 18

FOURTH SEMESTER	Credits
BCC 245 Practical Construction	4
BCC 247 Interior Trim	5
BCC 249 Construction Estimating and Management	3
BCC 250 Computers in Construction	2
PLH 255 Plumbing, Heating and Air Conditioning for the Trades	3
	<hr/> 17



Diesel Technician (DC)

Certificate

Students will practice the skills necessary to maintain diesel-powered highway, industrial, and marine vehicles and equipment. Advanced diesel maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. The

coursework emphasizes the theory and skills of refrigeration, electronic and mechanical fuel injection, chassis maintenance, vehicle inspection, tune-up, engine overhaul, transmission repair, brake service, and handling hazardous waste. Students may enroll in the fall or spring semester.

Career Opportunities: Heavy duty commercial truck technician for truck dealership, independent garage, truck fleet, leasing company, contractor or transport refrigeration technician; field service technician representative for diesel engine manufacturer or distributor.

Recommended High School Subjects: Three years of English, one year of algebra, and one year of science.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Diesel Technician major is to prepare students to service and repair heavy-duty diesel engines in the trucking industry. Students are exposed to all facets of the industry. Graduates are prepared to take the Pennsylvania Vehicle Safety Inspection Examination.

A graduate of the Diesel Technician major should be able to

- diagnose and repair mechanical and electronic fuel injection malfunctions.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- perform vehicle safety inspections as required by state and federal laws.
- overhaul and tune up diesel engines.
- test, adjust, and align truck suspension systems.
- diagnose and repair common malfunctions to brakes, air conditioning, and refrigeration systems.
- interpret schematics and wiring diagrams, test starting, charging, lighting, and accessory systems.
- understand the potential health and safety hazards in the work place and how to properly document and perform corrective action.
- apply basic electronic principles to engine control and data storage.

FIRST SEMESTER	Credits
DSM 113 Tools and Hardware	1
DSM 114 Applied Failure Analysis	1
DSM 115 Diesel Engines	4
DSM 116 Diesel Engines Laboratory	4
DSM 117 Introduction to Hydraulics	1
CSC 110 Introduction to Information Technology	3
MTH 011 Career Mathematics	3
	<u>17</u>

SECOND SEMESTER	Credits
DSM 118 Fuel Systems	2
DSM 120 Basic Electricity	4
DSM 140 Truck Tractor Chassis and Alignment	3
DSM 141 Heavy Duty Brake Systems	2
DSM 142 Power Train and Brake Systems Lab	4
DSM 146 Commercial Truck Power Train and State Inspection	3
	<u>18</u>

THIRD SEMESTER	Credits
DSM 240 Electronic Fuel Systems Operation/Diagnostics	3
DSM 241 Diesel Electronic Systems	2
DSM 242 Diesel Equipment Air Conditioning Systems	2
DSM 246 Allison Transmissions	3
ENL 010 Communications	3
	<u>13</u>

FOURTH SEMESTER	Credits
DSM 258 Vehicle Electronics/Diagnostic Procedures	3
DSM 259 Automated Power Train Products	3
DSM 268 Truck and Tractor Refrigeration Systems	4
DSM 274 Equipment Maintenance Management Open Elective	1
	<u>3</u>
	<u>14</u>

Electrical Occupations (EO)

Certificate

This curriculum offers the skills and theoretical background needed for a variety of careers. Graduates may work as electricians in electrical construction or in electrical maintenance where they would work with electrical machinery. They should also be qualified to develop the circuitry used to install and troubleshoot electrical and electronic machine-controlled equipment and systems. The major emphasizes electrical and electronic basics and the development of skills through laboratory practice. Courses in communication, math, and science improve students' employment prospects.

Career Opportunities: Industrial maintenance, electrical troubleshooter, power company employee, construction union apprentice, electrical tester or inspector; self-employment in residential and commercial wiring.

Recommended High School Subjects: One year of general math, one year of basic algebra, and one year of science. One year of advanced algebra is desirable.

Remediation Strategies: Students will be required to remediate deficiencies.

Program Goals: This major prepares graduates for jobs in residential, commercial or industrial electrical settings. This major should prepare the student to

- demonstrate technical skills in a variety of electrical fields, apply accepted safety standards, and meet work quality standards.
- demonstrate and apply knowledge in electrical theory and mathematics in the construction and operation of electrical systems.
- use and care for electrical tools and materials and demonstrate the ability to requisition these items from a stockroom or supplier.
- read and develop blueprints and use this information in performing installation, which comply with the National Electrical Code.
- interpret ideas and develop plans through communicating with others.
- operate, maintain, and repair rotating electrical machines.
- demonstrate working knowledge of electrical construction procedures in residential, commercial, and industrial installations.
- demonstrate the use of troubleshooting equipment and standard testing procedures.
- set up ladder relay logic systems and convert them to electronic programmable control systems.
- operate and maintain electrical and electronic programmable control systems.
- demonstrate knowledge of basic electronic control circuitry, devices, and schematic diagrams.
- troubleshoot microprocessor-based industrial control devices such as robots.

FIRST SEMESTER	Credits
ELT 116 Construction Lab I-Residential	5
ELT 117 Applied Direct Current Fundamentals	6
ENL 010 Communications	3
MTH 124 Technical Algebra and Trigonometry I	3
	<u>17</u>

SECOND SEMESTER	Credits
ELT 120 Construction Lab II-Commercial	5
ELT 126 Applied Alternating Current Fundamentals	6
ELT 127 Motor Maintenance and Repair	3
ELT 113 Accident Prevention	2
	<u>16</u>

THIRD SEMESTER	Credits
ELT 237 Construction Lab III - Industrial	4
ELT 231 Industrial Motor Control	6
ELT 238 Basic Electronics for Industry	5
ELT 128 Electrical Drawing and Print Reading	2
	<u>17</u>

FOURTH SEMESTER		Credits
ELT 240	Construction Lab IV-Practical Experience	3
ELT 243	Programmable Control	4
ELT 246	Electrical Machinery Analysis	3
ELT 247	Industrial Control and Troubleshooting	4
		<u>14</u>

Heavy Construction Equipment Technician (HC)

Certificate

This curriculum provides students with the skills necessary to maintain, repair and operate several types of heavy construction equipment. Advanced equipment maintenance techniques and principles are applied in diagnosing malfunctions and prescribing corrective action. Specific instruction in equipment systems includes engine overhaul, manual transmission repair, chassis maintenance, air conditioning repair, hydraulic component testing and overhaul, hydrostatic and powershift transmission repair, electrical troubleshooting, and preventative maintenance. The operation component emphasizes the safe operation of common heavy construction equipment and proper site preparation and survey. Students may elect to take the operation courses over the summer term.

Career Opportunities: Heavy construction equipment technician/operator for a heavy construction equipment dealership, mine, quarry, farm equipment dealership, forestry equipment dealer, leasing company or contractor; field service/sales representative for an equipment or engine distributor.

Recommended High School Subjects: Three years of English, one year of algebra, and one year of science.

Remediation Strategies: Triple deficient students must remediate prior to starting the major. All students must remediate by the first year. The order of remediation will be math, reading, and English.

Program Goals: The objective of the Heavy Construction Equipment Technician major is to prepare students to service, repair and operate heavy construction equipment. Instruction is broad based and exposes the student to all facets of the industry.

A graduate of the Heavy Construction Equipment Technician major should be able to

- practice approved safety procedures in various work situations.
- read and interpret equipment manuals and write clear, accurate, and complete service reports.
- demonstrate the correct use of basic hand tools, special tools, and testing equipment.
- describe the operation of diesel engines, overhaul a diesel engine, and demonstrate skills in problem solving, maintaining, and repairing diesel engines.
- troubleshoot, maintain, adjust, and repair basic chassis systems including standard transmissions, clutches, drive lines, braking systems, tracks, steering systems, and differentials using problem solving skills.
- identify, troubleshoot, and repair various types of hydraulic systems, hydrostatic and powershift transmissions, torque converters, fuel systems, and electrical systems using problem solving skills.
- demonstrate the proper use of transits, hand levels, lasers, and blueprints in construction layouts.
- explain the principles of planned preventative maintenance and the economic benefits of proper equipment maintenance scheduling.
- demonstrate the safe and proper operation of representative examples of heavy construction equipment and practice accepted earth-moving techniques used in industry.

FIRST SEMESTER		Credits
DSM 113	Tools and Hardware	1
DSM 114	Applied Failure Analysis	1
DSM 115	Diesel Engines	4
DSM 116	Diesel Engines Laboratory	4
DSM 117	Introduction to Hydraulics	1
MTH 011	Career Mathematics	3
		<u>14</u>

SECOND SEMESTER		Credits
DSM 120	Basic Electricity	4
DSM 139	Hydraulic Components	5
DSM 141	Heavy Duty Brake Systems	2
DSM 142	Power Train and Brake Systems Lab	4
DSM 145	Construction Equipment Chassis	1
DSM 147	Principles of Power Trains	2
DSM 148	Heavy Equipment Operating Methods	1
		<u>19</u>

THIRD SEMESTER		Credits
DSM 220	Site Engineering	2
DSM 221	Operation of Crawler Tractors	2
DSM 222	Operation of Ditch and Trenching Equipment	2
DSM 223	Operation of Hauling and Finish Grade Equipment	2
ENL 010	Communications	3
CSC 110	Introduction to Information Technology	3
		<u>14</u>

FOURTH SEMESTER		Credits
DSM 118	Fuel Systems	2
DSM 241	Diesel Electronic Systems	2
DSM 242	Diesel Equipment Air Conditioning Systems	2
DSM 274	Equipment Maintenance Management	1
DSM 283	Specialized Hydraulics	6
	Open Elective	3
		<u>16</u>

Machinist General (MG)

Certificate

This curriculum offers training on machine tools commonly used in most shops. It emphasizes practical machine skills. Classroom analysis of various jobs and machine operations increases the student's capabilities as a machinist. General mathematics, science, and communications skills are included to prepare students to work with technical advances in the machining industry.

Career Opportunities: Machinist, machine repair mechanic, setup person for production line work, skilled toolroom mechanic, technical sales, manufacturing supervision, or machine shop ownership.

Recommended High School Subjects: Industrial arts or vocational machining, or metal working courses, introductory blueprint reading, and technical math.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Machinist General major is to prepare the student for a variety of positions in the machining industry. Specifically, this major should prepare the student to:

- demonstrate safe work habits and be conscious of safety when operating machine tools and equipment.
- demonstrate working knowledge of blueprint reading; work from sketches of parts.
- develop and use mathematical formulas to compute coordinates and solve gearing and threading problems.

- apply basic knowledge of physics mechanics to machine tool problems such as power transmission, machining, etc.
- operate and set up basic machine tools.
- operate machine tools to produce gears, threads, and gages.
- operate and set up numerically controlled, electrical discharge, and electrical chemical machines.
- operate various types of abrasive cutting machines and practice heat treating of metals; for example, hardening, annealing, and carburizing.
- prepare and revise technical papers used in operating machine tools and machining procedures.

FIRST SEMESTER	Credits
MTT 113 Basic Metalworking I	3
MTT 114 Basic Metalworking II	2
MTT 116 Lathe Applications I	3
MTT 117 Lathe Applications II	2
CSC 110 Introduction to Information Technology	3
MTH 124 Technical Algebra and Trigonometry I	3
	<hr/> 16

SECOND SEMESTER	Credits
CIM 101 Basic Machine Tool Programming	3
MTT 123 Machining Processes	4
MTT 126 Metrology/Quality Control	5
MTH 125 Technical Algebra and Trigonometry II	3
SAF 110 Occupational Health and Safety	2
	<hr/> 17

THIRD SEMESTER	Credits
CIM 123 CNC Programming and Machining	4
MTT 210 Tool Technology	5
ENL 010 Communications	3
PHS 103 Physics Survey	3
	<hr/> 15

FOURTH SEMESTER	Credits
CIM 205 Electrical Discharge Machining	3
CIM 220 CAD/CAM	3
MTT 215 Abrasive Machining and Heat Treatment	5
Open Elective	3
	<hr/> 14

Co-op Options: Alternating, Parallel, Summer

Additional Information: National Institute of Metalworking Skills (NIMS) Certification

Nurse/Health Care Paralegal Studies (LX)

Certificate

This program will accept students who have an associate or baccalaureate degree in nursing or other Health Sciences field, such as Physician Assistant, Occupational Therapy and Radiography, or who are working on a degree in Applied Health Studies (BAH). The certificate program provides an introduction to the legal system and the role of the paralegal, along with an emphasis in legal research, writing and ethics. Additional courses expose students to specific practice areas where medical knowledge is particularly appropriate.

Career Opportunities: Nurse/Health Care Paralegals are hired by law firms, insurance companies, risk management departments, and government agencies. They are especially suited to any legal specialty field requiring medical expertise, such as medical malpractice, personal injury litigation, insurance, risk management, elder law, workers' compensation and disability law. Some work independently, offering their services as consultants and expert witnesses.

Remediation Strategies: Because students enter the program with a degree, this is not applicable.

Program Goals: The purpose of the Certificate in Nurse/Health Care Paralegal Studies is to provide students with a nurse/health care background an introduction to our legal system and the role of the paralegal, along with an emphasis in legal research, writing and ethics. Specifically, the certificate program should prepare students to

- gain an understanding of the interrelationship between the health care, insurance, and legal fields and the goals of the American Association of Legal Nurse Consultants (AALNC).
- learn about the role of the nurse/health care paralegal in a variety of legal fields and how to gain employment in a legal environment or establish an independent practice.
- learn the basic principles of the American legal system, including the sources of law, jurisdiction, civil case procedure, and the structure of state and federal court systems.
- learn the substantive and procedural law in various legal areas involving medical issues, including personal injury, medical malpractice, products liability, risk management, insurance, workers' compensation, and disability.
- learn how to conduct effective factual and legal research and prepare legal correspondence, memoranda, documents, and exhibits.
- develop skills in various aspects of civil case management, discovery, and trial preparation, including analyzing and summarizing medical documents and depositions transcripts for use in legal matters.
- develop skills necessary to testify in legal proceedings, negotiate on behalf of a client, and interview clients and witnesses.
- learn the ethical rules and standards of practice pertaining to the paralegal and develop a framework for resolving ethical dilemmas.
- develop an appreciation for lifelong learning and the need for maintaining currency in the medical and legal field.

FIRST SEMESTER	Credits
LAS 100 Introduction to Paralegal Studies	3
LAS 210 Civil Litigation	3
LAS 290 Risk Management and Insurance	3
Specified LX Legal Elective	3
	<hr/> 12

SECOND SEMESTER	Credits
LAS 150 Legal Research and Writing	3
LAS 371 Legal Ethics	3
Specified LX Legal Elective	3
	<hr/> 9

Specified LX Legal Elective: LAS120, LAS270, LAS280, LAS300, LAS360, LAS410

Plumbing (PH)

Certificate

This curriculum includes the basic theories of plumbing, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. Students develop skills in all types of plumbing repair work used in residential, institutional, and commercial applications. The major also provides training in the fundamentals of communication and mathematics.

Career Opportunities: Plumbing installation, industrial maintenance, public utilities service, machine work and shipbuilding industries.

Recommended High School Subjects: One year of technical math.

Remediation Strategies: Students will be required to remediate deficiencies.

Program Goals: The goal of this major is to prepare students for entry-level jobs in plumbing and its related fields.

Graduates of this major should be able to

- demonstrate good work habits and meet accepted safety standards
- use hand and power tools of the trade
- identify piping materials and install them using proper connections
- use and apply trade terms and technical data
- read and interpret blueprints, specifications, and codes as they apply to the trade
- install, maintain, and repair plumbing systems and keep up with the new developments in the field
- apply basic knowledge and skills of electrical work to install, repair, maintain, and troubleshoot electrical controls used in plumbing
- apply energy conservation measures to plumbing installations

FIRST SEMESTER	Credits
ELT 250 HVAC/R Electricity	5
MTH 011 Career Mathematics	3
or	
MTH 124 Technical Algebra and Trigonometry I	3
PLH 111 Plumbing Skills-Residential	5
ACR 111 Introduction to Refrigeration	5
	<hr/> 18

SECOND SEMESTER	Credits
PLH 121 Plumbing Skills-Commercial	5
PLH 123 Practical Plumbing Experience	3
BCT 254 Carpentry for the Trades	2
ACR 120 Blueprints and Specifications	2
WEL 101 Acetylene/Electric Welding	2
ENL 111 English Composition I	3
or	
ENL 010 Communications	3
	<hr/> 17

Students completing the plumbing program have the option of transferring into the HVAC Technology degree major. This additional year of study in the HVAC major can expand skills in air conditioning and heating. Note: Students planning to transfer to HP should take ENL 111, MTH 124, and 1 credit elective Fitness & Lifetime Sports (FIT) in the second semester. Students are also encouraged to take MTH 124, if placement tests indicate readiness.

Practical Nursing (NU)

Certificate

This three-semester curriculum is designed to prepare graduates to enter the field of nursing or to continue their education at the associate or baccalaureate level. Graduates who successfully complete the program are eligible to take the Practical Nursing licensing exam (NCLEX-PN) and work under the direction of a licensed professional nurse, licensed physician or dentist.

Practical Nursing education is a process through which the student has the opportunity to acquire knowledge, skills, attitudes and judgment in order to provide safe nursing care. Classroom instruction in theory and basic nursing skills is provided on campus; clinical experiences, viewed as an extension of theoretical preparation, are obtained at area hospitals, nursing homes and health care agencies. Under the guidance of College faculty, students gain valuable experience in the care of clients of all ages.

Practical Nursing students/graduates have the opportunity to pursue study toward an advanced degree in nursing. Students interested in continuing their nursing education are advised to complete a fourth semester at the College. Fourth semester courses should be selected

based on the requirements of the nursing program they plan to pursue, and might include chemistry, microbiology, sociology, statistics, English Composition II, developmental and/or abnormal psychology, and fitness and lifetime sports.

Practical nursing students/graduates also have a unique opportunity to earn an associate degree in Health Arts. Refer to the Health Arts major (in this catalog) for additional information.

Any deficiencies identified from placement testing must be remediated prior to admission. Students enrolled in the major must earn a minimum final grade of "C" in each of their nursing courses. Failure to do so will result in termination from the major.

The Practical Nursing major is approved by the Pennsylvania State Board of Nursing.

Career Opportunities: Graduates of the major find jobs in a variety of health care settings, such as: hospitals, extended care facilities, home health care agencies, state and federal health-related facilities, the armed services, private duty nursing, and in physician and dentist office settings.

Recommended High School Subjects: Three units of science (at least 1 unit should be Biology with a lab); Math every year, including Algebra II; English and Social Studies every year; Develop good oral and written communication skills; Score at least proficient on the State PSSA assessments in Writing, Mathematics, and Reading

Remediation Strategies: All developmental needs must be cleared before admission to this major will be considered.

Transfer Procedures: Graduates of this major may have the opportunity to advance into the College's associate of applied science in Nursing major, continue with Health Arts, and may transfer into the College's Applied Health Studies (BAH) major.

Program Goals: After successful completion of the course of study, the graduate of the Practical Nursing major of the Pennsylvania College of Technology will have the ability to:

- incorporate scientific knowledge, mathematical skills, and technical skills necessary to provide basic nursing care to clients of all ages under the direction of a registered professional nurse, licensed physician, or dentist.
- employ effective written, verbal, and technical communication skills in interactions with clients, families of clients and other members of the health care team.
- recognize the worth of each person by adapting nursing measures to clients of diverse ages, religions, and socioeconomic, ethnic, or cultural backgrounds.
- implement established teaching plans to promote and maintain optimal health for the client.
- demonstrate accountability of his or her own ethical and legal practice.
- use available regional and technology-supported educational opportunities for continued personal and professional growth.

FIRST SEMESTER	Credits
NUR 153 Development of the Caregiver Role	7
NUR 154 Introduction to Practical Nursing Concepts	7
BIO 115 Human Anatomy and Physiology I	4
ENL 111 English Composition I	3
	<hr/> 21

SECOND SEMESTER	Credits
NUR 163 Nursing Care of the Adult I	8
NUR 164 Nursing Care of the Adult II	8
BIO 125 Human Anatomy and Physiology II	4
Math Elective (124 or Higher)	3
	<hr/> 23

THIRD SEMESTER	Credits
NUR 173 Nursing Care of the Adult III	6
NUR 174 Maternal Child Health Nursing	6
PSY 111 General Psychology	3
Open Elective	1
	<hr/> 16

Special Admissions Requirements: Students must meet special admission requirements prior to being accepted. Please refer to a listing of special Health Sciences requirements in the Admissions section of this catalog.

Notice of Conviction: Child abuse clearance and criminal background checks may be required by some agencies involved in fieldwork and/or capstones. Agencies can bar students from their sites if a criminal record exists or a positive drug test is noted. By virtue of contract for Penn College students to be at clinical sites, agencies have the right to ask for random drug testing.

Inability to gain official or fieldwork or intern education experiences results in inability to meet program objectives and outcomes.

For additional clarification, students can speak with their program director.

The Pennsylvania State Board of Nursing advises that a drug related conviction and/or conviction of a felonious act might result in denial and/or revocation of a license to practice nursing.

NUR 153 - At the completion of NUR 153, the student will be eligible to take the state nurse aide competency exam. If successful, the student will be enrolled on the PA Nurse Aide Registry.

NUR 154 - Students who have Pennsylvania registration as a Nurse Aide, CPR Certification, have verification of work experience as a Nurse Aid totaling 1000 hours over the past three years, and have letter of reference from their employer; and have met the educational requirements for admission to the Practical Nursing Program, may receive credit for NUR 153 when they enroll in and successfully complete NUR 154.

Theory - 640 Hours, 2:5 Ratio; Practicum - 960 Hours, 3:5 Ratio; Total - 1600 Hours

In accordance with the Practical Nurse Law, Act of 1955, P.L. 1211, No. 376 as amended, the Pennsylvania Board of Nursing shall not issue a license to an applicant who has been convicted of a felonious act prohibited by the Act known as "The Controlled Substance, Drug, Device, Cosmetic Act" or convicted of a felony relating to a controlled substance in a court of law of the United States or any other state, territory or country unless at least ten (10) years have elapsed from the date of conviction.

Welding (WE) Certificate

This curriculum offers practical skills, training, and welding with theory and practice in oxy-fuel welding, inert gas shielded metal arc welding, flux-core arc welding, shielded metal arc welding, non-destructive testing and quality assurance, and CNC plasma cutting.

Career Opportunities: This certificate provides individuals with a wide array of skills applicable to construction welding, shipbuilding, fitting, industrial and production welding.

Recommended High School Subjects: Industrial arts or vocational welding or metalworking courses, introductory blueprint reading, and technical math.

Remediation Strategies: Students should remediate any deficiencies prior to enrollment. It is recommended that students remediate deficiencies in the following order of priority: mathematics, English, reading.

Program Goals: The purpose of the Welding major is to prepare the student for a variety of positions found in the welding industry. Specifically, this major should prepare the student to

- weld safely in shop and field operations.
- work safely and avoid practices that are unsafe to others.
- weld using oxy-fuel, electric and inert gas shielded methods.
- distinguish the types of welding power sources, their characteristics, uses, and limitations.
- inspect welding jobs using visual, destructive, and non-destructive testing methods.
- construct weldments from sketches, blueprints, or verbal instructions.
- interpret welding symbols.
- select the proper welding process, procedure, supplies, etc., based on cost

limitations.

- identify ferrous and non-ferrous metals.
- test the physical and mechanical properties of metals, as related to weldability.
- follow welding qualification test/procedures according to specifications of the AWS, ASTM, API, and ASME codes.

	Credits
FIRST SEMESTER	
WEL 113 Oxy-Fuel Welding and Cutting I	2
WEL 114 Shielded Metal Arc I	2
WEL 115 Oxy-Fuel Welding and Cutting II	2
WEL 116 Shielded Metal Arc II	2
EDT 107 Blueprint Reading for Welders	2
SAF 110 Occupational Health and Safety	2
MTH 011 Career Mathematics	3
or	
MTH 124 Technical Algebra and Trigonometry I	3
	15

	Credits
SECOND SEMESTER	
WEL 120 Gas Metal Arc I	2
WEL 123 Gas Tungsten Arc I	2
WEL 124 Gas Metal Arc II	2
WEL 129 Gas Tungsten Arc II	2
ENL 010 Communications	3
CSC 110 Introduction to Information Technology	3
	14

	Credits
THIRD SEMESTER	
WEL 210 Flux Cored and Sub-Arc I	2
WEL 213 Gas Tungsten Arc III	2
WEL 214 Flux Cored and Sub-Arc II	2
WEL 219 Gas Tungsten Arc IV	2
WEL 240 Basic CNC Programming	3
QAL 237 Non-Destructive Testing I	3
	14

	Credits
FOURTH SEMESTER	
WEL 230 Shielded Metal Arc III	2
WEL 233 Shielded Metal Arc IV/Pipe Welding	2
WEL 234 Shielded Metal Arc V	2
WEL 239 Shielded Metal Arc VI/Pipe Welding	2
QAL 247 Non-Destructive Testing II	3
Directed Welding Elective	3
Open Elective	3
	17

Directed Welding Elective: WEL100, WEL130, WEL247, WEL248, WEL250

Additional Information: American Welding Society (AWS) Certification

COMPETENCY CREDENTIALS

Purpose: The competency credential provides specialized training programs to respond to needs of individuals, business and industry. The credential offers formal recognition for competence in an area of specialization. Each credential is equivalent to no more than one semester of full-time college work.

Structure: Competency credentials consist of nine to 18 credits.

An **Individual Competency Credential** is developed to meet a student's personal goals. Advisors work with the student to develop a planned sequence of courses.

Standard Competency Credentials have been developed to provide training in well-established areas for professional upgrading or retraining. Standard Competency Credentials are listed in this Catalog.

Admission Requirements

Admission: Apply for admission through the Admissions Office. Some students may be asked to take placement tests to assure readiness for the competency credential.

Admission Fee: At the time of acceptance into the competency credential, an admission fee equal to one credit hour of Pennsylvania resident fees (*tuition plus activity fees*) will be charged.

Previous Coursework: Courses that have been completed at the time of petition can be used to fulfill the requirements of the standard competency credential up to a maximum of one-third of the total credits within the credential. Previously completed coursework will not transfer into an individual competency credential—all coursework must be new.

To develop an Individual Competency Credential, contact the Dean of the school that houses similar courses/programs.

Completion Requirements

1. Students must have completed the recommended course of study as set forth in the approved plan.
2. Students must receive a "C" in each course included in the competency credential.
3. Students must have completed courses within the competency credential within three years.
4. Students must have resolved all financial obligations to the College.
5. Students must have successfully passed the competency evaluation.

Competency Evaluation: Upon completion of coursework, the student will take a comprehensive competency evaluation consisting of either an examination, a performance assessment or a portfolio assessment.

Competency Re-evaluation: Students who do not pass the competency examination will complete a re-examination before the credential will be awarded. A fee of \$25 will be charged for each re-examination. The student may be required to prepare for the re-examination by repeating the particular course, independent study or completion of other supplemental work.

A competency credential document will be awarded by Academic Affairs. The College transcript will include a notation indicating that the student has completed a competency credential.

Appropriate courses earned in the competency credential may be applicable toward other baccalaureate degree, associate degree and certificate programs at the College.

Construction Equip. Operation (005)

Competency Credential

This competency credential delivers a set of operational skills to those employees within the heavy construction equipment industry who need retraining. The credential will be offered as part of the College's outreach efforts in major metropolitan areas of the state, where and as the industry identifies need. NOTE: Previous industry experience required.

	Credits
DSM 148 Heavy Equipment Operating Methods	1
DSM 220 Site Engineering	2
DSM 221 Operation of Crawler Tractors	2
DSM 222 Operation of Ditch and Trenching Equipment	2
DSM 223 Operation of Hauling and Finish Grade Equipment	2
	9

Contact: School of Natural Resources Management

Diagnostic Medical Sonography (019)

Competency Credential

The competency credential for sonography will be a combination offering whereby a student can take the coursework for credit and apply it to the bachelor of science degree in Applied Health Studies, or as non-credit. The non-credit will be offered in conjunction with the Technology Transfer Center (TTC). Courses will take place on weekends.

This competency credential will prepare the practitioner to take certification exams (registries). To be eligible for the competency credential a student will have to document 1500 hours of clinical practice, be a registered radiographer, a practitioner of sonography who is seeking certification eligibility or senior radiography student.

Unique Features: Courses will primarily be offered on weekends to accommodate practitioners. The most advanced ultrasound equipment will be made available for hands-on instruction.

Prerequisite skills: Interested students will need to demonstrate knowledge and document experience in ultrasound and or medical radiography to be eligible for course selection. The director of Radiography will assess the aforementioned criteria.

	Credits
SON 301 Introduction to Sonography	1.11
SON 302 Ultrasound Physics	3.00
SON 303 Abdominal Sonography	2.11
SON 304 Vascular Sonography	3.11
SON 305 Obstetrical and Gynecological Sonography	3.11
SON 306 Neurosonography	1.11
	13.55

Contact: School of Health Sciences

Dining Room Service (007)

Competency Credential

The purpose of establishing this competency credential is to teach and provide to the student the basic skills to be both imminently and immediately employable and trainable to meet an employer's specific job needs.

	Credits
FHD 118 Sanitation	1
FHD 133 Tableservice	2
FHD 134 Tableservice Practicum	1
FHD 135 Wine and Beverage Management	2
FHD 136 Wine and Beverage Practicum	1
FHD 255 Advanced Dining Room Management	3
	10

Contact: School of Hospitality

Financial Planning (001)

Competency Credential

The competency credential in Financial Planning is designed to provide a broad background in financial planning for those students who desire to become a Certified Financial Planner (CFP). Students are awarded a certificate of participation after completing the six required courses for the program. Students completing the competency credential in Financial Planning are eligible to sit for the CFP Certification Examination. Prior to licensing, candidates also must provide evidence of financial planning work related experience, sign an affidavit disclosing prior business conduct, and agree to adhere to the CFP Board's Code of Ethics and Professional Responsibility. For more information on obtaining the CFP license, see the program coordinator.

	Credits
FIN 305 Fundamentals of Financial Planning	3
FIN 310 Principles of Insurance	3
ACC 331 Income Taxation of Individuals	3
FIN 320 Investments	3
FIN 420 Estate Planning	3
FIN 430 Retirement Planning and Employee Benefits	3
	18

Required prerequisites ACC 112 Accounting I and ACC 122 Accounting II or ACC 113 Introduction to Financial Accounting. Additional recommended prerequisites: FIN 220, ECO 111, ECO 112, MGT 230, MGT 231, MGT 241, MGT 315, CSC 110, MTH 160.
Contact: School of Business & Computer Technologies

Motorsports Service Technician (002)

Competency Credential

This series of courses will prepare the student for entry-level employment as a service technician in the motorsports field. Many of the components and systems used in racecars are substantially different than those used on production cars. The training given in these courses will expose the student to the parts, systems and techniques used for racecar service and consultation.

	Credits
AMT 255 Dynamometer Testing	3
AMT 256 Engine Machining	1
AMT 258 Performance Chassis Modifications	3
AMT 259 Introduction to Race Car Construction	2
	9

Contact: School of Transportation Technology

Nanofabrication Technology (018)

Competency Credential

	Credits
EET 260 Semiconductor Industry Equipment and Materials Handling Procedures (PSU: ESC211)	3
EET 261 Thermal Processing: Oxidation, Diffusion, Ion Implementation & Epitaxy (PSU: ESC212)	3
EET 262 Thin Film Deposition and Etching (PSU: ESC213)	3
EET 263 Lithography for Nono- and Microfabrication (PSU: ESC214)	3
EET 264 Interconnects, Planarization, and Packaging (PSU: ESC215)	3
EET 265 Process Measurements, Material Characterization and Device Testing (PSU: ESC216)	3
	18

Contact: School of Industrial & Engineering Technologies

Professional Baking (013)

Competency Credential

The purpose of establishing this competency credential is to teach and provide to the student the basic skills required to be both imminently and immediately employable and trainable to meet an employer's specific job needs.

	Credits
FHD 118 Sanitation	1
FHD 137 Introductory Baking	3
FHD 208 Principles of Quantity Baking	6
FHD 279 Baking and Pastry Arts Internship	1
FHD 203 Cakes, Pastries and Desserts	3
Professional Baking Elective	3
	17

Professional Baking Elective: FHD105, FHD108, FHD138, FHD141, FHD270

Contact: School of Hospitality

Professional Cooking (014)

Competency Credential

The purpose of establishing this competency credential is to teach and provide to the student the basic skills required to be both imminently and immediately employable and trainable to meet an employer's specific job needs.

	Credits
FHD 108 Foundations of Food Preparation	4
FHD 118 Sanitation	1
FHD 269 Culinary Internship	1
Professional Cooking Elective	4
	10

Professional Cooking Elective: FHD105, FHD137, FHD138, FHD141, FHD206, FHD258, FHD277

Contact: School of Hospitality

Sawmilling and Wood Handling (016)

Competency Credential

This competency credential is being offered upon request from industry and graduates of the Forest Technology curriculum. Participants will have an opportunity to operate an on site circular sawmill and be directly involved in the processing of lumber and wood products. A unique feature is that the competency credential program will be operated as if it were a business. All courses, including lab experiences, will be interrelated. Prerequisites: Forest Technology students must graduate before electing to take the fifth semester sawmilling and wood handling competency credential. Industry applicants need to have at least one year of experience.

	Credits
FOR 230 Sawmilling	3
FOR 238 Lumber Drying	3
FOR 240 Production Management	3
FOR 241 Lumber and Log Grading	3
	12

Contact: School of Natural Resources Management

Tree Care (017)

Competency Credential

The competency credential is designed for individuals who are working in the tree care business. Combined with field experience, the student develops knowledge of tree identification, management safety, plant health care, and developing plant health care programs as found in the tree care business. Prerequisites: one year work experience in arboriculture, forestry, or complete two semesters in an appropriate field.

	Credits
URF 220 Arboriculture Safety and Equipment	3
URF 250 Arboriculture II	4
URF 260 Inventory and Management of Urban Forests	3
URF 270 Integrated Pest Management	4
	14

Contact: School of Natural Resources Management



Course Descriptions



This section provides the following course information:

- General Education elective choices are sorted by academic discipline (*students who need a Humanities course, for example, refer to the courses listed under the “Humanities” heading to identify options*).
- The Special Course Usage List identifies those courses that satisfy specific graduation requirements for baccalaureate majors and a few associate degree majors.
- Course Descriptions provide information on credit value, prerequisite and corequisite requirements and course availability. The listing is alphabetic by academic discipline. Each course has an alphanumeric code used on student schedules, transcripts and profiles.

Access our online catalog at www.pct.edu
for the most current information.

DISTANCE LEARNING

Through Distance Learning, Penn College provides individual classes and bachelor degree-completion programs to a broad constituency of students, office professionals, non-traditional students and senior and retired citizens. The instruction can be delivered to various receiver sites – at home, in the office, or at specific, partner sites in Pennsylvania. Students, for whom convenience may be a crucial factor in receiving college credit, can earn degrees by a variety of methods including videotape, CD-ROM, or on-line.

Four degree-completion programs currently exist for students who have attained a two-year associate degree in selected program areas. Students may complete a bachelor’s degree in Applied Health, Automotive Technology Management, Business Technology Management and Dental Hygiene. Information regarding the specific requirements of degree programs and related classes may be obtained from the Office of Distance Learning.

The following majors are available through Distance Learning:

Bachelor Degree in Applied Health (BAH)

Bachelor Degree in Automotive Technology Management (BAM)

Bachelor Degree in Business Technology Management (BTM)

Bachelor Degree in Dental Hygiene (BHM or BHP)

COURSES

COURSE DESCRIPTIONS

Courses are listed alphabetically according to a three-letter identification code followed by a course number.

Courses Numbered	Description
001-009	Developmental Coursework. Designed to prepare students for their “college level” work. These courses cannot be used to satisfy graduation requirements, but are mandated if indicated by placement tests.
010-099	Career Certification Coursework. Courses used only in certificate programs. They are designed to prepare the student for a career opportunity.
100-299	Degree Level Coursework. Courses usually will be taken by students during their first 62 credits.
200	Degree Level Transfer Course that does not parallel any offered Penn College course.
299	Special Topics. Courses that are unique to a given semester and not part of a major. Course usage should be verified before enrollment.
300-399	Upper Level Undergraduate Coursework. Courses can be both upper-level (primarily junior/senior year) courses in the major and support courses outside the major.
400-499	Upper Level Undergraduate Coursework. Courses are offered as senior-level coursework in baccalaureate degrees.

Credits

The number given after the course description shows the number of credits awarded for the course. The first number in parentheses shows the number of lecture hours per week. The second number, which appears after the dash, shows the number of laboratory or shop hours per week.

Prerequisite and Corequisite Courses

Prerequisite and co-requisite courses are listed in italics at the end of the course description. Prerequisites are courses that must be completed before enrolling in the course. Corequisites are courses that must be taken prior to or concurrent with enrollment in a course.

ELECTIVES

Certain majors allow students to meet part of their requirements by selecting courses that meet their particular interests or needs. Open electives, which offer the broadest range of choice, may be chosen from any content area, including the students’ major area. General electives, which offer a slightly narrower choice, may be selected from any content area except for students’ major area of study. These general electives help broaden students’ perspective and skills.

DEFINITIONS OF ELECTIVES

Open elective—Certificate students may take any course that is not a developmental course; associate and baccalaureate students may take any course that is numbered 100 or higher.

General elective—Any coursework outside the student’s major area which meets the numbering criteria mentioned above.

CORE COURSES/ELECTIVES

All majors, both degree and certificate, have course requirements that respond to the need for general skills for life enrichment and career advancement. These skills relate to Art, Communications, Computer Science, Fitness, Foreign Language, Humanities, Mathematics, Science and Social Science. Specific courses according to these groupings follow.

Art Elective/Special Course Usage

ABC 181 - Auto Graphics
 ACH 112 - Architectural History
 ART 110 - Basic Interior Design
 ART 122 - Painting
 ART 125 - Art History: Ancient through 15th Century
 ART 135 - Art History: 16th through 20th Centuries
 ART 140 - Ceramics
 ART 180 - Drawing
 ART 220 - Ceramics II
 ART 223 - Painting II
 ART 330 - Modern Art and the Contemporary Image
 ENL 235 - Creative Writing
 HRT 260 - The Art of Floral Design
 MCM 152 - Introduction to Cinema
 MUS 111 - Introduction to Music
 PHO 101 - Black-and-White Photography
 PHO 210 - Fine-Art Photography

Communication Elective

Skill areas:

comprehension, analysis and synthesis of written material
expression of concepts in writing
application of revision and proofreading techniques
expression of concepts orally
comprehension of nonverbal communication
communication in a team atmosphere
application of active listening skills
utilization of resource materials to support opinion
demonstration of systematic planning skills
application of time management skills

ENL 010 – Communications (for certificate programs only)
 ENL 111 - English Composition I
 ENL 112 - Technical Communication: Introduction to the Profession
 ENL 121 - English Composition II
 ENL 201 - Technical and Professional Communication
 ENL 235 - Creative Writing
 ENL 261 - Writing Nonfiction
 ENL 301 - Advanced Technical Communication
 ENL 321 - Rhetoric of Persuasion
 ENL 330 - Language, Writing and Signs
 ENL 351 - Document Design
 ENL 421 - Technical and Scientific Editing
 SPC 101 - Fundamentals of Speech
 SPC 201 - Interpersonal Communication
 SPC 203 - Oral Communication for Business and Professions
 SPC 301 - Organizational Communication
 SPC 302 - Intercultural Communication
 SPC 303 - Group Communication

Cultural Diversity Elective/Special Course Usage

ENL 250 - Literature of the American Indian
 ENL 281 - Sex, Death and Morality: Identity through Literature (Multicultural Perspectives)
 HIS 115 - World Civilization I
 HIS 125 - World Civilization II
 HTH 310 - Health Issues and Transitions
 HUM 223 - American Indian Perspectives
 HUM 225 - Fairy Tales and Fables
 LAS 240 - The American Civil War: Law, Politics and Technology
 LAS 320 - International Law
 MGT 410 - Management of Organizational Behavior
 NUR 463 - Transcultural Nursing
 PHA 352 - Community and Public Health
 PHA 495 - Senior Capstone (Physician Assistant)
 SOC 171 - Cross-Cultural Perspectives in the Health Professions
 SOC 210 - American Subcultural Groups
 SOC 270 - Death and Dying
 SOC 311 - Sociology of Work and Culture
 SOC 321 - Ethnicity, Class, and Status in the United States
 SOC 323 - Gender Issues in the United States
 SPC 301 - Organizational Communication
 SPC 302 - Intercultural Communication

Fitness and Lifetime Sports Elective

FIT 109 - Tennis/Table Tennis
 FIT 111 - Cardiopulmonary Resuscitation (CPR)
 FIT 142 - Badminton/Volleyball
 FIT 143 - Weight Training/Volleyball
 FIT 169 - Aerobic Dance
 FIT 170 - Step Aerobics
 FIT 172 - Weight Training
 FIT 173 - Aerobic Cross Training
 FIT 174 - Free-Weight Training
 FIT 175 - Basic Fitness Training
 FIT 176 - Shotokan Karate
 FIT 182 - Introduction to Scuba Diving
 FIT 190 - Personal Fitness
 FIT 192 - Walking and Physical Fitness
 FIT 201 - Personal and Community Health
 FIT 204 - First Aid, Responding to Emergencies
 FIT 205 - Coping with Stress
 FIT 207 - Choices: Wellness for a Lifetime
 FIT 220 - First Responder: Advanced First Aid

Foreign Language Elective

Skill areas:

ability to communicate in a second language
appreciation for another language and culture

FRE 111 - Beginning French I
 FRE 121 - Beginning French II
 SPA 111 - Beginning Spanish I
 SPA 121 - Beginning Spanish II

Humanities Elective

Skill areas:

evaluation of expressive works and ideas
evaluation of the historical basis of current society
evaluation of diversity of world cultures
evaluation of the influence of the arts
application of ethical choices
evaluation of personal values

EDU 121 - Children's and Young Adult Literature
 ENL 221 - Detective Fiction
 ENL 231 - World Literature
 ENL 240 - Early American Literature
 ENL 241 - American Literature Since 1865
 ENL 250 - Literature of the American Indian
 ENL 251 - Masters of Horror: Horror in Literature and the Mass Media
 ENL 252 - Women in Literature
 ENL 255 - Introduction to Dramatic Literature
 ENL 257 - The Graphic Novel
 ENL 281 - Sex, Death and Morality: Identity through Literature (Multicultural Perspectives)
 HIS 115 - World Civilization I
 HIS 125 - World Civilization II
 HIS 135 - United States Survey to 1877
 HIS 145 - United States Survey since 1877
 HIS 210 - Latin American Civilization
 HIS 212 - Twentieth Century Europe
 HIS 214 - The Making of Modern Africa
 HIS 250 - Popular Culture in the United States
 HIS 262 - Technology and Society
 HIS 280 - United States Labor History
 HIS 285 - Russian and Soviet History
 HIS 310 - Historical Investigation
 HIS 315 - Technology and Propaganda
 HUM 223 - American Indian Perspectives
 HUM 225 - Fairy Tales and Fables
 HUM 301 - Scientific Literature: Historical and Social Contexts
 PHL 111 - Introduction to Philosophy Analysis
 PHL 210 - Ethics
 PHL 220 - Social and Political Philosophy
 PHL 230 - Logic
 PHL 240 - Minds, Brains and Computers
 PHL 250 - Philosophy, Sports, Games, Physical Exertion

Mathematics Elective

Skill areas:

analysis of numerical problems and selection of appropriate methods of solution
comprehension of ordered systems of reasoning
application of statistical methodology to groups of data
evaluation of alternative solutions
demonstration of systematic planning skills
application of time management skills

MTH 113 - Business Mathematics
 MTH 124 - Technical Algebra and Trigonometry I
 MTH 125 - Technical Algebra and Trigonometry II
 MTH 151 - Structures of Mathematics
 MTH 153 - Topics in Mathematics
 MTH 158 - Elementary Statistics I
 MTH 160 - Elementary Statistics with Computer Applications
 MTH 164 - Elementary Statistics II
 MTH 170 - Matrix Algebra
 MTH 172 - Introduction to Geometry
 MTH 180 - College Algebra and Trigonometry I
 MTH 182 - College Algebra and Trigonometry II

MTH 190 - Pre-Calculus
 MTH 230 - Applied Calculus
 MTH 240 - Calculus I
 MTH 242 - Calculus II
 MTH 250 - Discrete Mathematics
 MTH 255 - Linear Algebra
 MTH 340 - Calculus III
 MTH 346 - Ordinary Differential Equations
 MTH 360 - Quantitative Statistical Methods with Applications

Science Elective

Skill areas:

recognition of the value of the natural sciences
recognition of science as a dynamic process of investigation
identification of problems
application of scientific methods and reasoning processes
analysis of empirical evidence
evaluation of alternative solutions
recognition of the roles and limitations of measurement
evaluation of the function and impact of technology
description of social/historical context of scientific questions
recognition of limitations on the ability to predict natural outcomes

BIO 103 - Human Anatomy and Physiology Survey
 BIO 107 - Diversity of Life
 BIO 111 - Basic Botany
 BIO 113 - General Biology I
 BIO 115 - Human Anatomy and Physiology I
 BIO 123 - General Biology II
 BIO 125 - Human Anatomy and Physiology II
 BIO 201 - Microbiology
 BIO 208 - Ecology
 BIO 210 - Genetics
 BIO 212 - Introduction to Neurobiology
 CHM 100 - Fundamentals of Chemistry
 CHM 108 - Chemistry Survey
 CHM 111 - General Chemistry I
 CHM 121 - General Chemistry II
 CHM 123 - Introductory Organic and Biochemistry
 CHM 203 - Organic Chemistry I
 CHM 204 - Organic Chemistry II
 GEL 105 - Physical Geology
 GEL 106 - Historical Geology
 MSC 106 - Introduction to Metallurgy
 PHS 103 - Physics Survey
 PHS 112 - Introductory Physics
 PHS 114 - Physics with Technological Applications
 PHS 115 - College Physics I
 PHS 125 - College Physics II
 PHS 201 - General Physics I
 PHS 202 - General Physics II
 PHS 203 - Physics III
 PHS 204 - General Physics III
 PHS 236 - Modern Physics
 PHS 251 - Mechanics
 SCI 100 - Environmental Science
 SCI 113 - Evolution, Genetics, and Development
 SCI 155 - Introduction to Astronomy
 SCI 156 - Astronomy Laboratory
 SCI 160 - The Science of Spaceflight
 SCI 170 - Introduction to Physical Science
 SCI 175 - Issues in Nuclear Energy
 SCI 180 - Plants, People and the Environment
 SCI 260 - Biology and Modern Society
 SCI 280 - Natural Disasters and Civilization

Social Science Elective

Skill areas:

evaluation of people and their behavior-either as individuals or in groups
evaluation of social structures and influences
evaluation of theories regarding the human mind
comprehension of economic principles
evaluation of concepts about production and the use of goods and services
application of scientific reasoning
evaluation of alternative solutions
evaluation of personal values
demonstration of systematic planning skills

ECO 111 - Principles of Macroeconomics
 ECO 112 - Principles of Microeconomics
 ECO 202 - Economic Analysis
 ECO 257 - International Economics
 EDU 111 - Introduction to Education
 EDU 358 - Instructional Methods
 GEO 111 - Introduction to Cultural Geography
 PSC 210 - International Relations
 PSC 231 - American Government-National
 PSC 241 - State and Local Government
 PSY 100 - Applied Psychology
 PSY 111 - General Psychology
 PSY 201 - Abnormal Psychology
 PSY 203 - Developmental Psychology
 PSY 210 - Child Psychology
 PSY 231 - Educational Psychology
 PSY 241 - Social Psychology
 PSY 260 - Psychology of Human Sexuality
 PSY 266 - Gerontology and Aging
 PSY 320 - Behavior Modification
 PSY 366 - Advanced Gerontology
 SOC 111 - Introduction to Sociology
 SOC 112 - General Anthropology
 SOC 171 - Cross-Cultural Perspectives in the Health Professions
 SOC 210 - American Subcultural Groups
 SOC 231 - Marriage and the Family
 SOC 241 - Urban Sociology
 SOC 242 - Criminology
 SOC 243 - Physical Anthropology and Human Evolution
 SOC 260 - Drugs and Society
 SOC 270 - Death and Dying
 SOC 311 - Sociology of Work and Culture
 SOC 313 - Research Methods
 SOC 321 - Ethnicity, Class, and Status in the United States
 SOC 323 - Gender Issues in the United States

Science/Technology/Society Elective/Special Course Usage

BBT 415 - Integrated Building Operation and Energy Management
 BCM 409 - Technology and Construction
 BCT 430 - Contemporary Issues in Residential Construction
 CHM 101 - Chemistry and Society
 CSC 300 - Computer Law, Ethics and Society
 HIS 262 - Technology and Society
 HIS 315 - Technology and Propaganda
 HTH 310 - Health Issues and Transitions
 HUM 301 - Scientific Literature: Historical and Social Contexts
 LAS 240 - The American Civil War: Law, Politics and Technology
 MET 321 - Engineering Ethics and Legal Issues
 MET 340 - Mining Technology and Society
 MGT 315 - Business Ethics
 PHA 327 - Clinical Procedures I
 PHA 357 - Clinical Procedures III

PHL 240 - Minds, Brains and Computers
 SCI 160 - The Science of Spaceflight
 SCI 180 - Plants, People and the Environment
 SCI 260 - Biology and Modern Society
 SCI 280 - Natural Disasters and Civilization
 SCI 301 - Exercise Physiology and Applied Nutrition

Writing Enriched Elective/Special Course Usage

ACC 495 - Accounting Senior Project
 AMT 310 - Automotive Service Management
 ART 330 - Modern Art and the Contemporary Image
 AVC 496 - Senior Project
 BBT 415 - Integrated Building Operation and Energy Management
 BCM 406 - Construction Management-Residential
 BCT 300 - Residential Management I
 BHV 370 - Advanced HVAC-R Control Systems
 CET 238 - Origin, Distribution and Behavior of Soils
 CSC 300 - Computer Law, Ethics and Society
 DEN 224 - Dental Law and Ethics
 DEN 301 - Issues in Professional Dental Hygiene
 FHD 495 - Culinary Arts Capstone Project
 FOR 210 - Forest Products
 FOR 249 - Forest Land Management
 HIS 262 - Technology and Society
 HIS 315 - Technology and Propaganda
 HTH 310 - Health Issues and Transitions
 HUM 301 - Scientific Literature: Historical and Social Contexts
 LAS 360 - Advanced Legal Writing and Analysis
 MET 321 - Engineering Ethics and Legal Issues
 MET 495 - Senior Seminar-Lecture
 MGT 410 - Management of Organizational Behavior
 NUR 326 - Community Health Nursing
 NUR 463 - Transcultural Nursing
 NUR 495 - Research and Theory in Clinical Practice
 OCT 221 - Psychosocial Rehabilitation Methods
 PHA 352 - Community and Public Health
 PHA 495 - Senior Capstone (Physician Assistant)
 PNP 354 - Trends and Issues in Printing and Publishing
 SOC 210 - American Subcultural Groups
 SOC 313 - Research Methods

COLLISION REPAIR (AUTO BODY) (ABC)

ABC111

Introduction to Auto Body

Shop safety practices, personal safety and health protection. Emphasis is on typical body and paint shop operations concerning modern auto body construction and repair techniques with the proper use of hand and power tools. 2 Credits (1.50 Lecture -1.50 Lab) **Fall Only.**

ABC113

Basic Unibody Repair

Introduction to theory and practical applications involved in measuring systems, diagnosing unibody damage, comprehending unibody specifications manual, and setting up pulling equipment. Basic straightening, realigning techniques, and checking of sheet metal alignment. 3 Credits (1 Lecture -6 Lab) **Fall Only.**

ABC114

Introduction to Body and Chassis

The proper removal and replacement of fastening devices, moldings, clips, and glass. Identification of damaged parts and estimate comprehension. The identification, selection, use, and application of adhesives for repair of plastic parts. 5 Credits (3 Lecture -6 Lab) **Fall Only.**

ABC121

Introduction to Repair Procedures

A general overview of determining repair procedures, gaining access, preparing surface, straightening damaged areas, and applying plastic filler. Practical applications in forming and smoothing filled areas, repairing scratches and nicks, inspecting areas for hidden damage, removing damaged parts, and repairing damaged new parts. Procedures involved in installing replacement parts, aligning sheet metal, and rust prevention. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): ABC111. Corequisite(s): ABC122. Spring Only.*

ABC122

Basic Refinish

Operating basic refinish equipment, applying primer, surface and paint fillers, determining areas to be refinished, methods of sanding, applying modern paint system. Procedures for buffing and polishing, applying pinstripes, decals, and overlays, clean-up techniques. 5 Credits (2.50 Lecture -7.50 Lab) *Corequisite(s): ABC121. Spring Only.*

ABC150

Toyota Collision Repair Internship

A specialized work experience to be performed in a participating Toyota dealership. The experience will apply knowledge and skills developed during the first year of automotive collision repair instruction. The course will be conducted in accordance with the guidelines established by the Toyota Technical Education Network (T-TEN). 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): ABC121 and ABC122.*

ABC181

Auto Graphics

Introduction to automotive graphics, custom painting, pin striping, candy, lettering and texturing. An introduction to equipment, materials, and tools needed. Discussion and practice with techniques, designing, aesthetics, history and origin of automotive and motorcycle specialty painting. The class requirements will include students designing, developing and producing a custom paint project. 3 Credits (2 Lecture -3 Lab) (ART)

ABC203

Advanced Unibody Repair

Emphasized unibody construction repair in practical applications involving plastic repairs, measuring systems, removing damaged areas, various pulling methods and procedures, replacement of damaged parts, and aligning to manufacturer's specifications. 5 Credits (1 Lecture -12 Lab) *Prerequisite(s): ABC113 and ABC114. Fall Only.*

ABC204

Advanced Refinishing

The theory and practice involved in the application of various modern paint systems, detect paint failure, paint refinish materials, surface preparations, color tints, plastic refinishing, spraying of color coats, and the techniques used in restoring corrosion resistance to outer body panels. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): ABC121 and ABC122. Spring Only.*

ABC222

Basic Auto Body Mechanics

An introduction to basic mechanical principles involved in auto body repair. The students will demonstrate removal and replacement procedures on drive trains, electrical components, engine exhaust systems, and fuel systems. 4 Credits (2 Lecture -6 Lab) **Spring Only.**

ABC224

Job Estimating with Computers

This course concentrates on estimating principles involved in preparing damage estimates on auto body components. The course utilizes both traditional and computer-assisted methods in determining the reparability and costs involved in labor, parts and materials. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ABC113. Spring Only.*

ACCOUNTING (ACC)

ACC113

Introduction to Financial Accounting

This course is an introduction to the principles of financial accounting and the use of these principles in a business environment. It will prepare the business and non-business student to understand and interpret accounting and financial information. The emphasis is on “how to use” this information to make rational, reasoned and intelligent decisions in a business environment. (Formerly ACC 112) 3 Credits (3 Lecture -0 Lab)

ACC123

Introduction to Managerial Accounting

This course presents the analytic skills necessary to make decisions based on financial information. It emphasizes the organization of data for decisions, development of sound measurements, and the use of accounting for control and evaluation of economic activity and de-emphasizes the uses of the transaction recording process. Course assumes the student has a thorough knowledge of accounting principles and is prepared to analyze the financial summarizations. (Formerly ACC 122) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC113.*

ACC210

Payroll, State, and Local Taxation

This course introduces the student to the various intricacies of payroll, sales (use), state and local tax accounting for businesses and individuals in the Commonwealth of Pennsylvania. The course will focus on the process of hiring employees, pay systems, payroll taxes at the Federal, State, and Local levels, laws affecting the payroll, and accounting requirements. Special issues involving fringe benefits, the Advanced Earned Income Credit, “independent contractor vs. employee” controversy, self-employment, tips, worker’s compensation, unemployment tax provisions, and sales and use tax provisions will be discussed from both a business and individual point of view. In addition, the Pennsylvania and Local income tax will be covered. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 or ACC113. As needed.*

ACC280

Computerized Accounting

To acquaint students with the basic elements of accounting information systems, including systems analysis and design; to introduce hardware and software considerations in developing an integrated accounting system and the general ledger, accounts receivable, accounts payable, inventory and payroll modules of an integrated accounting software. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC105 and CSC110 or ACC112 and CSC110 or ACC113 and CSC110. Spring Only.*

ACC285

Accounting Information Systems

This course emphasizes accounting information systems, transaction cycles, and communication of financial information for management decisions within the context of business. Topics include flowcharting; transaction processing; detailed analysis of transaction cycles; internal control; Enterprise Resource Planning (ERP) systems; security and encryption issues; electronic commerce; management reporting; file and database management; and system auditing. This course will include an AIS project using an integrated general ledger package. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 and CSC110 or ACC113 and CSC110.*

ACC310

Cost Accounting

This course introduces students to the principles of cost accounting for both manufacturing and service industries. Topics include: cost-volume-profit analysis, job costing, process costing, activity based costing, overhead allocation and analysis, budgeting and variances, variable and absorption costing, relevant costs, and pricing decisions. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC122 or ACC123.*

ACC331

Income Taxation of Individuals

Emphasizes the fundamentals of individual income taxation. Topics include: tax deductions, credits, exemptions, rates, computations for federal income tax, the tax implications of various forms of business, planning for the acquisition and disposition of property, tax advantaged investments, and tax planning for the family. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 or ACC113. Spring Only.*

ACC340

Intermediate Accounting I

This course is a detailed in-depth study of financial statements and the fundamental accounting processes. It includes the time value of money and the valuation of receivables and inventory. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC122 or ACC123. Fall Only.*

ACC345

Intermediate Accounting II

This course is a continuation of the in-depth study of financial statements and the fundamental accounting processes. It includes an examination of the valuation and reporting of property, plant, and equipment; current and long-term liabilities; and stockholders equity and investments. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC340 or ACC232. Spring Only.*

ACC360

Intermediate Accounting III

This course is a continuation of the in-depth study of financial statements and the accounting processes. It introduces students to accounting for income taxes, pensions and post retirement benefits, leases, accounting for accounting changes and the statement of cash flows. Special topics concerning issues and treatment of multinational accounting and partnerships are covered. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC345. Fall Only.*

ACC410

Advanced Cost Accounting

This course is a continuation of ACC 310. Topics include: management control systems, cost allocation, operation costing, backflush costing, just-in-time production systems, project control, capital budgeting, measuring yield, mix and productivity, total quality management, decentralization, and transfer pricing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC310. Spring Only.*

ACC430

Corporation, Partnership, Estate and Trust Taxation

This course presents the tax skills necessary to make decisions regarding corporations, partnerships, estates, and trusts. Emphasis is placed on such areas as organization and capital structure, earnings and profits, dividend distribution, redemptions, liquidations and reorganizations of corporations. In addition, flow-through entities such as partnerships and S corporations will be studied along with estates, trusts, family tax planning and exempt entities. Practical application of the tax law will be emphasized with proper consideration given to the historical, economic, and political perspectives of the laws. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC330 or ACC331. Fall Only.*

ACC450

Auditing—Internal

This course is designed to provide the student with a knowledge of the internal audit function and the role of the internal auditor in a business organization. The course emphasizes generally accepted auditing standards, professional ethics, the components of auditing, audit objectives, assessing audit risk, internal control structures, audit procedures, audit planning, preparation of workpapers, statistical sampling, and audit reporting. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC345. Fall Only.*

ACC460

Advanced Accounting

This course emphasizes both consolidations and not-for-profit accounting. Advanced financial accounting topics include: business combinations, consolidated statements, intercompany transactions, and investments in subsidiaries. Not-for-profit accounting topics include: governmental accounting, accounting for colleges and universities, not-for-profit health care providers, and voluntary health and welfare organizations. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC360. Spring Only.*

ACC480

Accounting Co-Op

With a professional internship program, each student is given the opportunity to experience accounting situations. The student’s work experience will be for one semester. Every effort is made to place students in a business situation relevant to their interest—managerial, financial, financial planning, tax, auditing, public accounting, nonprofit organizations, etc. The students receive no salary or remuneration for their services. Students are required to work 15 hours per week in their assigned position. It is recommended that this internship occur in the senior year as a culmination of their education. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): ACC310 and ACC330 and ACC360 or ACC310 and ACC331 and ACC360. As needed.*

ACC495

Accounting Senior Project

This is the capstone course that will be taken by all Accounting students during their final semester of study; it will fulfill the senior project criteria. It will require students to think strategically, analytically and critically, evaluate accounting, financial, and business situations from these perspectives, and finally reach a decision based on these perspectives. Students will be required to demonstrate accounting and financial matter expertise, research ability, oral and written presentation skills, and the ability to work together in small groups. Students will deliberately be placed in a work environment and will be forced to make decisions, think critically; understand “bottom-line” implications, develop listening and leadership skills, understand the needs of the users of accounting and financial information, and see the accounting and financial interrelationship with the other functions of business. In addition, the students will be required to integrate and synthesize the knowledge and competencies gained from their previous general, business, and management courses into a synergistic whole. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC310 and ACC330 and ACC360 or ACC310 and ACC331 and ACC360.* (Writing Enriched) **Spring Only.**

ARCHITECTURAL TECHNOLOGY (ACH)

ACH111

Architectural Graphics

This course introduces the architectural student to the various manual means by which architects have traditionally communicated and presented their buildings. The course includes basic pencil drawing and sketching, ink and watercolor work, and model making. The course will emphasize composition, line quality, precision and clarity of presentation, as well as introduce the student to the architectural jury. 3 Credits (1 Lecture -6 Lab) **Fall Only.**

ACH112

Architectural History

An overview of architectural history from prehistory to modern times. The focus is on Western culture and thought. Styles of architecture are identified by their cultural expression of belief systems within the religion and politics of the era. Although the emphasis is on the built environment, expression through art is also included in the course. 3 Credits (2 Lecture -3 Lab) (ART) **Fall Only.**

ACH114

Introduction to Architecture

An overview of the field of architecture. Career paths, educational opportunities, registration requirements and the architect's responsibilities are discussed. 1 Credit (1 Lecture -0 Lab) **Fall Only.**

ACH115

Computer Aided Drafting I

An introduction to the use of computer aided drafting equipment and software to prepare basic architectural two-dimensional drawings. Includes CAD workstation hardware and software components, use of Windows program and effective file management, CAD commands, system variables and proper drawing setup, creating lines, shapes, dimensions, text, editing, saving, and printing drawings. (Formerly ACH113) 3 Credits (2 Lecture -3 Lab) **Fall Only.**

ACH120

Building Materials I

This course covers the history, development, and application of residential building materials. The course is intended to give students a solid background in the construction and typical detailing of residential building materials. Students will develop an appreciation for the appropriate use of materials and the field of architecture. (Formerly ACH121) 3 Credits (3 Lecture -0 Lab) *Corequisite(s): BCT128.* **Spring Only.**

ACH122

Site Design

An introduction to the principles used in the design of building sites. Topics covered include: climate; topography; modifying contours; pedestrian and vehicular movement patterns; legal constraints; economic factors; and site analysis. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

ACH125

Computer Aided Drafting II

An advanced use of CAD software to create two-dimensional architectural drawings that build on the basic skills introduced in Computer Aided Drafting I. Includes CAD layer guidelines, advanced drawing and editing commands, use of templates, effective use of paper space, creating layouts, use of external references, creating symbols library, assigning attributes, and isometric drawings. (Formerly ACH123) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH115.* **Spring Only.**

ACH127

Working Drawings-Residential

Students will prepare residential type working drawings with lab emphasis on manual drafting and theory of construction. Students will develop a thorough set of drawings, based on wood construction, using good line definition, technique, clarity, thoroughness, dimensioning, and lettering. (Formerly ACH124) 3 Credits (1 Lecture -6 Lab) *Corequisite(s): ACH120.* **Spring Only.**

ACH230

Building Materials II

This course covers the history, development, and application of commercial building materials. The course is intended to give students a solid background in the construction and typical detailing of commercial building materials. Students will develop an appreciation for the appropriate use of materials. (Formerly ACH231) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACH120.* **Fall Only.**

ACH235

Computer Aided Drafting III

The use of computer aided drafting software in order to produce three dimensional designs, documentation drawings, and computer generated renderings. (Formerly ACH233) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH125.* **Fall Only.**

ACH236

Architectural Design I

The course presents the basic principles and criteria used in the programming, analysis, and design phases for small and medium sized residential and commercial type projects. (Formerly ACH232) 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ACH111.* **Fall Only.**

ACH237

Working Drawings-Commercial

This course covers laboratory practice and theory in the development of non-residential type working drawings. Emphasis will be placed on CAD technique in the preparation of drawings for a building incorporating masonry construction. (Formerly ACH234) 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ACH125 and ACH127.* *Corequisite(s): ACH230.* **Fall Only.**

ACH240

Environmental Systems

Theory and design of plumbing, heating, air conditioning, lighting, and electrical service systems for residential and commercial buildings. (Formerly ACH242) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH127.* **Spring Only.**

ACH241

Codes, Specifications and Estimating

The course introduces students to building codes, specifications, and estimating. The course provides information on interpretation and utilization of building codes, standards, and regulations. Students will also study building cost estimating, how specifications are used to define and limit materials, fabrication and installation in the construction industry, and how specifications are developed as an essential part of the contract document. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

ACH243

Structural Principles

An overview of structural principles used in the design of buildings. General concepts of static forces and the basic design of wood, masonry and concrete materials are studied. Some mathematical calculations are required. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH180.* **Spring Only.**

ACH244

Architectural Design II

This course introduces the architecture student to methodology involved in the design of non-residential buildings and the associated challenges they present to the environment. Investigation of the problems in creating exterior space. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ACH236 or ACH232. Spring Only.*

ACH245

Native American Architecture

An overview course of Native American architecture, beginning with the Olmecs and continuing through the modern day. The emphasis will be on the cultural and historical settings that led to the expression of art and architecture by Native Americans in Central and North America beginning around 1000 BC. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

ACH246

3D Studio

An introduction to 3D Studio animated rendering software. Student will use Frank Lloyd Wright's Falling Water as the basis for learning how to create a project, manipulate objects, set lighting conditions, create materials, and animate a scene. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH233. Spring Only.*

ACH247

Working Drawings III

Laboratory practice and theory in developing working drawings for a large-scale multi-unit building or complex. Emphasis will be placed upon collaboration, self-direction, time management, Internet tools and CAD drawing efficiency. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ACH230 and ACH237. Spring Only.*

ACH248

Architectural Detailing

An overview of the practice of architectural detailing. Functional principles, standards, constructibility, and aesthetics will be discussed. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH230 and ACH237. Spring Only.*

ACH249

Computer Modeling and Animation

An introduction to object driven 3D animated rendering software. Students will use various methods to create 2D and 3D objects to create a project, manipulate objects, set lighting conditions, create materials and animate a scene. Students may schedule this course by either successfully completing the prerequisite or permission of the instructor. (Formerly ACH246) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH115. Spring Only.*

AIR CONDITIONING AND REFRIGERATION (ACR)

ACR111

Introduction to Refrigeration

This course will introduce the student to basic refrigeration systems. Proper and safe use of tools, identification of materials, methods of assembling refrigeration systems, and proper handling of refrigerants are included. Emphasis is placed on basic system components: evaporators, compressors, condensers and test equipment. 5 Credits (3 Lecture -6 Lab)

ACR120

Blueprints and Specifications

Introduction to blueprint reading for plumbing, air conditioning, and HVAC on residential and commercial applications. Includes specifications, symbols, and information contained on construction drawings. 2 Credits (2 Lecture -0 Lab)

ACR121

Commercial Refrigeration Systems

An introduction to commercial refrigeration systems, different types of refrigeration systems and their methods of operation. Understand and identify the types of controls required to control temperature, humidity, air circulation and defrost procedures. 5 Credits (3 Lecture -6 Lab) *Corequisite(s): ACR123.*

ACR123

Installation and Service-Commercial

To demonstrate the ability to recognize and correct installation errors and service problems in commercial refrigeration systems. Troubleshooting of mechanical and control malfunctions as they relate to the operation of commercial refrigeration systems. 5 Credits (3 Lecture -6 Lab) *Corequisite(s): ACR121.*

ACR226

AC/R Systems and Equipment

The primary focus of this course is to develop a common understanding of the basics and functions of applied commercial building and industrial facility AC/R systems. Students from various technical skill area backgrounds will merge common skills and gain exposure to the specifics of identity, application, and operation of central liquid chillers, packaged DX systems, unitary equipment, and rooftop units. Students will be introduced thru both classroom instruction and practical experiences to the following topics: the importance of AC/R systems for comfort and process, types of systems, how systems work, identification of AC/R system components, the properties of air and water vapor, applicable use of psychometric chart for ACR process analysis. ASHRAE ventilation standards, IAQ basics, and introductory control point strategies. 3 Credits (2 Lecture -3 Lab)

ACR237

Basic A/C Systems and Design

Basic entry level skills required to identify, install, and operate various central A/C systems for residential and light commercial installations. Basic concepts and skills required to calculate, layout, and design residential air side cooling systems. Basic skills in the layout and fabrication of one inch fiberglass ductboard, to include straight duct, offsets, and 45-degree and 90-degree elbows. Review of the proper handling and use of the types of refrigerants covered by the "Clean Air Act" and the "Montreal Protocol." 5 Credits (3 Lecture -6 Lab)

ACR240

CFC and Refrigeration Management

This course is designed to give the HVAC student the knowledge and sensitivity to the environmental impact of refrigerants, to understand the laws on venting and handling of CFC, HCFC and HFC refrigerants covered in the Clean Air Act - Section 608. This course will provide the knowledge to help the student successfully acquire U.S. Environmental Protection Agency (EPA) certification for handling the refrigerants, through the Refrigeration Environmental Protection Association, Inc. 1 Credit (1 Lecture -0 Lab)

ACR243

HVAC Systems II

Theory and shop assignments in the methods of operation of heat pumps. The service and installation of heat pumps and their components. The principles of operation of liquid chillers and their service and maintenance. The air conditioning of computer rooms and environmental chambers. The uses and operation of commercial exhaust systems. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): ACR237.*

AUTOMOTIVE (AMT)

AMT110

Ford Automotive Fundamentals

An introduction to the various Ford automotive systems to include fuel and controls, electrical, engine, drive train, transmission, heating and cooling. Students will study the theoretical and practical operations of each system. Topics such as pre-delivery service, basic maintenance, lubrication, minor repairs and the use of service manuals, charts and diagrams are explored. Use of measuring instruments and tools, both hand and machine, as well as fasteners and fittings, tubing and hydraulic lines. 5 Credits (4 Lecture -3 Lab) **Fall Only.**

AMT111

Manual Transmission and Transaxle Principles

Theory and basic service techniques including power flow of standard transmissions/transaxles, clutches, universal and C-V joints, drive shafts, axles, and differentials. 3 Credits (1.50 Lecture -4.50 Lab)

AMT112

Brake Systems

Fundamentals of brake hydraulics, theory and operation of servo and non-servo drum brakes. Disc and drum brake machining, operation of disc brakes, theory of operation of power assist brakes, introduction to electronic anti-skid brakes. 3 Credits (2 Lecture -3 Lab)

AMT113

Steering and Suspension

Principles of operation of steering and suspension, rack and pinion steering gears, and conventional steering gears with theory of operation of power steering gears, steering geometry, wheel alignment principles, and static and dynamic wheel balancing. 3 Credits (2 Lecture -3 Lab)

AMT118

Air Conditioning Fundamentals and General Accessories

This course is a study of the operating principles of automotive air conditioning/heating and selected accessory systems including door and window regulators. Major emphasis will be placed on diagnosis of selected malfunctions and minor service of these components. 2 Credits (1 Lecture -3 Lab) **Fall Only.**

AMT119

Fundamentals of Automatic Transmissions

Nomenclature and operating principles of automatic transmissions. Procedures for inspection, bench repairs, and testing of automatic transmissions and transaxles. Front and rear wheel drive transmissions will be discussed. 3 Credits (1.50 Lecture -4.50 Lab)

AMT120

Ford Automotive Electrical Systems

Ford applied electrical fundamentals and the use of wiring diagrams and types of application of instrumentation. Troubleshooting, repairing and servicing electrical circuit systems and components are stressed. Included are basic circuits, accessory circuits and systems. 5 Credits (4 Lecture -3 Lab) **Fall Only.**

AMT122

Engine Principles

Operating principles of internal combustion engines. Two and four stroke cycles. Engine nomenclature. Engine cooling, lubricating, and valve systems. Engine disassembly, precision measurement, and assembly techniques. Power and torque curves. Diesel principles. Thread sizes, drilling and tapping. 3 Credits (2 Lecture -3 Lab)

AMT123

Basic Fuel and Emission Control Systems

Fuel supply systems. Fuel pump tests. Principles of combustion and types of fuels. Carburetion and carburetor fuel circuits. Introduction to fuel injection including basic diesel. Operation of exhaust emission controls including air injection, PCV, EGR, timing controls, heated intake air, and catalytic converters. Carburetor disassembly and adjustments. Infrared exhaust timing. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): AMT122.*

AMT124

Automotive Electrical/Electronic Principles

Electron theory of electricity. Ohm's law and Kirchoff's law. AC and DC principles. Series and parallel circuits. Use of test meters. Reading wiring diagrams. Basic solid state devices. Circuit analysis. Concepts of capacitance, inductance, and impedance. Introduction to integrated circuits and on-board microcomputers. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH001 or MTH004 or Placement by Examination.*

AMT126

Engine Electrical Systems

Wiring, connectors, and circuit protection devices. Batteries and battery tests. Cranking circuits and starter motors and drives. Charging circuits, alternators, and voltage regulators. Ignition systems. Engine computer controls and electronic fuel injection. Use of oscilloscope and other special test equipment. Basic electrical test procedures for engine related systems. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH001 or MTH004 or Placement by Examination. Corequisite(s): AMT122 and AMT123 and AMT124.*

AMT130

Ford Automotive Engines, Diagnosis, Overhaul and Repair

Basic Ford engine theory and operation includes engine disassembly, inspection, repair, replacement, measurement and reassembly. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT110 and AMT120. Spring Only.*

AMT141

Ford Vehicle Heating and Air Conditioning

This course is designed to introduce the theory and develop the skills needed by today's technicians to diagnose and repair any malfunctions of automotive

heating and air conditioning systems and electronic, mechanical and vacuum controls. The course will also stress the provisions of section 609 of the Clean Air Act Amendments of 1990 which outline automotive refrigerant recovery procedures and certification of automotive air conditioning technicians. The effect of chlorofluorocarbons (CFCs) on the earth's atmosphere and substitute refrigerants will also be covered. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): AMT120 and AMT146.*

AMT146

Ford Automotive Electronics and Diagnostics

The student will progress beyond the wiring harness connector to the "black box" and explore solid state electronics and microprocessor operation. Sensors, signal inputs, conditioning, decision making, outputs, and actuators are some of the topics designed to increase the scope of electronic knowledge necessary for proper vehicle on board system diagnosis. The electronics portion (Tier 2) of the Ford STS Electrical/Electronics curriculum revised in July 1996 has been integrated. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT110 and AMT120.*

AMT150

Toyota Dealership Internship

A specialized work experience to be performed in a participating Toyota dealership. The experience will apply knowledge and skills developed during the first year of automotive instruction. The course will be conducted in accordance with the guidelines established by the Toyota Technical Education Network (T-TEN). 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): AMT112 and AMT114 and AMT126 or AMT111 and AMT112 and AMT126. Summer Only.*

AMT160

Ford Dealership Internship I

A specialized work experience to be performed in a participating Ford Lincoln/Mercury dealership. The experience will apply knowledge and skills developed during the first semester of automotive instruction. The course will be conducted in accordance with guidelines established by the Ford ASSET program. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT110 and AMT120. Fall Only.*

AMT161

Ford Dealership Internship II

A specialized work experience to be performed in a participating Ford Lincoln/Mercury dealership. The experience will apply knowledge and skills developed during the second semester of automotive instruction. The course will be conducted in accordance with guidelines established by the Ford ASSET program. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT130 and AMT146. Spring Only.*

AMT162

Ford Dealership Internship III

A specialized work experience to be performed in a participating Ford Lincoln/Mercury dealership. The experience will apply knowledge and skills developed during the summer semester of automotive instruction. The course will be conducted in accordance with guidelines established by the Ford ASSET program. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT141. Summer Only.*

AMT163

Ford Dealership Internship IV

A specialized work experience to be performed in a participating Ford Lincoln/Mercury dealership. The experience will apply knowledge and skills developed during the third semester of automotive instruction. The course will be conducted in accordance with guidelines established by the Ford ASSET program. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT210 and AMT220. Fall Only.*

AMT164

Ford Dealership Internship V

A specialized work experience to be performed in a participating Ford Lincoln/Mercury dealership. The experience will apply knowledge and skills developed during the fourth semester of automotive instruction. The course will be conducted in accordance with guidelines established by the Ford ASSET program. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT230 and AMT240. Spring Only.*

AMT210

Ford Steering, Suspension and Brake Systems

Ford suspension systems, construction, operation, component, relationships, steering geometry, alignment, rear and front suspension service, repair and wheel balancing. Types of braking systems, system components, system operation, troubleshooting, adjustments and repair. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT130 and AMT140 and AMT145 or AMT130 and AMT141 and AMT146. Fall Only.*

AMT220

Ford Engine Management Systems

Ford performance analysis and basic tune-up procedures. The operation and troubleshooting of the various systems, including fuel, emission control, ignition and engine control are explored, as well as turbochargers and the diesel fuel system (high pressure type). The purpose and performance of computerized engine control systems, theory of operation, service, troubleshooting and repair are covered with emphasis placed on closed loop microprocessor systems. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT130 and AMT140 and AMT145 or AMT130 and AMT141 and AMT146. Fall Only.*

AMT230

Ford Automotive Manual Transmissions, Drivelines and Transfer Cases

Operational theory, troubleshooting, diagnosis and repair of the drive train and drive train components. Clutches, manual transmissions, drive axles, transaxles, drive shafts, universal joints, transfer cases, and carriers. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT210 and AMT220. Spring Only.*

AMT235

Engine Service

This course provides experience with procedures, techniques, and special equipment used for driveability repairs, servicing emission controls, engine electrical repairs, and minor mechanical repairs. Students will use oscilloscopes, engine analyzer, scan tool, and exhaust gas analyzer. 4 Credits (1.50 Lecture -7.50 Lab) *Prerequisite(s): AMT123 and AMT126.*

AMT238

Emissions Inspection

This course is designed to prepare the student to become state certified to test vehicles for exhaust emission standards. Students focus on a study of exhaust emissions, controls, and special equipment mandated by the Commonwealth of Pennsylvania and the related regulations and standards. 2 Credits (1.50 Lecture -1.50 Lab) *Corequisite(s): AMT235.*

AMT239

Engine Repair and Overhaul

The course is designed to teach the student the need for different types of major engine repair service. The student will also become familiar with many causes of excessive oil consumption. Procedures, techniques, and special tools used for engine removal and overhaul will also be covered. The student will become familiar with cylinder block and cylinder head rebuilding, including cylinder wall preparation, engine bearing clearances, crankshaft inspection, cylinder head warpage and crack detection, and valve guide and seat service. 4 Credits (1.50 Lecture -7.50 Lab) *Corequisite(s): AMT235.*

AMT240

Ford Automotive Transmissions and Transaxles

The function and repair of the complete power drive systems will be taught. Theory of operation, troubleshooting, service, repair and overhaul of Ford automatic transmission transaxles are covered. Drive line, universal joint inspection, repair and differential construction, diagnosis and repair are included in this course. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): AMT210 and AMT220. Spring Only.*

AMT241

Automotive Chassis Service

This course will provide the student a broad exposure to the inspection and maintenance procedures for brakes, steering, suspension, and exhaust systems on many makes of vehicles. Emphasis will be on providing the students hands-on experiences using customer vehicles needing routine repairs. Students will also receive theory on new developments in automotive technology. (Formerly AMT 246) 5 Credits (2 Lecture -9 Lab) *Corequisite(s): AMT242.*

AMT242

Vehicle Safety Inspection

This course will prepare the student to take the Vehicle Safety Inspection exam. A course outline provided by the state will be followed as mandated by the state. (Formerly AMT245) 1 Credit (1 Lecture -0 Lab)

AMT254

Automotive Business Internship

A flexible, yet specialized work experience in the automotive service management field. Unpaid, structured observation and practice of service management and repair procedures, including a parts department operation. The experience must include at least 50 percent customer contact time. The student may be assigned to a business location or to the College live work area. Cooperative experience may be substituted. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): AMT112 and AMT114 and AMT126 or AMT111 and AMT112 and AMT126. Spring, Summer.*

AMT255

Dynamometer Testing

Use of the bench and chassis dynamometers. Horsepower correction factors and calculations. Engineering definitions of work, power, heat, and temperature. Basic instrumentation techniques for measuring engine operating parameters. Engine modifications and adjustments which affect power and exhaust emissions. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): AMT123 and AMT126 and MTH180 or AMT123 and AMT126 and MTH124. Spring Only.*

AMT256

Engine Machining

Basic engine machining operations. Precision measuring and crack detection. Valve, seat, and guide work. Cylinder reboring and honing. 1 Credit (.50 Lecture -1.50 Lab) *Corequisite(s): AMT233 or AMT239. As needed.*

AMT258

Performance Chassis Modifications

This course is designed for students who wish to participate in motor sports either as an occupation or an avocation. It will introduce students to practical information on chassis modifications and suspension tuning of race cars and street rods. It includes chassis set up for highway, road course, drag strip, and oval track. The course includes instructor demonstrations on actual race car chassis and student set ups on theoretical models. 3 Credits (2.50 Lecture -1.50 Lab) *Prerequisite(s): AMT113. Fall Only.*

AMT259

Introduction to Race Car Construction

The course introduces nomenclature, general construction theory and procedures for building a race car chassis. An overview of pre-fabricated frame and roll cage components, location of powertrain and suspension mounting points and selection methods for drivetrain components and gearing will also be presented. Students will develop a mock construction project of oval or drag race chassis sections consistent with current rules and designs. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AMT258. Fall Only.*

AMT260

Automotive Service Internship I

A flexible, yet specialized, work experience in the automotive customer service field. The course is designed to be an application of theories in customer service and basic service management techniques being studied in Automotive Customer Service Techniques, AMT262. Students will perform the duties of service writers and assistant service managers in live-work automotive laboratories. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): AMT262. Fall Only.*

AMT261

Automotive Internship II

A flexible, yet specialized, work experience in the automotive customer service field. Continuing the application of the theories in customer service and basic service management techniques studied in Automotive Customer Service Techniques, AMT262. Students will focus on gathering technician and shop efficiency information, warranty repair issues, and service facility concerns. Students may work in the live-work automotive laboratories or in industry at an appropriate service facility. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): AMT260. Spring Only.*

AMT262

Automotive Customer Service Techniques

This course will provide an overview of the skills and techniques needed to successfully handle automotive service customers. Topics will include communication techniques, conflict resolution, co-worker relations, inventory control, customer billing, and overseeing and directing daily operations. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): AMT126 or ABC122. Corequisite(s): AMT260. Fall Only.*

AMT273

Powertrain Computer Systems Analysis

This course is designed to help the student to develop knowledge and skill in repair of the automotive computer systems which deal specifically with functions of the engine and drivetrain. Students will gain proficiency in the use of scan tools and other diagnostic equipment, locating the necessary repair information, and troubleshooting and repairing engine driveability problems and transmission shifting problems in a live work shop. Emphasis is on the more common systems, including those on Ford, GM, and Toyota vehicles. 2 Credits (1.50 Lecture -1.50 Lab) *Corequisite(s): AMT235.*

AMT274

Automotive Air Conditioning Systems and Service

This course will provide the student with a thorough understanding of the theory and operation of automotive air conditioning systems. The course will also cover proper diagnosis and servicing techniques, including recycling and handling of refrigerants and retrofitting of vehicles from R-12 to R-134 A refrigerant. Students will be given considerable opportunity to develop their air conditioning diagnostic and repair skills in a live work laboratory setting. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): AMT124.*

AMT275

Automotive Electrical Accessories Service

This course provides students an opportunity to develop an understanding of the operation of many common electrical and electronic accessories that are used on modern vehicles. Systems covered will include lighting, windshield wiper/washer, horn, power seat, mirror, window and door lock, supplemental restraint (air bags), keyless entry, instrumentation, speed control, and body control computers. Special emphasis will be placed on electrical troubleshooting, including tracing wiring diagrams and testing circuits and components. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): AMT124.*

AMT310

Automotive Service Management

A study of the principles and procedures involved in managing an automotive service facility. Topics include customer relations, writing repair orders, warranty claims, maintaining records, technical service training, personnel management, shop layout, parts management, equipment needs, and using computer-based shop management systems. Course objectives may be met by off-campus independent study in consultation with a working service manager and under the guidance of an assigned automotive faculty member. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL201.* (Writing Enriched) **As needed.**

AMT312

Automotive Service Facilities and Production

This course presents information that will allow students to analyze the impact of business and repair on production and profit within the automotive service industry. Exploration of service facility design, equipment placement, building maintenance and appearance as related to production and profit is examined. Employee performance is emphasized with special attention to technician performance in meeting industry standards. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT310 and MTH180.* **As needed.**

AMT314

Administration of Automotive Service Operations

This course focuses on the processes and tasks required for management of an automotive service organization. Students will perform various tasks including developing budgets, record keeping and documentation, interpreting warranties, government compliance, and other duties necessary for efficient service facility operation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT310 and AMT312.* **As needed.**

AMT334

Vehicle Propulsion Systems: Application and Design

The operating principles for alternative fueled engines that burn compressed natural gas (CNG), propane (LPG); or are powered by electricity or a combination of these propulsion systems will be presented. Procedures for the conversion of engines to use an alternative fuel will also be discussed. In addition, students will distinguish among the techniques for maintenance, refueling, and repair of alternatively fueled vehicles and how they differ from the procedures used for traditional gasoline powered vehicles. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT310.* **Spring Only.**

AMT342

Automotive Collision Repair

A study of major collision damage, repair procedures, cost estimating, equipment, refinishing and products used. A major focus is to become knowledgeable of shop operating costs and employee pay plans in relation to business operating costs. Not for auto body majors and not suitable for AB and AY graduates. 3 Credits (3 Lecture -0 Lab) **As needed.**

AMT345

Teaching Automotive Seminars

Methods of presenting technical information in seminars to trained technicians. Use of specialized equipment and mock-ups. Developing, selecting and use of audiovisual materials in a seminar environment. Evaluation methods for determining the effectiveness of presentations. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT310 and SPC101.* **As needed.**

AMT390

Vehicle Design

This course provides a broad presentation of the impact of vehicle design upon the social, health, personal, work, industry, and international sectors. Students will use the case study approach to investigate the design, development, and execution of vehicle prototypes. Students will work in project teams and perform various tasks, which will lead to a vehicle prototype design. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT310.* **As needed.**

AMT395

Vehicle Prototype

This course is the second in a series designed to engage students in a teamwork approach to the design of a vehicle project. Students enrolled in AMT395 are expected to have a final design ready for prototype construction. Management of the project, with special attention to specifications and testing is emphasized. Students will seek to refine the project by employing consistently elevating methods of evaluation, improvement. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT390.* **As needed.**

AMT495

Senior Project

A study of the applications and cost analysis factors of a selected segment of Automotive/Transportation Technology which will advance the students' knowledge in their area/areas of manufacture, maintenance, service and cost management. Topics are chosen from Auto Body, Heavy Construction Equipment, Diesel or Automotive Technology. Both oral and written reports are required. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AMT314.* **As needed.**

ARCHITECTURAL TECHNOLOGY (ARH)

ARH102

Basic Architectural Drafting

Fundamentals of architectural drawing and sketching. Use and care of drawing instruments and media. Lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work. 3 Credits (2 Lecture -3 Lab)

ARH112

Working Drawings - Residential

Laboratory practice and theory in producing residential architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation, quality. 3 Credits (1 Lecture -6 Lab) **Fall Only.**

ARH122

Working Drawings - Commercial

Laboratory practice and theory in producing non-residential architectural working drawings. Emphasizes technique in preparing drawings, content, lettering, line quality, and presentation quality. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ARH112.* **Fall Only.**

ADVERTISING ART/GRAPHIC DESIGN (ART)

ART102

Two-Dimensional Design

Includes theory and application of design essential to the visual arts. Emphasis is placed on two-dimensional design principles as they relate to graphic design. (Formerly ART 106) 3 Credits (2 Lecture -3 Lab)

ART109

Design and Color

Theory and applications for the use of color in design. Includes in-depth study of color theory with design application. Emphasis is also placed on visual thinking and problem solving. (Formerly ART 108) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART102. Spring Only.*

ART110

Basic Interior Design

Introduction to interior design. Emphasis will be on the fundamental theories of design and how they are applied to the practice of interior design. Selected topics of interior design will be addressed, such as textiles and floor plans as well as specific spaces in interior. In addition, a basic history of interior design will be covered. 3 Credits (3 Lecture -0 Lab) (ART)

ART122

Painting

Introduction to painting techniques, compositional structure, form and materials. Emphasis is placed on representational painting, but experimentation is encouraged. 3 Credits (2 Lecture -3 Lab) (ART) **Fall Only.**

ART125

Art History: Ancient through 15th Century

This art history survey course emphasizes the study and recognition of the visual forms of art, especially painting, sculpture and architecture. Students will study the function of design; techniques of execution; and the scientific, political, economic, social, and literary dimensions of the period. This course will cover the history of art from the ancient world up to and including the Renaissance. (Formerly ART133) 3 Credits (3 Lecture -0 Lab) (ART) **Spring Only.**

ART135

Art History: 16th through 20th Centuries

This art history survey course emphasizes the study and recognition of the visual forms of art, especially painting, sculpture and architecture. Students will study the function of design; techniques of execution; and the scientific, political, economic, social, and literary dimensions of the period. This course will cover the history of art from the 16th Century up to and including the 20th Century. (Formerly ART133) 3 Credits (3 Lecture -0 Lab) (ART) **Fall Only.**

ART140

Ceramics

Includes basic hand-building and wheel techniques. Introduces students to several clay bodies and firing processes and explores development of surface treatments. Also surveys ancient development to recent outgrowth and styles of ceramics. 3 Credits (2 Lecture -3 Lab) (ART)

ART145

History of Graphic Design

The study of the History of Graphic Design and of the ways in which the past will help students better understand current and future design applications. Emphasis will be placed on research of different design movements, such as the Victorian and Nouveau Graphics, Postmodern Design, the computer graphics revolution, and The Arts and Craft Movement. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

ART180

Drawing

Introduction to drawing techniques, structure, and various media. Includes analysis of drawing elements and applied creative problems. Subject matter includes linear perspective, still life and life drawings. 3 Credits (2 Lecture -3 Lab) (ART) **Spring Only.**

ART202

Introduction to Three-Dimensional Design

This course provides an introduction to the basic formal concepts necessary for designing in three-dimensional space. Emphasis is placed on the application of design principles through the construction of three-dimensional design projects, as well as through the development of a working formal design vocabulary. (Formerly ART 300) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART102. Corequisite(s): ART109. Spring Only.*

ART210

Introduction to Graphic Design

Introduction to equipment, materials, techniques, and working methods appropriate to graphic designers and other visual designers. Discussion of employment opportunities and job classification. Experience with ads, logos, corporate needs, book covers, restaurant menus. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART106 and ART108 and ART230 and PNP114 or ART109 and ART225. Spring Only.*

ART215

Printmaking

Introduction to printmaking techniques, materials, and processes. Includes a brief exploration into the history of printmaking and explores how printmaking processes have evolved over the years into modern commercial printing. Print methods range from etching to screen printing. 3 Credits (2 Lecture -3 Lab) **As needed, Spring.**

ART220

Ceramics II

This course provides to the serious students interested in ceramics the opportunity to become involved with more sophisticated techniques and aesthetic problems dealing with design and production. Includes hand-building, advanced wheel techniques, various clay bodies, glazes and color development, decorating techniques, and firing processes for producing ceramic forms. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART140. (ART) As needed, Spring.*

ART223

Painting II

Further study of painting with an emphasis on color relationships, pictorial space, form and structure, and the development of individual concepts. Includes study of painters' styles and techniques from various periods and cultures. Exploration of various painting media is encouraged. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART122. (ART) As needed.*

ART225

Type Design I

Introduction to the history, anatomy and design of letterforms. A study of letterforms, spacing, and the elements and design of layout and graphic design. Development of skills in rendering letterforms in a variety of materials, for a variety of applications. (Formerly ART230) 3 Credits (2 Lecture -3 Lab) *Corequisite(s): PNP114. Fall Only.*

ART235

Type Design II

The course will focus on the formal and aesthetic principles of letterforms and their use in the design and layout of text-centered work. The skill acquired should enable the student to develop an aesthetic sensibility for type and the printed page. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART225. Spring Only.*

ART240

Bookmaking

This course is an introduction to designing, techniques, structure and the use of media in the production of a one-of-a-kind personal book. This course also includes basic papermaking and bookbinding. 3 Credits (2 Lecture -3 Lab) **As needed, Fall.**

ART260

Introduction to Computer Graphics

Develops student comprehension and mastery of vector graphics in electronic design. Emphasis is placed on computer and software applications for image and type layout design. Students also develop and refine concepts using traditional media for graphic design. (Formerly ART255) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART102. Corequisite(s): PNP114. Fall Only.*

ART295

Portfolio

Students design and develop a portfolio for entry into the art and design field. Emphasis is placed on concept development, execution of artwork, and the representation of identity through the design of a personal logo and resume. Prior to scheduling this course, students must have completed the majority of the major course work in the Advertising Art program. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): ART210 and ART235 and PHO250 and PNP210. Spring Only.*

ART310

Graphic Design: Point of Purchase (POP)

A variety of forms of advertising designed to be used at the point where the purchase can be made. Because of the diverse projects, students are free to experiment and come up with new design solutions using a variety of materials and techniques. The point of purchase design must not only be extremely creative, but also aware of the production demands and cost. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART106 and ART108 and ART210 and ART230 and ART255 and PNP114 or ART202 and ART210 and ART235. Spring Only.*

ART330

Modern Art and the Contemporary Image

A course about the art of the twentieth century. Emphasizing the interrelation of painting, sculpture, architecture, graphic arts, photography, and computer-generated art during major art movements of the 1900s: avant-garde art, cubism, surrealism, abstract expressionism, pop and op art, minimalist art, performance and virtual reality experiences. Includes the study of the scientific, political, economic, social, and literary dimensions of the period. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ART106 and ART108 and ART300 or ART125 and ENL121. (ART, Writing Enriched) Spring Only.*

ART340

Illustration

Includes application of the various media used to produce narrative drawings and paintings for advertising and editorial use. Also acquaints students with styles and techniques appropriate for satisfying a wide range of visual requirements within the commercial art field. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART106 and ART108 and ART180 or ART109 and ART180. Fall Only.*

ART360

Graphic Design for the Web

Study of creative applications, design principles and aesthetics of the web page. Students will research, design and produce web pages utilizing various graphic design software and digital media. Emphasis will be placed on application of artistic concepts and formal design attributes for a web page. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART210 and ART260. Fall Only.*

ART410

Graphic Design, Corporate Identity (CID)

In this course, students will contact and research a product-oriented company, submit a profile, and over the course of the semester design a logo and a variety of items relating to that company. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART210 and ART230 and ART255 and PHO350 or ART235 and PHO250. Corequisite(s): ART450 or ART460. Fall Only.*

ART420

Portfolio Design

This class will allow the students to develop and enhance their design works for the portfolio they will use while looking for a job. Students will also develop a personal identity to be used on a letterhead, resume, and envelope. All major coursework, except ART 495, should be completed before enrolling. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART410 and ART450 or ART410 and ART460. Corequisite(s): ART495 or ART496. Spring Only.*

ART460

Advanced Computer Graphics

Advanced study of computer applications utilizing test and image manipulation for interactive design. Emphasis is placed on the application of concept development and design theory. (Formerly ART450) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ART210 and ART260 and ART310 and PHO250. Fall Only.*

ART496

Senior Project

Students will be responsible for developing an independent project, working with faculty direction. Includes research, analysis, discussion, execution and presentation of a final project within the discipline. Prior to scheduling this course, students must have completed all major course work except for the Portfolio Design and one BGD/PHO elective. (Formerly ART495) 3 Credits (2 Lecture -3 Lab) *Corequisite(s): ART420. Spring Only.*

AVIONICS/AVIATION (AVC)

AVC101

Basic Electricity

Basic electrical theory as it applies to Ohm's Law. Application of AC-DC circuits. Use of electrical measuring instruments and diagrams. Principles of aircraft electrical components and power systems. 2.50 Credits (1.50 Lecture - 3 Lab) **Fall Only.**

AVC102

Avionics Fundamentals and Flight Physics

A course providing students with an overview of the array of avionics systems used in modern aircraft. The four categories of avionics systems will be examined: communications, navigation, surveillance, and automatic flight control systems; stressing an understanding of their basic theory and purpose. Physics concepts applied to basic aerodynamics such as Bernoulli's Principle and Newton's Laws, as well as fixed and rotary wing flight control surfaces are presented, to achieve an understanding of aircraft performance in the flight envelope. 1 Credit (1 Lecture -0 Lab) **Fall Only.**

AVC104

Federal Air Regulations, Records and Publications

Federal aviation regulations under parts 43, 65 and 145 as they apply to the privileges and limitations of the mechanic. The use of aircraft maintenance publications, records and forms. 1.50 Credits (.90 Lecture -1.80 Lab) **Fall Only.**

AVC105

Flight Line Servicing and Corrosion Control

An introduction to the identification of specific aircraft fuels and lubricants, ground movement procedures, operation practices, security and safety precautions necessary with aircraft. Including the selection, determination and use of proper cleaning materials and procedures for corrosion control. (Formerly AVC111) 2.50 Credits (1.40 Lecture -3.40 Lab) **Fall Only.**

AVC108

Aircraft Materials, Process, Fluid Lines and Fittings

An introduction to various practices, and process utilized by aviation mechanics. Included in the course will be a study of precision measuring equipment, non-destructive inspections, hardware identification, forming, bending and inspection of flexible and rigid tubing. 3 Credits (1.70 Lecture - 3.90 Lab) **Fall Only.**

AVC115

Aircraft Basic Science

Theory and application of basic science principals as they relate to aviation maintenance. Physics laws and mathematics concepts covered in detail for applications within the industry. The procedure for weighing aircraft, computing the various weights for proper balance, and record keeping of the data. 3 Credits (1.90 Lecture -3.30 Lab) **Fall Only.**

AVC116

Turbine Engines

Theory and operating principles of aircraft gas turbine engines and the functions of the engine components. 3.50 Credits (1.90 Lecture -4.80 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Corequisite(s): AVC144. Spring Only.*

AVC120

Aircraft Electrical and Instrumentation Systems

The study of the theory, testing, and troubleshooting of aircraft power generation and distribution systems. In addition, theoretical concepts of engine monitoring, position and indication, crew warning, and flight instruments are examined. Testing and troubleshooting of flight instruments to include: attitude

and heading reference gyros, magnetically referenced electric gyro systems, pitot-static instruments, and flight line maintenance of Electronic Flight Instrument Systems (EFIS). 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): AVC102 and EET110 and EET111 and EET112 and EET113 and EET114 and EET115. Spring Only.*

AVC125

Engine Ignition Systems

The inspection, service, troubleshooting, repair and theory of reciprocating and turbine engine ignition systems. Includes various related components. 2 Credits (1.10 Lecture -2.70 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Fall Only.*

AVC128

Engine Induction and Exhaust Systems

Covers engine induction, ice and rain control, heat exchanges, superchargers and turbo charges, and air intake and induction manifolds. Includes the theory, inspection, troubleshooting and repair of these components. Engine exhaust systems and their components are covered. 1.50 Credits (.80 Lecture -2.10 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Corequisite(s): AVC144. Spring Only.*

AVC132

Engine Fuel Metering

Theory, operating principles and maintenance of reciprocating and turbine engine fuel metering systems which include float and pressure carburetors, fuel injection and fuel controls. 2 Credits (1.10 Lecture -2.70 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Fall Only.*

AVC134

Propellers

Theory, operating principles and maintenance practices for fixed pitch and constant speed propellers. Also covers propeller governing and synchronizing system, ICR control and their related functions. 3 Credits (1.60 Lecture -4.20 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Corequisite(s): AVC144. Spring Only.*

AVC137

Reciprocating Engine Installation and Operation

Reciprocating engine installation and operation to include adjustment of fuel metering components, propellers, magnetos and other components, adjustment and rigging of controls and associated components to ensure safe and efficient operation. 3 Credits (1.70 Lecture -3.90 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Corequisite(s): AVC144. Spring Only.*

AVC138

Reciprocating Engine Overhaul

Reciprocating engines including nomenclature, operating principles, disassembly inspection of parts and reassembly. 4 Credits (2.30 Lecture -5.10 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115. Corequisite(s): AVC144. Spring Only.*

AVC144

Aircraft Drawings

Aircraft blueprint reading for aviation maintenance technicians. Emphasizes reading and interpreting multiview drawings. Includes installation diagram, schematics, and the use of charts and graphs. Students will produce three-dimensional sketches for repair and alterations to aircraft. (Formerly EDT104) 1.50 Credits (1 Lecture -1.60 Lab) **Spring Only.**

AVC177

Engine Cooling, Lubrication and Inspection

Introduction to the proper procedures for servicing, inspecting and repair of the powerplant lubrication system, cooling system and the use of proper inspection procedures. Engine manufacturers' procedures and specifications will be followed to properly maintain, troubleshoot, and provide safe and efficient operation of the powerplant. 2 Credits (1 Lecture -3.80 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Fall Only.*

AVC178

Engine and Airframe Fuel and Fire Protection

An introduction to the theory and operation of various fuel and fire protection systems currently in use on aircraft and powerplant systems. The student will be able to identify the various components, systems and subsystems associated with the fuel systems including types of fuel used, fuel pumps, fuel tanks,

selector valves, and means of controlling the flow and storage of fuels. Additionally, fire protection systems will be explored to include detection, warning and extinguishing of airframe and engine fires. 1.50 Credits (.80 Lecture -2.20 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Fall Only.*

AVC181

Engine Electrical

The operation, installation and repair of engine electrical components. Includes wiring, controls, switches, protective devices and generating and starting units. 3.50 Credits (1.90 Lecture -4.80 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144.*

AVC182

Aircraft Instrument Systems

Gyroscopic, temperature, direction, and pressure operated instruments systems are explained and their markings are identified. Theory and application of electronic flight instrument systems as found in modern aircraft. Includes the installation, inspection and service of aircraft instruments and their systems. 1.50 Credits (.80 Lecture -2.20 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Fall Only.*

AVC201

Aircraft Electrical

Study and repair of airframe electrical circuits and components. Includes wiring, controls, switches, protective devices and lighting systems. AC/DC circuits and related electrical accessories. (Formerly AVC184) 4 Credits (2.80 Lecture -3.60 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144.*

AVC205

Aircraft Assembly and Flight Control Rigging

This course is designed to build on and expand the theory of flight competencies from earlier courses. Students perform adjustments to, and balance checks of, flight controls. Major airframe components of the aircraft are assembled and rigged while proper documentation and safety procedures are followed. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Fall Only.*

AVC207

Airframe Covering, Finishes and Welding

The use of various fabrics in the construction of aircraft and the application of paints and dope. Fabric restoration and repair procedures are covered in detail. The application of welding theory and methods. Students are instructed in the safe and proper use of welding equipment. Students produce a variety of welds on different metals using several methods. 3 Credits (1.70 Lecture -3.90 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Fall Only.*

AVC208

Aircraft Landing Gear, Hydraulics, Pneumatics and Position Warning

The inspection, operation, service and repair of aircraft landing gears, hydraulics and pneumatics. Landing gears including retraction systems, shock struts, brakes, wheels, tires and steering systems. Hydraulics and pneumatics including power and control systems, pumps, actuators and special equipment. Position and warning systems including speed and take-off, anti-skid and landing gear position units. 5.50 Credits (3.20 Lecture -6.90 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Spring Only.*

AVC209

Sheet Metal Applications

Students will learn to apply the various methods and materials utilized in the construction, design and repairing of aircraft metallic structures. This course will allow the student to discover and practice the approved methods, processes and procedures used in inspection, repair, manufacturing and fabrication of sheet metal structures and components. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): AVC205 and AVC207. Spring Only.*

AVC210

Composite and Wood Applications

The application of non-metallic aircraft structures to include inspection and repair of composite, fiberglass, plastic, honeycomb and wood materials utilized in the manufacturing and repair procedures. Students learn the proper and safe procedures utilized by the industry to ensure a continuous airworthiness condition of the airframe and components. Repair, inspection, and testing procedures will be applied to structural and non-structural components. 1.50 Credits (1 Lecture -1.60 Lab) *Prerequisite(s): AVC205 and AVC207. Spring Only.*

AVC212

Rotary Wing Aircraft Applications

The application of rotary wing aircraft design and the laws of physics that apply to the operation of helicopters. Topics include primary flight controls, rotor heads and airframe systems. Students learn the procedures for rigging of the flight controls and special precautions for helicopter operation. Additional topics include the study of non-standard flight platforms. 1.50 Credits (1 Lecture -1.60 Lab) *Prerequisite(s): AVC205. Spring Only.*

AVC213

Airframe Inspection

The course is designed to prepare aviation maintenance technicians to perform to aviation industry standards in various types of procedures utilized to inspect an aircraft to verify airworthiness and conformity to manufacturer's specifications, Federal Air Regulations, and Type Certificate Data Sheets. Use of manufacturer service, inspection and maintenance manuals, including inspection checklists will be required in the performance aspect. Precise and proper maintenance record entries will also be demonstrated. .50 Credit (.20 Lecture -1 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Spring Only.*

AVC214

Aircraft Atmosphere Control and Ice/Rain Control

The various types of atmosphere control systems. Includes pressurization, heating, cooling and ventilation as well as oxygen systems. Also covers the various pneumatic and electrical operated ICR and rain control systems. 2 Credits (1.30 Lecture -2.10 Lab) *Prerequisite(s): AVC104 and AVC105 and AVC108 and AVC115 and AVC144. Spring Only.*

AVC215

Navigation and Communication Applications

An application of navigation and communication systems found on current generation aircraft. Students learn the theory and operation of aircraft communication systems to include VHF and SATCOM. Additional topics include aircraft navigation systems, cockpit displays, and integration of the autopilot. Intermediate BITE testing and troubleshooting concepts. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC182. Spring Only.*

AVC227

Aviation Navigation and Communication Theory

A study of avionics communication and navigation focusing on the theoretical concepts and maintenance of High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communication and navigation systems. In addition, audio integration systems used on aircraft will be studied. Special emphasis will be placed on the subjects covered in the Federal Communications Commission General Radio Telephone Operators Examination. 4 Credits (4 Lecture -0 Lab) *Prerequisite(s): AVC120 and EET150 and EET151 and EET152 and EET153. Corequisite(s): AVC228.*

AVC228

Aviation Navigation and Communication Applications

An application of avionics communication and navigation principles concentrating on the maintenance of High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communication and navigation systems. In addition, audio integration systems used on aircraft will be studied. Special emphasis will be placed on the subjects covered in the Federal Communications Commission General Radio Telephone Operators Examination. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): AVC120 and EET150 and EET151 and EET152 and EET153. Corequisite(s): AVC227.*

AVC229

Flight Control Systems

An application of avionics communication and navigation principles concentrating on the maintenance of High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communication and

navigation systems. In addition, audio integration systems used on aircraft will be studied. Special emphasis will be placed on the subjects covered in the Federal Communications Commission General Radio Telephone Operators Examination. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC120 and EET150 and EET151 and EET152 and EET153.*

AVC234

Advanced Navigation

A study of area navigation systems including Automatic Direction Finding (ADF), land based area navigation (VOR/DME R-NAV), LORAN-C and GPS. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC120 and AVC227 and EET150 and EET151 and EET152 and EET153.*

AVC237

Advanced Avionics Systems Theory

A study of avionics systems used on modern aircraft focusing on component level circuit analysis and troubleshooting. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): AVC120 and AVC227 and EET150 and EET151 and EET152 and EET153. Corequisite(s): AVC238.*

AVC238

Advanced Avionics Systems Applications

A practical study of avionics systems used on modern aircraft focusing on component level circuit analysis, and troubleshooting. Emphasis will be placed on component level repair of inoperative equipment. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): AVC120 and AVC227 and EET150 and EET151 and EET152 and EET153. Corequisite(s): AVC237.*

AVC242

Avionics Airframe Applications

A study of aviation materials and processes pertaining to avionics installations, focusing on fastener installation, proper tool usage, and advanced composite materials. 2 Credits (1 Lecture -3 Lab)

AVC309

Airframe Sheet Metal Structures

Students will learn to differentiate among the various methods and materials utilized in the construction, design and repairing of aircraft metallic structures. This course will include the approved methods, processes and procedures used in inspection, repair, manufacturing and fabrication of sheet metal structures and components. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): AVC205 and AVC207. Spring Only.*

AVC310

Non-Metallic Structures

The study of non-metallic aircraft structures to include inspection and repair of composite, fiberglass, plastic, honeycomb and wood materials utilized in the manufacturing and repair procedures. The application of proper and safe procedures utilized by industry standards to ensure a continuous airworthiness condition of the airframe and components to ensure safety and compatibility of non-metallic structures. Repair, inspection, and testing will be applied in order to differentiate types of material used in manufacturing, inspection and repair of various structural and non-structural components. 1.50 Credits (1 Lecture -1.60 Lab) *Prerequisite(s): AVC205 and AVC207. Spring Only.*

AVC311

Navigation and Communication Systems

An exploration of integrated navigation and communication systems found on current generation aircraft. Theory and operation of aircraft communication systems to include VHF and SATCOM. Theory and operation of aircraft navigation systems, cockpit displays, and integration of the autopilot. Advanced BITE testing and troubleshooting concepts. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC182. Spring Only.*

AVC312

Rotary Wing Aircraft

The study of the theory of flight for rotary wing aircraft and the laws of physics that apply to the operation of helicopters. Topics include primary flight controls and rotor heads. Control of the helicopter about the three axis is studied. Detailed analysis of the rigging and special precautions for helicopter operation. Additional topics include the study of non-standard flight platforms. 1.50 Credits (1 Lecture -1.60 Lab) *Prerequisite(s): AVC205. Spring Only.*

AVC327

Aircraft Navigation and Communication Theory

A study of avionics communication and navigation focusing on the theoretical concepts and maintenance of High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communication and navigation systems. In addition, audio integration systems used on aircraft will be studied. Special emphasis will be placed on the subjects covered in the Federal Communications Commission General Radio Telephone Operators Examination. Students will be eligible to take the FCC exam. Additional areas of study will include a historical overview of aircraft communications and navigation systems with a focus on the systems of today and those of tomorrow. 4 Credits (4 Lecture -0 Lab) *Corequisite(s): AVC328.*

AVC328

Aircraft Navigation and Communication Applications

An application of avionics communication and navigation focusing on the concepts and maintenance of High Frequency (HF), Very High Frequency (VHF), and Ultra High Frequency (UHF) communication and navigation systems. In addition, audio integration systems used on aircraft will be studied. Special emphasis will be placed on the subjects covered in the Federal Communications Commission General Radio Telephone Operators Examination. Students will be eligible to sit for the FCC exam. Additional areas of application will concentrate on emerging technologies in both general and commercial aircraft. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): AVC327.*

AVC329

Aircraft Control Systems

A study of flight control systems focusing on the theoretical concepts and maintenance of autopilots, integrated flight control systems, and flight management systems. Students will be given a historical overview of flight control systems that leads to a detailed exploration of the modern flight control package. 2 Credits (1 Lecture -3 Lab)

AVC335

Aviation Microwave Pulse Theory

A study of microwave pulse systems used on-board aircraft focusing on Distance Measuring Equipment (DME), air traffic control transponders, airborne weather radar, and RADAR altimeters. Students will be given a historical overview of aircraft pulse systems that will lead to a detailed analysis of the modern avionics pulse system. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AVC120 and EET150 and EET151 and EET152 and EET153 or AVC182. Corequisite(s): AVC336.*

AVC336

Aviation Microwave Pulse Applications

A study of microwave pulse systems used onboard aircraft focusing on the practical maintenance of Distance Measuring Equipment (DME), air traffic control transponders, airborne weather radar, and RADAR altimeters. Students will be given an historical overview of the systems that leads to a detailed analysis of the modern avionics system. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): AVC120 and EET150 and EET151 and EET152 and EET153 or AVC182. Corequisite(s): AVC335.*

AVC340

Avionics Integration

A study of avionics integration and installation techniques focusing on custom interconnects between various avionics subsystems in accordance with the appropriate Federal Aviation regulations. The course will focus on the integration of the avionics system as a complete package. Special features include the study of digital information transfer between components of the system. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): AVC120 and AVC227 and AVC228 and AVC229 and EET150 and EET151 and EET152 and EET153 or AVC327 and AVC328 and AVC329.*

AVC434

Long Range Navigation Systems

A study of area navigation systems including Automatic Direction Finding (ADF), land based area navigation (VOR/DME R-NAV), LORAN-C, and GPS. The course features the most popular forms of aviation navigation. An overview of navigation system is provided while focusing on the modern satellite systems of today and tomorrow. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): AVC182 and AVC327.*

AVC496

Senior Project

A study in the application of knowledge gained in the Aviation Maintenance Technology Program, and how this knowledge will assist the student in becoming an aviation maintenance professional. Topics for discussion and research will range from cost effectiveness, maintaining aircraft and avionics, aircraft overhaul, and the effect of outside entities on the aviation industry. Students are required to complete a major project and provide the necessary industry required documentation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): AVC327 and AVC328 and AVC329. (Writing Enriched)*

BUILDING AUTOMATION (BBT)

BBT209

Building Automation Industry

This course presents the fundamentals of commercial HVACR systems used to condition buildings and their occupants and equipment. An introduction to control system operation and control system types is covered. Career opportunities and the scope of the building automation industry are also covered. 3 Credits (3 Lecture -0 Lab)

BBT304

Direct Digital Control of HVACR Equipment

Students in this course study application specific controllers as well as general-purpose digital controllers. The course also includes material on digital/analog input and output types. Students also study the installation and set-up of the controllers for single zone, variable air volume (VAV), and unitary systems are covered. Topics in digital control system architecture and the fundamentals of control theory as they apply to digital HVACR control are also studied. DDC cycles of operation and control sequences and documentation are also covered. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BBT209.*

BBT310

Building Automation Industry Internship

This course provides a vehicle for a paid internship with a company, association, or institution with direct involvement in HVACR controls and automation design, layout, installation, or troubleshooting. Internships must be approved by BBT faculty prior to the start of the internship. An internship guide provides more information. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): BBT304 and BBT344.*

BBT344

Electric, Pneumatic and Electronic Control Systems

This course covers the basics of commercial HVAC control theory as it applies to electric, pneumatic and electronic controls systems. Students study control sequences, system drawings and specifications. A section on troubleshooting is also included. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BBT209.*

BBT406

Building Control Networks

Topics in this course include common building control network implementations and protocol standards including Web based applications, BACnet, Ethernet, Arcnet, LonTalk and various proprietary systems. Additional topics include transmission types such as twisted pair, coax, fiber optic cable, and RF. Students in this course will also study routers and bridges, installation and troubleshooting building controls. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BBT304 and BBT344. Corequisite(s): BBT414.*

BBT412

Building Commissioning and Recommissioning

This course focuses on the building commissioning and recommissioning process and includes topics in air and water balance and control system operation and optimization. Report writing including the use of tables and graphs is stressed. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BBT406.*

BBT414

Building Automation Programming

This course provides the student with an introduction to programming HVACR direct digital controllers and building integration panels. Topics include line programming, icon based programming, and template programming. This course stresses good programming practices including complete program documentation. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BBT304 and BBT344. Corequisite(s): BBT406.*

BBT415**Integrated Building Operation and Energy Management**

This course involves the study of interoperability between horizontal systems such as HVACR equipment operation from different manufacturers. Topics in this course also include vertical interoperability between HVACR, security, energy monitoring and control, fire safety and elevator systems. The course provides an opportunity for students to explore topics in energy management strategies for new and existing buildings. 3 Credits (2 Lecture -3 Lab)

Prerequisite(s): BBT406 and BBT414. (Science, Technology and Society, Writing Enriched)

BBT416**Central Mechanical Equipment Control and Building Electrical Systems**

This course includes topics in the operation and control of central mechanical. Students in this course study air and water-cooled reciprocating, centrifugal, scroll and screw chillers, cooling tower operation and control, and single and two-stage absorption. Topics are also included in commercial steam and hot water boiler control and in chilled water, steam, and hot water distribution systems control. Students study building electrical systems including metering, wye/delta, and part winding starters, soft-start starters and variable speed drives applied to HVAC fans and pumps. The student is also provided with a brief overview of fire and security systems. Electrical codes, standards, isolation transformers will also be covered. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BBT406 and BBT414.*

BBT495**Senior Seminar-Lecture**

This lecture component of the senior capstone course draws on course work in previous semesters, the internship, and current course work. Students develop a problem statement in the form of a proposal with supporting documentation concerning an operating or proposed HVACR control system. This course emphasizes critical thinking, oral and written communication, and engineering visualization presentation methods. 1 Credit (1 Lecture -0 Lab) *Corequisite(s): BBT406 and BBT414.* **Fall Only.**

BBT496**Senior Seminar-Lab**

Students will work under a faculty mentor to develop and deliver the finished project as proposed by the student in the planning portion of the senior seminar. Successful completion of the project will include an executive summary, a graphical and oral presentation. The senior seminar emphasizes critical thinking, oral and written communication, and engineering visualization presentation methods. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): BBT495.* **Spring Only.**

BUILDING CONSTRUCTION (BCC)**BCC124****Roof Construction**

In this course various types of roofs are studied, including parts of a roof system, layout terms, rafter sizing, rafter layout and the use of a framing square. Roof framing principles and application will be emphasized, including gable, hip, and intersecting roof designs. Construction of a roof will be performed. Other objectives include advanced framing practices, including cantilevers, patio-decks, and post and beam construction. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCT109.* **Spring Only.**

BCC130**Masonry Construction**

This course stresses the terms and definitions of block wall foundations, parts of a block, styles of block, methods of block construction and variables of mortar mixes, their uses and problems in light construction. Other objectives include an introduction to brick and stone construction. 5 Credits (2 Lecture -9 Lab) *Corequisite(s): BCT100.* **Fall Only.**

BCC140**Brick and Stone Construction**

A continuation of BCC 130. This course stresses the terms and definitions and hands-on practice of brick and stone construction, types of brick and stone construction, styles of brick and stone, methods of brick and stone construction, mortar mix, joint reinforcement, wash down, weather protection, silicon and bleaching and prevention. Also included will be fireplace construction. 4 Credits (1 Lecture -9 Lab) *Prerequisite(s): BCC130.* **Spring Only.**

BCC235**Exterior Finishing**

Develop skills in the selection and installation of siding and roofing materials, installation of windows, exterior doors, garage doors, cornice work, and other exterior finish applications. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCC124.* **Fall Only.**

BCC236**Interior Finish Materials**

Students will learn application techniques for the following material types: drywall, plaster, tile, paneling, wallpaper, flooring, linoleum, carpet, and ceiling treatments. 4 Credits (1 Lecture -9 Lab) *Prerequisite(s): BCT109.*

BCC239**Introduction to Commercial Construction**

Introduction to the methods of light and heavy commercial structures. Metal framing materials, trusses, laminated beams, and prefabricated materials are included. Reinforced concrete, masonry, and steel structures are discussed. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BCC124.* **Fall Only.**

BCC245**Practical Construction**

Use of the knowledge and skills acquired in the construction curriculum. Supervise permanent projects on and around campus. When practical, the student participates in all stages of a project from planning through construction. 4 Credits (1 Lecture -9 Lab) *Prerequisite(s): BCC235.* **Spring Only.**

BCC247**Interior Trim**

Principles and methods of interior carpentry construction. Includes the installation of interior trim, doors, and stair building. Advanced woodworking techniques and cabinetry are also covered. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCT109.* **Spring Only.**

BCC249**Construction Estimating and Management**

Study of construction estimating and its relation to construction management for residential and light commercial structures. Processes and procedures will be covered to give the student a working knowledge of how realistic construction costs are obtained. The emphasis will be placed on the types of estimates and quantity takeoff and development of construction schedules. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCC235.* **Spring Only.**

BCC250**Computers in Construction**

An introduction to the use of the microcomputer for construction applications. Software available in construction will be presented in the course, including an introduction to word processing. Basic DOS functions, computer equipment, keyboard, and other related software for the construction field will be included. 2 Credits (1 Lecture -3 Lab) **Spring Only.**

BCC251**Introduction to Home Remodeling**

An introduction to the evaluation, planning, and implementation of residential remodeling. Techniques used in evaluating and planning bathrooms, kitchens, additions, and basement conversions. Remodeling materials and methods of construction are covered in this course. 3 Credits (2 Lecture -3 Lab)

CONSTRUCTION MANAGEMENT (BCM)**BCM101****Construction Materials and Methods I**

The purpose of this course is to provide students with knowledge of residential building techniques and materials. Students will study specific erection and fabrication techniques, construction materials and their uses. Course also will focus on traditional as well as prefabricated and/or pre-manufactured methods and materials. This course will provide the technical knowledge base for those students who will manage the residential building process. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

BCM102**Construction Materials and Methods II**

Students will acquire knowledge of light commercial building systems, materials, erection and assembly procedures. The focus of this course is to provide students with a technical knowledge base necessary to manage and direct the building process for light commercial buildings and projects. Building types studied will include pre-engineered steel; tilt-up concrete; composite types consisting of masonry, steel and/or wood, modular systems. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

BCM110**Construction Safety Management**

Course introduces the student to the construction safety management process. The student will learn the criteria for reviewing project safety and how to improve safety on the job. The course will include the preparation and implementation of a project safety manual. Students' studies include safety administration, program development, federal and state regulations. 2 Credits (2 Lecture -0 Lab)

BCM112**Construction Working Drawings**

Laboratory practice and theory in producing and interpreting architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation and quality. 4 Credits (2 Lecture -6 Lab)

BCM201**Construction Equipment**

A study of the types and uses of construction equipment and tools beginning with power tools and ending with earth moving equipment. Particular emphasis will be given to safe tool and equipment use, scaffold, ladder and trench safety and electrical safety. 2 Credits (2 Lecture -0 Lab) **Fall Only.**

BCM202**Basic Construction Surveying**

Course introduces the student to basic construction surveying concepts. Includes the care and use of instruments, differential leveling, distance measurements, property layout, contours, slope, direction calculations, site preparation, and the layout of construction projects. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH172 and MTH180.*

BCM210**Heavy Construction and Estimating**

This course introduces the student to the area of construction known as Heavy and Highway. The course will include the method of construction and methods of construction estimating for this construction category. Students will acquire a knowledge of the terminology. Topics include structural steel, highways, dams, industrial, high rise and bridge construction. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): BCM112 and BCM250.*

BCM250**Basic Construction Estimating**

Standard construction estimating procedure from conceptual estimates to project award. Areas of construction estimating from general conditions to punch list items will be introduced and discussed. The course will also explain how construction estimating is affected by building codes, zoning regulations, and other constraints. Application will consist of utilizing all acquired knowledge for production of residential building estimate. Students enrolled in this course must have acquired the basic understanding of materials and methods, and sequencing of the construction process. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): BCM112 and BCM210.*

BCM255**Construction Computer Applications**

This course presents an introduction to the use of the microcomputer for construction applications. Building upon the foundation laid by prerequisite courses, the student will combine construction-related software programs and real-world information to generate building design, construction estimates, and project scheduling. Students will also learn how to utilize the personal computer for construction organizational duties using word processing, presentation, spreadsheet, and database applications. Construction-related business software will be used and evaluated in the course. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): BCM101 and BCM112 and CSC110.*

BCM260**Construction Project Financing**

A study of building construction financing and related contract requirements. Topics include construction loans, permanent building mortgages, construction bids and contracts, penalty and incentive provisions, progress payments and retention, escalation provisions, cost extras performance and bid bonds, company profits, cash flow and business loans. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): ACC112 or ACC113.*

BCM300**Construction Specifications**

Students will gain knowledge in interpretation of technical building specifications and their application to selection and installation of material, equipment, and systems. The Construction Specification Institute Index System (SCI) database will be used. Students will study building and material specifications as supplied by architects, government agencies, and professional contracting organizations such as the AGC (Association of General Contractors), ABC (Associated Building Contractors), and the NAHB (National Association of Home Builders). 3 Credits (3 Lecture -0 Lab) **Fall Only.**

BCM301**Construction Law**

This course addresses the legal aspects of the construction process. Contractual issues, litigation and the relationships of the construction parties from the perspective of a contractor are examined. The student will be instructed in the preparation and implementation of contracts as well as defending claims against the contract. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): MGT231.*

BCM302**Electrical and Mechanical Systems**

This course is designed to provide basic knowledge of electrical, plumbing, and HVAC systems used in residential and light commercial buildings. Emphasis is placed on advantages and disadvantages of various systems, and how their design and installation integrates into the management of the building process. Particular attention is given to soliciting and managing mechanical and electrical sub-contractors. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

BCM306**Structural Components**

Presents the fundamental principles of structural mechanics as they are applied to the design and selection of structural components in residential and commercial building. Students will learn how loads and stresses are determined, the proper use of tables to size and select structural members, and how the construction manager can assist the engineer in the solution of structural problems. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCM101 and BCM102 and BCM112 and BCM210 and BCM250 and BCM255 and MTH172 and MTH180.*

BCM310**Construction-Temporary Structures**

The course will include the preparation of soil erosion controls, site dewatering, formwork design, protection of site features and design of construction roadways. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BCM112 and BCM202 and BCM210 and BCM250 and MTH180.*

BCM312**Construction in the International Market**

This course contrasts aspects of the U.S. construction industry with similar yet fundamentally different operating procedures utilized within the international construction community. Areas of concentration include participant organization and culture, project delivery methods, multi-national teams, and unique operational and management activities essential in the international market. Course introduces the student to the construction procedures on the international market and the impact of the culture of the region on construction. 2 Credits (2 Lecture -0 Lab)

BCM314

Real Estate for Contractors

This course builds a foundation for understanding real estate principles and practices how they relate to the construction industry. Students will investigate the topics of real estate law, financing, property valuation, types of property ownership and government rights and power. Practical examples, problems, and projects are utilized to reinforce the student's understanding of course material. 2 Credits (2 Lecture -0 Lab)

BCM402

Advanced Construction Surveying

This study will advance the student's knowledge of surveying operations associated with performing construction surveys. Techniques taught will include taping, differential leveling, laying off vertical and horizontal angles, traverse surveys, and construction control surveys. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): BCM202 and MTH172 and MTH180.*

BCM405

Quality Assurance and Inspection

Students will learn the duties and responsibilities of the building inspector and will develop an understanding of the importance of quality assurance programs in maintaining safety and efficiency of all building processes. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

BCM406

Construction Management-Residential

An examination of construction management practices as applied by the residential building contractor. Emphasis will be placed on business organizations and operations tasks. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL201 or ENL121.* (Writing Enriched) **Fall Only.**

BCM407

Advanced Materials Applications

A study of the characteristics and properties of various construction materials and how these factors affect intended performance and service life in residential and commercial structures. Detailed attention will be given to concrete and soil applications. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BCM101 and BCM102.* **Spring Only.**

BCM408

Construction Management-Commercial

This course focuses on the processes and tasks required for management of commercial building projects. Students will work in project teams and perform various tasks including developing construction budgets, record keeping and documentation, interpreting contracts and specifications, and other duties necessary for efficient project operation and successful completion. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT247 or MGT249.*

BCM409

Technology and Construction

This course provides a broad presentation of the impact of construction upon social, health, personal, work, industry and investment sectors. The students will use the case study approach to investigate the design, development and execution of construction projects and the industry influence in the United States and the world. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCM101 and BCM102 and BCM201 and BCM300 and BCM301 and BCM302 and BCM306 and BCM312 and BCM402 and BCM406.* (Science, Technology and Society)

BCM410

Advanced Estimating Systems

Course introduces the student to the construction costing process. The student is taken from reviewing project selection criteria and quantity take-off and pricing to subcontractor bid analysis and cash flow forecasting and historical cost analysis. The private and public bidding environments are compared and contrasted. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BCM112 and BCM202 and BCM210 and BCM250 and BCM255 and BCM302 and MTH172 and MTH180.*

BCM412

Construction Planning and Scheduling

The course introduces the student to concepts such as forecasting, tending and completion probabilities are explored. Integration of the estimate into the schedule to facilitate the decision-making process is included. Contractual duties and responsibilities of the parties to the contract as they are impacted by the scheduling and planning effort are examined. (Formerly BCM308) 3

Credits (2 Lecture -3 Lab) *Prerequisite(s): BCM112 and BCM210 and BCM250 and BCM255 and BCM310 and BCM402 and BCM410 and MTH160 and MTH172 and MTH180.*

BCM495

Senior Project/Co-Op Experience

This course is designed for students who have completed the majority of their Construction Management courses. Activities will include library and field research, data analysis, report writing, and active participation in the discussion and presentation of the final project or through a co-op experience. Topics may include but are not limited to entrepreneurship, construction management field practices, organizational operations, etc. All project proposals are subject to instructor approval. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCM101 and BCM102 and BCM201 and BCM300 and BCM302 and BCM306 and BCM402.* **Spring Only.**

BUILDING CONSTRUCTION (BCT)

BCT101

Introduction to Building Maintenance

This introductory course covers the basic materials, tools and step-by-step procedures used in building maintenance. Safety, material selection, tool care and use, specifications, basic carpentry, basic plumbing, basic wiring, repairs and estimation are included. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): MTH006 or MTH180.*

BCT102

Construction Safety and Equipment

This course is designed to give the student a working knowledge of auxiliary equipment and systems used to perform construction work. Various types of scaffold will be erected. The operation of moving equipment, power generating equipment, and powered fastening systems will be reviewed. Personal safety issues along with issues specific to individual pieces of construction equipment will be addressed. OSHA requirements/guidelines specific to the construction industry will be thoroughly reviewed. 2 Credits (2 Lecture -0 Lab)

BCT103

Construction Hand and Power Tools

This course is designed to give the student a working knowledge of hand and power tools typically used to perform construction work. Emphasis is placed on the development of skills needed to effectively perform layout, measurement, cutting, fastening, and finishing operations. Maintenance of tools and equipment will be thoroughly addressed. Safe use of hand and power tools will be stressed. Emerging tool technology will be explored. 1 Credit (0 Lecture -3 Lab)

BCT105

Painting Applications for Construction

This introductory course covers the basic materials, tools and step-by-step procedures for interior and exterior painting and decorating. Safety, material selection, tool care and use, surface preparation, paint application, repairs and estimation are included. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): MTH006 or MTH009A and MTH009B.*

BCT109

Framing Principles

The purpose of this course is to provide students with the knowledge and skills of framing techniques in residential and light commercial construction. Basic principles and skills used in hand and machine woodworking operations will be emphasized. 4 Credits (2 Lecture -6 Lab) *Corequisite(s): BCT102 and BCT103 or BCT100.* **Fall Only.**

BCT110

Site Preparation and Layout

Introduction to site preparation and layout of structures. The use of the builder's level rods, tapes and surveying equipment. Triangle calculations, differential leveling and erection of batter boards and markers are included in this course. 2 Credits (1 Lecture -3 Lab) **Fall Only.**

BCT117

Construction Materials and Applications I

The purpose of this course is to provide students with knowledge of residential building techniques and materials. Students will study specific erection and fabrication techniques, construction materials, and their uses. Course also will focus on traditional as well as prefabricated and/or pre-manufactured methods and materials. This course will provide the technical knowledge base for those students who will manage the residential building process. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

BCT118

Construction Materials and Applications II

Students will acquire knowledge about commercial and residential finish materials and light commercial structural materials, building systems, and assembly methods. The focus of this course is to provide students with a technical knowledge base necessary to manage and direct the building process for light commercial buildings and projects. Building types studied will include pre-engineered steel and tilt-up concrete and composite types consisting of masonry, steel and/or wood modular systems. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCT117.* **Spring Only.**

BCT119

Blueprint Reading and Specifications

Techniques in reading and interpreting blueprints and specifications. Instruction in reading plan views, elevations, and details typical of working drawings. Understanding and using basic construction drawings to determine the methods and materials of light construction. 3 Credits (3 Lecture -0 Lab)

BCT127

Roof Framing and Exterior Finishing

In this course various types of roofs are studied including parts of a roof system, layout terms, rafter sizes, rafter layout, and the use of a framing square. Roof framing principles and applications will be emphasized, including gable, hip, and intersecting roof designs. Construction of a roof will be performed. Other objectives include developing skills in the selection and installation of siding and roofing materials, windows, exterior doors, garage doors, and cornice work. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCT109.* **Spring Only.**

BCT128

Building Materials Applications

A hands-on class in which students working in teams will physically build various projects in order to gain an understanding of the characteristics of typical construction materials used in residential and light commercial construction. Students may schedule this course by also scheduling the corequisite or obtaining permission of the instructor. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): ACH120.* **Spring Only.**

BCT234

Masonry Principles

Introduction to masonry construction materials and methods. This course stresses the terms and definitions, methods and construction practices related to concrete block and brick construction. Other information includes the different types of mortar mixes, their strengths and uses, reinforcement of masonry walls, cleaning, weather protection for masonry, and estimating masonry supplies and materials. 5 Credits (2 Lecture -9 Lab) *Corequisite(s): BCT100 or BCT102 and BCT103.* **Fall Only.**

BCT238

Concrete Construction

Principles of concrete design-water-cement ratio, proportions of ingredients, reinforced concrete, concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing concrete. 3 Credits (1 Lecture -6 Lab) *Corequisite(s): BCT100 or BCT102 and BCT103.*

BCT254

Carpentry for the Trades

Theory and laboratory assignments in basic residential and commercial carpentry. The technical aspects of frame construction, construction materials, use of carpentry tools and equipment, and job safety. Methods and techniques of applying carpentry skills in the trade areas. 2 Credits (1 Lecture -3 Lab)

BCT255

Construction Estimating

Standard construction estimating procedure from take-off to bid. The course includes excavation, concrete, steel, masonry, carpentry, alteration work, mechanical work, electrical work, and general conditions. Included in the

course is an analysis of the Uniform Building Code, FHA, local, city, county, and state codes. Students will be introduced to the following: preparation of the typical contract, insurance, documentation, bonds and formal bidding, along with inspection techniques. Application will consist of utilizing all acquired knowledge for presentation of an actual estimate. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCT233 or MCT239 or BCT118 and BCT127 or BCM101 and BCM102.* **Spring Only.**

BCT256

Residential Construction Planning, Scheduling, and Management

This course will provide students with the fundamental skills necessary to plan and schedule the entire residential construction process. Students will learn to mix and match available resources in the most efficient combinations to complete projects on time and within budget. Also included will be an examination of construction management practices as applied by the residential building contractor, including the interrelationship between architects, sub-contractors, and others in the labor force that involve the contractor. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): BCT255.* **Spring Only.**

BCT257

Interior Finish and Trim

Principles and methods of interior carpentry and finishing. Includes the installation of interior trim, doors, stair building, and cabinetry. Also included is modern finishing materials: drywall, plaster, tile, paneling, wallpaper, flooring, carpet, and ceiling treatments. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCT109.*

BCT258

Computer Applications for Construction

An introduction to the use of the microcomputer for construction applications. Basic design, construction estimating, project management, word processing, spreadsheets, database, and construction related business software will be used and evaluated in the course. Basic DOS functions, computer equipment, keyboard, and other related software for the construction field will be included. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): CSC104 or CSC110.*

BCT260

Introduction to Electrical and Mechanical Systems

This course is designed to provide an introduction to the electrical, plumbing, and HVAC systems used in residential and light commercial buildings. Emphasis is placed on the advantages and disadvantages of various systems, and how their design and installation integrates into the management of the building process. Particular attention is given to the contractor's viewpoint and the soliciting and managing of mechanical and electrical sub-contractors. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

BCT300

Residential Management I

This course introduces the student to the soft skills required to manage a residential business or project. The student will develop a business plan for a residential builder. Topics include modes of communication, feasibility studies, sales, marketing, advertising, insurance issues, conflict resolution, warranty issues, and customer relations. This course is a writing enriched course, formal and informal writing will be emphasized in this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and MGT115.* (Writing Enriched)

BCT310

Residential Management II

This course emphasizes the cost control systems used in residential construction. Topics include construction loans and mortgages, residential bids and contracts, penalty and incentive provisions, profits, overhead and cash flow. Emphasis will be placed on business organization and cost engineering tasks, including database management and software applications. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 and BCT300 or ACC113 and BCT300.* *Corequisite(s): ACC210.*

BCT320

Design and Build/Plan Modification Issues

Building upon the foundation laid by prerequisite courses, the student will use software programs to modify and transmit drawings and specifications. Both CAD and sketch/edit software will be applied. Issues related to the Design & Build process will be examined. Emphasis will lie in solving real world design modifications encountered by managers of residential construction. Consideration will also be given to the modification of specifications to satisfy specific job needs. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACH113 and CSC110 or ACH115 and CSC110.*

BCT330**Residential Building Systems**

This course will provide the student with technical information pertaining to current building systems used in the residential construction industry. Students will study the integration of manufactured components, innovative and alternative foundation options, the modular housing industry, site built framing techniques using the latest in pre-engineered products, steel framing, and traditional log and post-beam construction. Practical examples and current information from sources such as the National Association of Home Builders will be utilized to reinforce the student's awareness of all the various building systems available to builders today. 3 Credits (3 Lecture -0 Lab)

Corequisite(s): BCT310.

BCT410**Advanced Residential Estimating and Scheduling**

This course enhances basic estimating and scheduling skills from previous coursework. This course gives the student the residential construction costing process that follows quantity take-offs, including bidding analysis, productivity assessments and resource allocations. Job sequencing and scheduling as related to the total cost controls will be discussed. Various software applications will be utilized in this course. 3 Credits (3 Lecture -0 Lab)

Prerequisite(s): BCT310.

BCT420**Advanced Mechanical Systems**

This course emphasizes the importance of electrical and mechanical systems in the total homebuilding package. Students will learn to assess customer needs, market trends, and emerging technologies in electrical and mechanical systems to complete the homebuilding process. Emphasis will be placed on utilizing planning, scheduling, bidding, and managerial skills from other coursework to develop a complete electrical and mechanical package for today's homebuyers. Particular attention will be given to energy conservation, and environmental and safety issues as they relate to electrical and mechanical systems. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BCT330.*

BCT430**Contemporary Issues in Residential Construction**

This course will enlighten the student to the constant changing dynamics of the residential construction industry and the effect on both the consumers and the providers within the industry. The intent of this course is to provide the student with current, contemporary issues of culture, politics, economics, environment, and demographics that are affecting the residential building industry. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BCT330.* (Science, Technology and Society)

BCT495C**Senior Co-op Experience**

This course allows students' to apply various skills acquired in previous courses to solve real world residential construction problems. Activities may include library and field research, data analysis, report writing, presentation of the final project, or approved co-op experience. Topics may include, but are not limited to entrepreneurship, residential management field practices, estimating and scheduling, and cost control. Completion of this course by a co-op experience with a residential construction employer, with approval of a faculty advisor, is strongly encouraged. 3 Credits (0 Lecture -15 Lab)

Prerequisite(s): BCT330.

AIR CONDITIONING AND REFRIGERATION (BHV)**BHV310****Cooling System Design**

This course is an introduction to the different types of cooling equipment. The course addresses the basic skills required to calculate cooling loads, layout, and design residential and commercial air conditioning systems. The course will cover the different types of equipment and the proper selection for each application. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACR237. Fall Only.*

BHV315**Heating Design**

This course is a study of the techniques used in the design of commercial hydronic heating systems. Students are introduced to requirements of sizing and selecting equipment, distribution systems, controls, and other devices necessary for efficient system design installation and operation. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PLH239 and PLH244. Fall Only.*

BHV320**Advanced Cooling System Design**

This is an advanced course in HVAC design. The course will deal with topics that require special design needs, such as computer rooms, clean rooms, laboratories and test chambers. The course will show the proper design of these systems and differences they have from standard cooling applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BHV310. Spring Only.*

BHV325**Advanced Heating System Design**

This course is an advanced study of HVAC systems and equipment used in large commercial and institutional buildings containing multiple thermal zones. Major emphasis is placed on system design and equipment selection. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BHV310 and BHV315. Spring Only.*

BHV370**Advanced HVAC-R Control Systems**

This course is a continuation of basic HVAC controls. Emphasis will be placed on the application, set-up, operation, and maintenance of direct digital control systems. Basic design and controller equations will be taught. Other topics will include system drawings, system performance prediction, and control system set-up and functions. Systems used for commercial air conditioning, commercial refrigeration, and energy management will be analyzed. Special attention will be given to state of the art system application and upgrading of existing older systems will be covered. In addition the students will be required to integrate the knowledge gained into written proposals. These proposals will simulate correspondence between a technical designer and a less technical customer. The proposals will cover three major areas of the degree program: 1. Heating and Air Conditioning; 2. Commercial refrigeration; 3. Total Building Environment. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ELT253. (Writing Enriched) Fall Only.*

BHV400**Commercial Refrigeration Systems Design**

This course will familiarize the student with the operation, design, and application of commercial systems. The use, installation, and design of refrigeration systems used in stores, supermarkets, and industry will be covered. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ACR111 and ACR237 and ELT253. Fall Only.*

BHV430**Environmental Impacts of the HVAC Industry**

This course is a study of the impacts of environmental issues and concerns that relate to the HVAC technology in the U.S. and the world. Specific topics will include review and interpretation of environmental policies and regulations, direct and indirect implementation, strategies, and legal remedies. Other important topics of study are interpretation of technical requirements in handling and disposal of toxic refrigerants, oils, metals, and other materials used in HVAC systems. 2 Credits (2 Lecture -0 Lab) **Spring Only.**

BHV435**Computer Applications for HVAC/R**

This course is a basic HVAC/R computer-aided design course. The students will use the latest software to perform heating and cooling load calculations, design and size HVAC systems, select equipment, and draw mechanical systems. The students will design residential and commercial heating and cooling projects. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BHV320 and BHV325 and CSC110. Spring Only.*

BHV495**HVAC Senior Project**

This course is designed to enable the student to put into practice all the competencies learned in other courses. Activities will include library research, data collection and analysis, project planning and development. Topics may include, but are not limited to: project management field and/or office practices, entrepreneurship, project planning and/or design, and feasibility studies. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BHV320 and BHV325 and BHV400. Spring Only.*

BIOLOGY (BIO)

BIO103

Human Anatomy and Physiology Survey

A one-semester survey of human anatomy and physiology designed for non-science majors. Relationships between structures and functions in each body system are emphasized. The interrelationships among all body systems in the maintenance of homeostasis is a unifying concept for this course. Laboratory work complements and reinforces lecture materials. 4 Credits (3 Lecture -3 Lab)

BIO107

Diversity of Life

A one-semester course for non-science majors that examines the different forms of life on earth. Topics include physical, chemical, and mathematical laws that prescribe and limit forms of life; strategies for categorizing organisms; cell diversity; characteristics of major phyla; and the implications of the loss of biodiversity. The laboratory component involves dissection, experimentation, taxonomy, and study of the means by which biological information is acquired and shared. (Student will not receive credit for both BIO107 and BIO113, General Biology I.) 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ENL111 and RDG111 and Placement by Examination or ENL111 and Placement by Examination.*

BIO111

Basic Botany

Fundamentals of plant science, plant anatomy, physiology, taxonomy, reproduction, and genetics. 3 Credits (2 Lecture -3 Lab)

BIO113

General Biology I

A cellular and molecular approach to the study of the fundamental processes of life. Topics include the philosophical underpinnings of the scientific method, inorganic and organic chemistry of life, cellular structure and function, nucleic acid structure and function, and Mendelian and molecular genetics. Successful completion of recent high school biology and chemistry courses is highly recommended. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): Placement by Examination or ENL001 and Placement by Examination or MTH004 and Placement by Examination or RDG111.*

BIO115

Human Anatomy and Physiology I

The first semester of a medically-oriented study of the structure and function of the human body, using homeostasis as a unifying concept. For students specializing in health-related and science programs. Topics include basic biochemistry; basic genetics; the cell; tissues; and the integumentary, skeletal, muscular, endocrine, and reproductive systems. Successful completion of recent high school biology and chemistry courses is highly recommended. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): Placement by Examination or ENL001 and Placement by Examination or MTH004 and Placement by Examination or RDG111.*

BIO123

General Biology II

A continuation of BIO 113. Unifying course concepts are evolution, structure, function, and the interrelationships of organisms. Topics include the origin of life; evolutionary theories; structural and functional study of viruses; monerans, protists, fungi, plants, and animals; animal behavior; and ecological interactions. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO113. Spring Only.*

BIO125

Human Anatomy and Physiology II

A continuation of BIO 115. Topics include the cardiovascular, lymphatic, immune, respiratory, digestive, excretory, and nervous systems. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO115.*

BIO201

Microbiology

Biology of microorganisms. Includes bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Explores the relationship between microorganisms and higher forms of life. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO113 or BIO115.*

BIO208

Ecology

Basic principles of the relationships between plants and animals and their environments. Physical factors, energy and chemical cycles in the ecosystems, population and community characteristics, ecological succession, aquatic and terrestrial ecology. Local terrestrial and aquatic environments. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO103 or BIO113 or BIO115 or BIO201. Spring Only.*

BIO209

Radiation Biology

This course describes the basic effects of ionizing radiation on cells and the human body. Special emphasis is placed on the effects of x-radiation for students enrolled in the Radiography program. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): PHS222. Spring Only.*

BIO210

Genetics

Genetics is the scientific investigation of the mechanics of heredity. The purpose of the course is to provide an undergraduate biology major with an overview of the major concepts of modern genetics. Topics include classical (Mendelian) genetics, molecular and cellular genetics, and the principles of population genetics. College-level chemistry strongly recommended. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO123 and MTH160 or BIO125 and MTH160 or BIO123 and MTH180 or BIO125 and MTH180 or BIO123 and Placement by Examination or BIO125 and Placement by Examination or Placement by Examination. As needed.*

BIO212

Introduction to Neurobiology

Investigates the workings of the nervous system. Emphasizes a functional understanding so that the student will be able to follow the sequence from affector to effector. Uses primarily an inquiry-based outlook to explain successful approaches employed to investigate nerves and their relationship to the organism. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO125 and CHM100 and MTH160 or BIO125 and CHM108 and MTH160. As needed.*

COMPUTER-AIDED DRAFTING (CAD)

CAD116

Introduction to 2D CAD

An introduction to the use of computer-aided drafting equipment and CAD software to prepare 2D drawings. Includes CAD workstation components, use of basic Windows operating system, CAD software commands for drawing lines, shapes, dimensions, notes, editing, saving work, and plotting drawings. CD and BCD students must schedule CCD101 and CCD102 simultaneously with this course. 3 Credits (2 Lecture -3 Lab)

CAD117

Technical Drawing, Print Reading and 2D CAD

This course is designed for students enrolled in technical programs that require an understanding of basic mechanical drawing, print reading, and the fundamentals of 2D Computer-Aided Drafting. Provides an introduction to technical sketching. Provides basic instruction in 2D CAD applications including saving, plotting, and editing CAD files. CAD software is used in the instruction of orthographic projection, geometric construction, sectional views, axonometric projection, dimensioning and technical notation, tolerancing, and auxiliary views. Included is the interpretation of drawings, symbols, notation, technical information, and geometric tolerancing used on industrial working drawings. 3 Credits (2 Lecture -3 Lab)

CAD126

Advanced 2D CAD

An advanced 2D computer-aided drafting course that builds on the basic skills learned in the CAD116 course. Included is the use of layouts, external referenced drawings, multiview drawings using view ports, symbol libraries, attributes, tolerancing, advanced editing, productivity skills and an introduction to 3D CAD. CD and BCD students should schedule CCD121 and CCD122 simultaneously with this course. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CAD116.*

CAD237

3D CAD and Modeling

This course provides an understanding of 3D and solids modeling using CAD and an introduction to parametric modeling. Includes the development of 3D wire frame and surface drawings, generating and editing 3D geometry, development of multiview drawings from 3D geometry, analyzing 3D models, shading and rendering topics, and the development of physical models with rapid prototyping equipment. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CAD126 and CCD102 and CSC110. Fall Only.*

CAD247

CAD Management and Customization

An introduction to the customization and management of a computer-aided drafting system for the purpose of increasing user productivity. Topics include customizing menus, using text editors, use of CAD specific programming language in the modification of drawing databases and to write macros. Use of third party software and advanced file management is also addressed. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CAD126 and CCD102. Spring Only.*

COMPUTER-AIDED DRAFTING (CCD)

CCD101

Technical Drawing I

Basic principles and skills of drafting as a graphic language; technical sketching and shape description emphasized, geometric construction, multiview projection, sectional views, auxiliary views and revolutions, threads and fasteners, descriptive geometry, dimensioning tolerancing, oblique projection, axonometric projection and ANSI drawing standards. This course serves as a foundation for all other technical drafting courses. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): CAD116 and CCD102. Fall Only.*

CCD102

Detailing I

Additional basics such as producing detail drawings from sketches and/or parts, producing assembly and detail drawings, manufacturing processes theory, surface finish specifications using ANSI standards, introduction to geometric tolerances, acquiring and using vendor part catalogs. CAD software used to produce drawings. 3 Credits (0 Lecture -9 Lab) *Corequisite(s): CAD116 and CCD101. Fall Only.*

CCD121

Technical Drawing II

Drafting applications as they apply to castings and forgings, welded parts, plastic parts, piping details, sheet metal developments and intersections. The use of technical notes, specifications and symbols within a drawing. Cam and gearing terminology and definitions. Calculations and their use for producing cam drawings, gear drawings, various drives and mechanisms. Technical sketching will be emphasized. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CCD101 and CCD102. Corequisite(s): CAD126 and CCD122. Spring Only.*

CCD122

Detailing II

This course provides an understanding of the function, design, terminology, definition, and calculations used in the preparation of finished drawings from the sketches of sheet metal parts, welded parts, piping details and assemblies, cams, gears, drives and mechanisms. CAD software used to produce drawings. 3 Credits (0 Lecture -9 Lab) *Prerequisite(s): CCD101 and CCD102. Corequisite(s): CAD126 and CCD121. Spring Only.*

CCD235

Design and Production Drawings

Preparation of details, sub-assemblies, and assemblies from design layouts or engineering specifications and sketches. The design process, strength of materials, use of standard parts, advanced geometric dimensioning and tolerancing specifications. Surface finishes are included. CAD software used to produce drawings. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CAD126 and CCD122. Fall Only.*

CCD236

Civil and Structural Drawings

Introduction to the preparation of civil and structural drawings. Student will plot traverses from field notes, draw deed descriptions, prepare contour maps and profiles, and perform civil engineering calculations. Working from structural engineering drawings and data, the student calculates and designs

connections and members, and prepares structural steel shop drawings. CAD software used to produce drawings. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CAD126 and CCD101 and CCD102. Fall Only.*

CCD243

Tooling Design and Drawings

An introduction to tool, fixture, gage, and die design and drafting. Materials, purchased parts, design principles, drafting techniques, fixtures and clamping devices, gages, gauging fixtures, design of dies for piercing, stamping and forming, and tooling for automated manufacturing area included. CAD software used to produce drawings. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CAD126 and CCD121 and CCD122. Spring Only.*

CCD244

Electrical and Electronics Drawings

Preparation of electrical and electronic drawings for electrical construction and electromechanical applications. Drawing standards and layout, terminology, symbols, schematics, wiring diagrams, block diagrams, printed circuit diagrams, industrial control, and residential electrical wiring drawings are included. CAD software used to produce drawings. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CAD126 and CCD101 and CCD102. Spring Only.*

CABINETMAKING AND MILLWORK (CCM)

CCM110

Introduction to Cabinetmaking and Millwork

This course will serve as an introduction to the theoretical knowledge and practical skills involved in millwork and cabinet construction. It is intended for students not presently enrolled in the CK program. Emphasis will be placed on correct usage and personal safety while using both hand and power equipment. Various materials and assembly methods will be explored while building an assortment of individual and group projects. 3 Credits (2 Lecture -3 Lab)

CCM200

Cabinet Materials

This course will introduce the student to the wide variety of materials used in the production of custom cabinets and millwork. Among the topics to be covered are identification, characteristics and properties, grading, and applications of wood and wood panel products as they pertain to custom cabinetmaking and architectural millwork. The other topics to be discussed include adhesives, veneers, edge banding, and nontraditional cabinet materials. Proper application and appropriate specification of materials and methods will be stressed. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

CCM202

Cabinet Hardware

This course introduces the student to the many different types of hardware and application techniques used in custom cabinetwork. Types described and demonstrated will include trim hardware, assembly hardware, Knockdown and Ready to Assemble hardware, special functions hardware, and systems hardware. Attention will be given to developing the student's ability to solve problems encountered and to design special installations. Systems hardware will be given special consideration because of its increasingly popular use. 2 Credits (2 Lecture -0 Lab) **Spring Only.**

CCM211

Cabinet Design, Estimating, and Planning

This course introduces the relationship of form and function and is designed to familiarize the student with the basic elements and concepts of quality design in terms of historical style, functionality, appearance, proportion, detailing, and utility. In order to become reality, design must be directed and controlled by the planning process and moderated by realistic estimating. These two governing disciplines are taught simultaneously. The student will develop the ability to analyze problems, define alternate solutions, and choose final design utilizing an orderly process of planning while remaining within the basic controlling structure of aesthetics and the reality of economic feasibility. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

CCM221

Joinery Techniques

This course introduces students to joinery techniques utilized in the construction of custom cabinets and architectural millwork. The course will explore various methods and tools, both power and hand tools used to construct actual joinery projects. Safety, proper tool setup, use of jigs and fixtures, use

and maintenance of woodworking tools will be emphasized in this course. Techniques learned will be used to construct actual elements and components to be used in cabinets constructed in other courses. 5 Credits (2 Lecture -9 Lab) **Fall Only.**

CCM227

Architectural Millwork

This course introduces the student to the field of custom architectural millwork. This custom field involves limited-run design and manufacturing of products such as custom moldings, custom elements and components, and machining and manipulation of man-made materials. Special focus will be given to American Woodworking Institute specifications and definitions, basic approaches to problem solving, designing for expansion and shrinkage while maintaining structural integrity, and design and development of custom jigs and fixtures. A large proportion of the course is devoted to hands-on training in the shop so the student will develop advanced equipment training while developing the theories and practices required in this field. 5 Credits (2 Lecture -9 Lab) **Fall Only.**

CCM231

Abrasives and Finishes

This course introduces students to abrasives and finishes utilized in the construction of custom cabinets and millwork. Students will study and use various abrasive products as they relate to the finishing process. A comprehensive study of finishing products and methods of application and safety requirements will be covered. Special attention will be given to the characteristics and application of water-based finishes. 2 Credits (1 Lecture -3 Lab) **Spring Only.**

CCM241

Shop Management and Maintenance

This course will introduce the student to principles and practices required in the operation of a custom cabinet and architectural millwork shop. Topics to be covered will include shop safety and compliance with pertinent safety and health regulations, organization and specification of shop equipment for optimum efficiency, and familiarization with business practices as they apply to the operation of a shop. Proper maintenance procedures for shop equipment will also be a significant component of the course content. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

CCM249

Cabinet Construction

This course is designed to bring together, meld, and further develop the mechanical and artistic competencies developed during the entire Cabinetmaking and Millwork program. While other courses have dealt with the cabinet in its many facets and details, this course will bring them all together and turn them into a single finished project. Components, elements, and subassemblies, produced in other courses will be assembled into final projects. The principal goal for this course is for the students to finalize their development and learn to apply all the different techniques and systems in order to produce a finished product. 5 Credits (2 Lecture -9 Lab) **Spring Only.**

CCM257

Installation - Materials and Methods

This course is designed to provide the student with the necessary technical information, as well as develop the necessary skills, required to perform final installation of custom cabinetwork and millwork. Layout, order of installation, installation methods, scribing and fitting, and touch-up will be covered. Since much of installation of finished countertops is performed in the field as part of the installation process, laminate work and solid surfaces will be included in this course. 5 Credits (2 Lecture -9 Lab) **Spring Only.**

COOPERATIVE EDUCATION (CED)

CED101

Cooperative Education I

Designed for students wishing to participate in a related educational work experience as an elective. The student will be employed in a job related to the skills and knowledge offered in his or her program while enrolled in co-op. Variable credit.

CED102

Cooperative Education II

Designed for students who have successfully completed CED 101 and wish to participate in a second program of related educational work experience with the same or a new employer. Variable credit.

CED103

Cooperative Education III

Designed for students who have successfully completed CED 101 and CED 102 and wish to participate in a third program of related educational work experience with the same or a new employer. Variable credit.

CIVIL ENGINEERING TECHNOLOGY/SURVEYING (CET)

CET113

Introductory Surveying

Introduction to surveying; use and care of instruments. Simple surveys with compass, transit, level and tape. Note keeping; computations; preparing planimetric map. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): Placement by Examination.* **Fall Only.**

CET114

Civil Drafting

Drafting fundamentals; use of instruments, lettering, sketching, 2-D drawing. Drawing work will emphasize structural applications including uses and detailing for wood, concrete and steel structures. Both manual and computer drafting methods will be utilized. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): CAD116.*

CET122

Topographic Drawing and Cartography

Use of conventional symbols in mapping, the construction of large-scale topographic maps, contours, slopes, features, profiles, photographic and map interpretation. Methods of plotting, use and construction of small-scale maps, earth's coordinate system, map projections, enlargement and reduction of maps, map digitizing, geographic information systems, thematic maps, computer applications. 3 Credits (1 Lecture -6 Lab) **Spring Only.**

CET123

Plane Surveying

Theory and practice of plane surveying; error theory and application; traverses and elementary triangulation; differential and reciprocal leveling; topographic and construction surveys; surveying computations with computer applications. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CET113. Corequisite(s): CET122.* **Spring Only.**

CET233

Statics

Basic principles of statics; coplanar and non-coplanar force systems; friction; centroids and moments of inertia; hydrostatic pressures and loads. 3 Credits (2.50 Lecture -1.50 Lab) *Corequisite(s): PHS115 or PHS201.* **Fall Only.**

CET234

Highway Engineering Technology

Highway systems, organization and planning; right-of-way; driver, vehicle and road characteristics; highway design, traffic engineering; drainage; engineering economics; pavement design; construction and maintenance. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH180 or MTH240.* **Fall Only.**

CET235

Computer Applications in Civil Engineering

Applications of microcomputer software in the solution of civil engineering problems; surveying, mapping, statics, geotechnical and highway design. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): CET112 and CET122 and CET123 and CSC110 or CET114 and CET122 and CET123 and CSC110. Corequisite(s): CET237.* **Fall Only.**

CET237

Route Surveying

Highway curves (horizontal and vertical); field stakeout cross-sections; slope staking; determination of earthwork; plan and profile; profile leveling; Polaris and solar observations for bearing; route location on topographic map; total station instruments; computer-CAD applications. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CET123. Corequisite(s): CET234.* **Fall Only.**

CET238

Origin, Distribution and Behavior of Soils

Geological origin of soils; minerals, rocks, rock structure, weathering, glaciation, erosion, and deposition. Distribution of soils in North America; residual, glacial and water-wind deposited soils. Soil characteristics and behavior, engineering classification, volume-weight relationships, physical properties, supporting capabilities for foundation elements and sampling methods. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ENL111 and MTH180. Corequisite(s): PHS115 or PHS201. (Writing Enriched) Fall Only.*

CET239

Land Development and Legal Aspects

Application of the concepts of land boundaries and ownership to the practice of land surveying: History, Courthouse usage, land development, ethics, Pa. legislation, deeds, environmental concerns, legal aspects, planning from topographic maps, zoning and subdivision regulations; colonial and public domain boundary surveys; sewer line and septic systems. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CET122 and CET123.*

CET242

Fluid Mechanics

Mechanics of fluids, fluid flow in conduits and around bodies, liquid flow in open channels; friction and energy loss; fluid measurements; pumps; similitude and dimensional analysis. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET233 and PHS115 or CET233 and PHS201. Spring Only.*

CET243

Strength of Materials

Engineering materials and properties; stress and deformation; shear and moment in beams; stresses in beams; beam design for wood and steel, beam deflection; statically indeterminate beams; combined stresses; column design. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CET233. Spring Only.*

CET246

Materials of Construction

Properties of aggregates, Portland cement and asphaltic concretes, steel, wood and miscellaneous construction materials; sampling and testing of construction materials; mix design for Portland cement and asphaltic concretes. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHS115 or PHS201. Corequisite(s): CET243.*

CET247

Boundary and Control Surveying

Horizontal and vertical control surveys; triangulation and level nets; three point solution; planning and estimating from topographic maps; state plane coordinate systems; legal aspects; boundary location and relocation surveys; total station instruments; geodetic surveys; global positioning system; computer applications. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CET122 and CET123. Spring Only.*

CET249

Stormwater Management

Hydrologic cycle; runoff by rational and SCS methods; stream flow measurement; hydraulic design of channels, culverts, basins, inlets and gutters; design of sediment control devices such as: silt fences, bale barriers, traps and basins; regulations and permits; hydrologic surveys; reservoir capacity; computer use. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): CET122. Corequisite(s): CET242.*

CET311

Structural Analysis

Analysis of statically determinate and indeterminate structures. Influence lines, moving loads, member forces and stresses, deflection of structures, displacements, flexibility and stiffness analyses. Computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET243 and CET246 and CET248 and CSC110 or CET243 and CET246 and CET348 and CSC110. Corequisite(s): CSC255 and MTH242. Fall Only.*

CET312

Hydraulics/Hydrology

Hydrologic cycle; measurement and estimates of precipitation; stormwater runoff calculations; stream flow measurement; erosion and sediment yield; hydraulic structures design such as: channels, closed conduits, retention - detention basins, gutter and inlets; design of sediment control devices such as: silt fences, sedimentation traps and basins; regulations and permits; computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET242 and CET248 or CET242 and CET348. Fall Only.*

CET321

Structural Steel Design

Design of members and frames of structural steel. Structural steels, fabrication methods, construction methods, tension members, beams, columns, connections, plate girders, continuous beams and frames, and composite construction. Allowable-Stress Design (ASD) and Load and Resistance Factor Design (LRFD) methods. AISC specifications. Computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET311 and CSC255 and MTH242. Spring Only.*

CET322

Water/Sewer Design

Fluid flow through pipes by gravity and pressure; shapes and materials used in pipes; construction practices; gravity flow wastewater and stormwater systems; pumping stations; demands on systems; potable water collection, treatment and system design; introduction to wastewater treatment plant design; regulations and permits; computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET312. Spring Only.*

CET344

Photogrammetry

Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; stereoscopy; overlapping aerial photographs; aerial triangulation; flight planning; photographic principles, tilted aerial photos; cost estimation; contracts and specifications; remote sensing; computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH182. Corequisite(s): CET123.*

CET348

Dynamics

Analysis is particle and rigid body motion in two and three dimensions. Kinematics of translation and rotation, use of force/mass/acceleration and work/energy methods; impulse, momentum, and collision of elastic bodies. Strong emphasis on the engineering significance of these principles, with special emphasis on structures. Computer applications to civil engineering problem solutions. (Formerly CET 248) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET233 and MTH242.*

CET411

Geotechnical Engineering Technology

Study of physical properties of soils related to engineering evaluations and designs; subsurface investigation methods; settlement and bearing capacity analyses for foundations; slope stability factor-of-safety analyses; lateral earth pressures and design of retained-earth structures; soil stabilization methods; geotextiles. Computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET238 and MTH242. Corequisite(s): CET412. Fall Only.*

CET412

Reinforced Concrete Design

Design of members and frames of reinforced concrete. Concrete and reinforcement properties. Anchorage and splicing of reinforcement. Design of beams, columns, slabs, frames, footings and retaining walls. ACI Code. Computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET311 and CET321 and CSC110 and CSC255. Corequisite(s): CET411. Fall Only.*

CET413

Civil Engineering Estimating and Scheduling

Mass diagram analysis for earthwork, factors affecting construction equipment selection, time studies, cost estimating, bid proposals, project planning and management, Critical Path Method (CPM). Computer applications. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET234 and CET235 and CET237 and MET315. Fall Only.*

CET414

Geographic/Land Use Information Systems

Definition of data structures and procedures used in the synthesis of geographic and non geographic data to provide decision makers with options for civil engineering projects upon which to make the best possible choices. Project definition, data organization and capture, and use of query languages generate options. Computer applications to Civil Engineering project design. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CET123 and CET234 and CET235 and CET237 and CET244 or CET123 and CET234 and CET235 and CET237 and CET344. Fall Only.*

CET495

Planning/Analysis for Capstone Project

Theory and practice of defining, planning and analyzing a civil engineering or surveying project. Upon completion of introductory sessions, faculty will function in a dual role; first as a client with whom regular meetings will be held to communicate job progress, and secondly as a consultant from whom advice or direction can be obtained. Teams of students will function as employees of a company working in project teams to develop the planning and analyses for a selected project. The design work for the project will be handled in a corequisite course (CET 496). Teams will schedule the planning and design work to ensure completion in the allotted time, keep records of time spent on the project, prepare an estimate of cost for the project, make a formal oral and hard-copy presentation of the completed design to the client, and prepare a client billing for the planning and design phases of the project. Students may select a project from an approved list or seek approval for a project of their own. 2 Credits (1 Lecture -3 Lab) *Corequisite(s): CET496. Spring Only.*

CET496

Design for Capstone Project

Data gathering and design for the selected and approved project in the corequisite course, Planning/Analysis for Capstone Project (CET 495). Development of an organized project file containing letters, memos, notes and computations for the planning and design that can become part of a project record. Development of drafted plans and written specifications and/or reports to present the completed work to the client. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): CET495. Spring Only.*

CHEMISTRY (CHM)

CHM100

Fundamentals of Chemistry

Introduction to theoretical foundations and laboratory practice in inorganic chemistry. Intended for non-science majors needing one term of inorganic chemistry or for those who desire background before taking general chemistry. Successful completion of a high school chemistry course is suggested. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH009A or MTH002 or MTH005 or Placement by Examination.*

CHM101

Chemistry and Society

A basic introduction to chemistry in the "everyday world," with emphasis on the role that chemistry plays in personal and professional lives. The course enables students to use concepts of chemistry to think critically about current issues in science and technology. Basic chemical concepts presented include: metric measurement, chemical elements and atoms, chemical bonds and molecules, types of chemical reaction, radioactive substances and radiation, and states of matter. No background in Chemistry or other Natural Sciences is presumed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and MTH005. (Science, Technology and Society)*

CHM108

Chemistry Survey

Introductory overview of the fundamentals of chemistry with applications to inorganic and organic chemistry and to living organisms. Intended for students who desire to fulfill a lab science requirement. No background in chemistry is assumed. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH001 or MTH004 or Placement by Examination.*

CHM111

General Chemistry I

Principles of chemistry with emphasis on inorganic aspects. Intended for science majors but may be taken by non-science majors desiring to fulfill a lab science requirement. Prepares the student for pursuit of a degree in chemistry. Successful completion of a high school chemistry course is suggested. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH009A or MTH002 or MTH005 or Placement by Examination. Fall Only.*

CHM121

General Chemistry II

Continuation of CHM 111. Intended for science majors but may be taken by non-science majors desiring to fulfill a lab science requirement. Involves extensive algebraic calculations. Permission of instructor would be required if a course other than CHM111 would be used to meet the prerequisite. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM111. Spring Only.*

CHM123

Introductory Organic and Biochemistry

Introduction to organic chemistry and biochemistry. Nomenclature, molecular structure and types of reactions for the major classes of organic compounds and biochemicals. Intended for students who need only one term of organic/biochemistry or for those who desire preparation for CHM 203 and CHM 204. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM100 or CHM111.*

CHM203

Organic Chemistry I

The major classes of organic compounds. Emphasizes molecular structure and reaction mechanisms. Intended for science majors. A score of 4 or higher on the AP Chemistry Exam or permission of the instructor may also be considered in addition to listed prerequisites. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM111 or CHM121 or CHM123. As needed, Fall.*

CHM204

Organic Chemistry II

Continuation of CHM 203. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM203. As needed, Spring.*

COMPUTER-INTEGRATED MANUFACTURING (CIM)

CIM101

Basic Machine Tool Programming

Basic numerical control introduction. Programming basic two (2) axes machines. Operations on two (2) axes machines involving turning, facing, drilling, reaming, milling, using manual data input (MDI). Includes introduction to cartesian coordinate system and system safety. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTT110 and MTT115 and Placement by Examination or MTT116 and MTT117 and Placement by Examination.*

CIM123

CNC Programming and Machining

Theory and practice in CNC part programming and machining using G + M code language. Program writing and CAD/CAM code generation for two and three axis milling centers and lathes. Theory and practice is given on straight, taper and radius turning. Drilling, tapping, grooving, threading, milling, and contouring will also be covered. Applications include tool setup, manual data input, and fixture building. 4 Credits (1 Lecture -9 Lab) *Prerequisite(s): CIM101 and MTT116 and MTT117.*

CIM150

CIM for Technicians

This course includes theory, demonstration, and applications involving basic and advanced methods of manufacturing. An emphasis will be placed on the programming, operation, and maintenance of various machines. 4 Credits (3 Lecture -3 Lab) **Spring Only.**

CIM202

Advanced Programming

This program is designed to give students skills in the latest programming options including fixed cycles, subroutines, looping and nesting. Sophisticated programs will be developed using graphics and verified by plotting. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CIM121 and CIM122 or CIM123. Fall Only.*

CIM205

Electrical Discharge Machining

Programming and operation of wire and ram-type electrical discharge machines (EDM). Small hole EDM, fine wire, and 4 axis ram and wire operations. Applying EDM theory to produce specified surface finishes and accuracy. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CIM101 and MTT126.*

CIM220

CAD/CAM

The design of part geometry and the generation of CNC code. Translation of part geometry to and from CAD/CAM systems. Manufacturing applications using CAM software to generate part programs for manufacturing. Applications will include two, three and four axis machining on vertical machining centers. Multi-axis turning, EDM and fabrication machinery will also be studied. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CIM101 and CIM123 and CSC110.*

CIM221

CNC Applications

Hands-on operational experiences including machine parameters, tool offset, axial force, torque, feeds and speeds, tool geometry and address format. Operation of different machine tools involving a turning and milling center. Fundamentals of microprocessors used in programming and interfacing. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CIM121 and CIM122 or CIM123. As needed.*

CIM222

Robotic Applications

Study of robot classification and application in different environments. Hands-on experience including motion control, safety, end effectors and tooling. Basic programming and operation of Cincinnati, ASEA, and GE robots. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CIM101 and MTT110 and MTT115 or CIM101 and MTT116 and MTT117. As needed.*

CIM226

Computer Integrated Manufacturing

Techniques for implementing the most appropriate manufacturing process using computer aided processes, robots, and computer controlled machines. Production planning, quality control and Statistical Process Control (SPC) methods are studied. The specification and selections of machinery, computers and software for manufacturing operations will also be studied. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CIM123 and CSC110 and MTH180.*

CIM227

Material Handling/Fluid Power

The theory, demonstration and applications involving fluid power in a manufacturing environment will be presented. Fluid power systems in several types of automation and manufacturing environments will be studied. The various equipment and modern methods of material handling will be examined. Hydraulic and pneumatic experiments will be conducted on industrial trainers. Fluid power principles and applications will be studied and applied to machine tool work-holding and robotic end of arm tooling. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CSC110 and MTH180.*

CIM428

Interdisciplinary CIM

CIM (Computer Integrated Manufacturing) will be explored in depth. Students will apply CIM concepts: the integration of business principles, manufacturing technology, and computer information management in a profitable enterprise. The functions and interrelationships of major company departments and how products are developed, made and marketed will be studied. The latest manufacturing tools and technologies and how they are used in a CIM company will be presented. Students will analyze the costs, benefits, personnel, data processing, and financial impacts of automation. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

COMPUTER INFORMATION SYSTEMS AND COMPUTER INFORMATION TECHNOLOGY (CSC)

CSC040

Computer Applications Internship

This course is designed to provide the student with practical experience using various computer applications within a professional, real-world environment. The student will receive on-the-job training directly in a professional setting. Internship placement may be with a private company or corporation, an institution (as in a school, college, or hospital), a government agency, or other appropriate work environment. The student will be directed and supervised both by the College and by personnel at the work site. 1 Credit (0 Lecture -5 Lab) **As needed.**

CSC103

Introduction to Computers with Fortran

Presents data processing concepts, methods and applications through the medium of the FORTRAN IV programming language. Topics include computer system history, principles and operations, programming language structure, problem analysis and flowcharting, and computer solution of numerical problems using the FORTRAN IV language. 3 Credits (3 Lecture -0 Lab) **As needed.**

CSC108

Introduction to Computer Programming Concepts

This course is designed to introduce basic computer programming concepts including problem definition, algorithmic problem solving, translation of pseudocode into simple computer programs, program execution and debug, and various applications of computer programming. In addition to learning programming theory, students will write, edit, execute, test, and debug simple programs in a selected high-level computer programming language. 1 Credit (1 Lecture -0 Lab)

CSC110

Introduction to Information Technology

This course is designed to provide students in all curricular areas with a broad background of computing fundamentals and an awareness of how and where information technology is currently being implemented. Computing terminology, hardware and software concepts, computer security, and ethical use of computer information systems will be covered. Students will learn what modern digital computers can and cannot do, as well as develop an understanding of new computer applications and how information technology is changing our society. In addition to computing theory, students will acquire basic skills in operating systems, networking, word processing, spreadsheets, and bibliographic research. Students will be introduced to a variety of applications and environments; these will change with the emergence of new technologies. Prior keyboarding skills would be helpful. 3 Credits (3 Lecture -0 Lab)

CSC128

COBOL Programming I

This course introduces the COBOL language elements as well as division concepts, program writing, execution, and diagnostics. This course stresses documentation which will include a written problem statement, along with any formula development which may be required, printer spacing chart layouts with appropriate terminology for programming, record layouts, and a program flowchart/pseudocode. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140.*

CSC140

Problem Solving with Elementary Programming

This course provides an introduction to problem solving techniques and elementary programming. Students learn problem solving techniques, data representation, and data analysis by solving a variety of business and scientific problems. A selected high-level language is used to illustrate the elementary programming techniques. 3 Credits (3 Lecture -0 Lab)

CSC150

Introduction to Web Page Development

This course offers a comprehensive coverage of the Internet and online Web technologies. Students will learn how to plan, create, and maintain web pages. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110.*

CSC161

Computer Programming I

This course provides an introduction to program design and development. A structured, multi-phase program development process featuring a series of steps involving understanding of a problem, formal program definition, and program specification through graphic design methodologies and/or pseudocoding is stressed. A selected high-level language is used to illustrate the implementation phase of program development. (Formerly CSC 116) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140.*

CSC201

File and Database Processing

This course is an introduction to application program development in a database environment. Emphasizes loading, modifying and querying the database using a host language and the DBMS query facilities. Also covers the logical-physical organization of data and random access devices. (Formerly CSC 240) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140. Spring Only.*

CSC211

Business Computer Applications Using Spreadsheet

This course emphasizes the use of the computerized spreadsheet in typical business applications. Students will become skilled in the major spreadsheet concepts including creation, formatting, printing and disk saving operations, spreadsheet maintenance and expansion, and graphing and data management. Designing macros to enhance and simplify the user interface will also be covered. The use of the spreadsheet as a decision-making tool in the business environment will be especially emphasized in this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 or CSC123.*

CSC221**Business Computer Applications Using Database**

This course emphasizes the use of the computer in typical business database environments. Students will become skilled in the major database concepts including creation and modification of database files, report and label generation, indexing, sorting, and database searching. Integration of database data into various other software platforms will be discussed. The course content will also include database theory, including the major database models, and exposure to various existing database implementations. Discussion of appropriate and ethical use of databases will be addressed. Note: This course does not satisfy the requirement for a Computer Science Elective in the following programs: Computer Information Systems (all concentrations); Bachelor of Science in Information Technology (all concentrations). This course cannot be substituted for CSC 240 or CSC 201, File and Database Management. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 or CSC123.*

CSC238**COBOL Programming II**

This course covers such topics as multi-dimensional arrays, multi-level control breaks, sequential file processing, indexed file processing, and relative file processing. Applications are written utilizing a screen generator, report writer, and subprograms. This course stresses documentation which includes a written problem statement, printer spacing charts, record layouts, and program flowcharts or appropriate pseudocode. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC128.*

CSC250**Creating Web Applications**

This course offers a comprehensive coverage of the Internet and online technology and how they are impacting today's business. Students will learn how to develop an Intranet, and how to connect an Intranet to the Internet and WWW. Students will learn the internal and external considerations of planning, creating and maintaining web sites. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140.*

CSC255**Fortran Programming**

This course is designed to introduce the student to FORTRAN language programming as applied to business and mathematics problems. Data processing concepts, methods and applications will be presented through the medium of the FORTRAN language. Topics will include computer system history, operations, programming language structure, problem analysis, flowcharting, input/output programs, disk file handling, sub-programs and table handling. The students will write programs in FORTRAN to demonstrate the various concepts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC108. Fall Only.*

CSC258**Programming in RPG**

This is a course in Report Program Generator programming. It includes writing, compiling, and executing RPG programs. The programs written for this course are based on business applications and business-oriented problems. Topics included in this course are sequential disk files, indexed disk files, direct disk files, tables, arrays, subroutines, and interactive programming techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC238. Spring Only.*

CSC262**Computer Programming II**

At this level, students write programs to solve more complex problems. Emphasis is placed on arrays, records and file processing, including sorting and searching techniques. Problem solutions utilizing pointers and dynamic memory allocations are considered. Attention is given to data validation, utilization of library modules, and separate compilation of subprogram. (Formerly CSC 126) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC161 or CSC116.*

CSC263**Data and Object Structures**

The study of data structures covers stacks, queues, trees, and graphs. Data structures are introduced as abstract concepts, then their physical implementations and operations are developed and applied. The course includes basic techniques of design and analysis of efficient algorithms for sorting, merging, and searching. (Formerly CSC 226) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC262.*

CSC271**Network Administration**

This course is a comprehensive introduction to Local Area Networks. After exploring the basic components of a LAN, the concept of layered communications, the various communications protocols and transmission media, and the different network topologies, students will implement and administer a Local Area Network. (Formerly CSC 260) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140 and EET105 and EET204 and EET205.*

CSC272**Network Technical Support**

This is an introduction to the development and implementation of an information and network technical support center. It assumes the student is already familiar with network operating system software installation, basic network hardware, its installation and configuration. The focus is on administrative tasks and utilities available to accomplish them within selected operating systems. (Formerly CSC 292) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC271. Corequisite(s): CSC273.*

CSC273**Network Interconnection**

This course offers an introduction to the principal ways of interconnecting different networks. Topics discussed include repeaters, bridges, routers, gateways, TCP/IP, and different interconnection utilities. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): CSC272.*

CSC281**Computer Organization**

This course offers a conceptual framework for understanding computer architecture. Topics include machine language, machine operations, instruction sequencing, input/output, addressing, and supervision. (Formerly CSC 230) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC140.*

CSC282**Systems Programming**

This is a course designed to introduce basic system programming concepts. Students learn basic computer management skills such as disk and memory management, file handling, system security, and customizing of user interface. Programs are implemented in selected operating system's command language. (Formerly CSC 122) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC281.*

CSC300**Computer Law, Ethics and Society**

This course provides an overview of the legal and ethical implications involved in computing in today's workplace and focuses as well on the interaction between people and computers. Topics to be discussed include the legal implications of writing computer programs for sale (copyright, contracts, warranties, patents, software protection, liabilities), hardware and software procurement, computer system failures, data security, privacy, and personnel management. Topics concerning computer crime, psychology and human-computer interaction, health issues in the use of computers, and the impact of computer use on society in the local and global communities, both now and in the future, will also be emphasized. A major component of the course will be the discussion of ethical concerns involved with each of these issues, particularly with regard to both the employer and the employee's ethical responsibilities in using computer facilities. This course is designed as a lecture course. (Formerly CSC 306/307) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and ENL111 or CSC123 and ENL111. (Science, Technology and Society, Writing Enriched)*

CSC302**Database Development**

This course offers an introduction to multi-user application development in a database environment. Students document the project design using CASE and other tools and implement the design within an appropriate database development environment. (Formerly CSC 290) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC201. Fall Only.*

CSC303**System Analysis and Design Methods**

This course offers a systematic approach for the analysis and design of computer information systems. The course follows the systems development life cycle, emphasizing the system documentation tools and techniques used in each phase. The student is introduced to both classical and structured approaches in order to apply analysis and design techniques that produce the necessary process model for the software system. Students will learn successful problem solving approaches, which result in high quality software systems. (Formerly CSC 315) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC302. Spring Only.*

CSC364**Object-Oriented Programming**

This course is a comprehensive introduction to object-oriented programming. The course combines a "data-oriented" approach to the development of software systems with the "process-oriented" techniques of traditional structured programming by using the concept of data abstraction as the fundamental building block in program development. Through lectures and programming assignments, the concepts of encapsulation, inheritance, polymorphism, and persistence are explored in depth. (Formerly CSC 333) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC263. Fall Only.*

CSC365**Event-Driven Programming**

This course is a comprehensive introduction to event-driven programming in which statements in a program execute in response to some user action. Students learn properties, methods, and event pertaining to an object and its interface. They also learn the different ways of interacting with an event-driven program. These concepts are explored through lectures and programming assignments on a selected event-driven language. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC364. Spring Only.*

CSC374**Data Communications**

This course is designed to provide a working knowledge of modern communication practice as it relates to voice, data, image, and video. The efficiency of synchronous and asynchronous transmission for local and wide area networks is considered in detail. The relationship between transmission protocol and network topologies will be explored in depth. Error detection and correction, line control, and security analysis are considered as they relate to information integrity in a distributed computing environment. (Formerly CSC 310) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC272 and CSC273.*

CSC375**Telecommunication Concepts**

This course offers a survey of the telecommunication industry and an introduction to the regulation of the industry. The basics of telephone switching systems and networks are introduced. Telecommunications management, economic issues and regulations are studied. Current features of switching systems and networks are introduced. (Formerly CSC 360) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC374. Spring Only.*

CSC383**Operating System Concepts**

This course presents an introduction to the fundamental principles of operating systems. The course will provide a student with an in-depth study of the internal operations and the technical terminology of a computer system. Students will be introduced to various operating system topics including common features of operating systems, operating system services, file systems, CPU scheduling, memory management, virtual memory, disk scheduling, and deadlocks. (Formerly CSC 370) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC282. Fall Only.*

CSC384**Concurrent Systems**

This course offers an introduction to the fundamental principles of concurrent systems. Topics include describing concurrent systems, modular system structure, device handling and communications, process abstraction, distributed software systems, memory management, concepts of filing systems, and process interactions. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC383. Spring Only.*

CSC404**System Implementation and Management Methods**

This course presents the steps of systems implementation and systems management. The student will learn to apply the appropriate methods for converting the physical design of a system into a working system. Topics of discussion will include appropriate language selection, validation techniques, testing techniques, system installation, procedures, and system and software maintenance. The student will learn to maintain the integrity of the system as it evolves through the systems development life cycle by using various systems management tools and techniques. (Formerly CSC 345) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC303. Fall Only.*

CSC405**Database Management Integration**

This course explores the use of high-level business programming languages as hosts for processing databases. The course includes a survey of the types of DBMS models, the major functions of DBMS systems, and the components of database languages. (Formerly CSC 410) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC404. Spring Only.*

CSC466**Software Engineering**

This course is a comprehensive introduction to fundamental principles and issues in software engineering. Topics include software evolution, software management, requirements, engineering, and project management. Students will be grouped to participate in a team project. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC365. Fall Only.*

CSC476**Network Design and Management**

This course offers an introduction to the techniques of planning, network selection, and implementation. Concentration will be given to such issues as testing, startup, tuning, reliability, fault diagnosis, security, the network control center, and network management tools. Working with a faculty advisor/instructor, each student will be responsible for developing a detailed network design and preparation of specific testing and management procedures. (Formerly CSC 497) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC375. Fall Only.*

CSC477**Certification Preparation I**

CSC477 is designed to prepare the student for the examinations to obtain industry certification. It is the first of a two-semester sequence, to be followed by CSC478, Certification Preparation II. Material will be covered for the required certification exams. It will cover materials based on discussion of specific industry exam objectives. Students are responsible for scheduling and payment of the official certification examinations at a testing center of their choice. No guarantee of passing any or all of the required certification exams is expressed or implied by attending this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC384 and EET204 and EET205. Fall Only.*

CSC478**Certification Preparation II**

CSC478 is the continuation of CSC477, Certification Preparation I. It is designed to prepare the student for remaining examinations pertaining to the specific certification covered by CSC477 and CSC478 at the time. Students are responsible for scheduling and payment of the official certification examinations at a testing center of their choice. No guarantee of passing any or all of the required certification exams is expressed or implied by attending this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC477. Spring Only.*

CSC498**Senior Project**

This is the capstone course and is designed to prepare the student for the successful management of system development/enhancement projects. Both technical and behavioral aspects of project management are discussed as the student is called upon to analyze, integrate, and synthesize all of the preceding CSC and related course work. Student must be currently in Senior standing to schedule this course. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

DENTAL HYGIENE (DEN)

DEN103

Dental Hygiene I

An introduction to fundamental concepts and techniques in disease control and dental hygiene instrumentation skills. Includes the use and care of dental equipment. 4 Credits (2 Lecture -6 Lab) *Corequisite(s): BIO115 and DEN104 and DEN107 and DEN108. Fall Only.*

DEN104

Preventive Dentistry

This course is an introduction to the fundamental concepts and techniques of preventive home care measures. An emphasis will be placed on individualized instruction, and the continual evaluation of the success of preventive strategies. 2 Credits (1.50 Lecture -1.50 Lab) *Corequisite(s): BIO115 and DEN103 and DEN107 and DEN108. Fall Only.*

DEN107

Orofacial Anatomy

A study of postnatal development and structure of the teeth, oral and facial anatomy with emphasis placed on the relationship of structure to function. 3 Credits (2.50 Lecture -1.50 Lab) *Corequisite(s): BIO115. Fall Only.*

DEN108

Oral Histology

The study of the development of the germ tissues, teeth, oral and facial structures. 1 Credit (1 Lecture -0 Lab) *Corequisite(s): BIO115. Fall Only.*

DEN123

Dental Radiology

The physics of radiation and radiation biology are related to the principles, techniques and interpretation of intra and extraoral radiographs. Quality in exposing and processing x-rays (with respect to the safety of the patient and operator) is stressed. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO115 and DEN103 and DEN104 and DEN107 and DEN108. Corequisite(s): BIO125 and DEN126 and DEN130 and DEN211. Spring Only.*

DEN126

Dental Hygiene II

Lectures on medically compromised and "special" needs patients are combined with practical experience in the clinic. More skillful application of dental hygiene knowledge and ability will be presented in order to be practiced in the dental hygiene clinic. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BIO115 and DEN103 and DEN104 and DEN107 and DEN108. Corequisite(s): BIO125 and DEN123 and DEN130 and DEN211. Spring Only.*

DEN130

Introduction to Periodontics

A study of clinical diagnosis and treatment of periodontal disease. Stresses the importance of periodontal therapy and the role of the dental hygienist. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO115 and DEN103 and DEN104 and DEN107 and DEN108. Corequisite(s): BIO125 and DEN123 and DEN126 and DEN211. Spring Only.*

DEN202

General and Oral Pathology

The study of general and oral pathology with emphasis on disease and anomalies related to the oral and paraoral structures. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO125 and BIO201 and DEN123 and DEN126 and DEN130 and DEN211. Corequisite(s): DEN204 and DEN208 and DEN212 and DEN214. Fall Only.*

DEN204

Pharmacology

A study of the general principles of applied pharmacology including drug action, interaction, and handling; adverse drug reactions; and prescription writing. Drugs utilized in dentistry, as well as those that may alter dental treatment, will be examined. Pharmacology as related to dental and medical emergencies will also be stressed. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO125 and BIO201 and DEN123 and DEN126 and DEN130 and DEN211. Corequisite(s): DEN202 and DEN208 and DEN212 and DEN214. Fall Only.*

DEN208

Dental Hygiene III

This course will provide the learner with experience and theory in the techniques necessary to perform comprehensive dental hygiene therapeutic services. Advances in root debridement, nonsurgical therapy, curettage, use of

ultrasonic scalers, dental hygiene diagnosis and treatment planning, implants, as well as investigation and evaluation of new products and devices, are introduced and combined with clinical application. 6 Credits (2 Lecture -12 Lab) *Prerequisite(s): BIO201 and DEN123 and DEN126 and DEN130 and DEN211. Corequisite(s): DEN202 and DEN204 and DEN212 and DEN214. Fall Only.*

DEN211

Oral Health and Nutrition

This course covers the fundamentals of nutrition with an emphasis on the relationship of diet and dental health. The application of this knowledge is in the form of nutritional counseling of patients who wish to prevent or control nutritional-related oral health problems. Food habits, socio-economic status, and the food environment will be examined. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO115 and DEN103 and DEN104 and DEN107 and DEN108. Corequisite(s): BIO125 and DEN123 and DEN126 and DEN130. Spring Only.*

DEN212

Periodontics II

This is the second and final course in periodontics. Course material will include: diagnosis and treatment rationale to ameliorate the disease state from a surgical approach, complex treatment considerations including mucogingival surgery, gingival augmentation, occlusal equilibration, and implantology will be discussed. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): BIO201 and DEN123 and DEN126 and DEN130 and DEN211. Corequisite(s): DEN202 and DEN204 and DEN208 and DEN214. Fall Only.*

DEN214

Dental Materials and Specialties

This course will provide an overview of the principles and practice of the physical, chemical and mechanical properties of dental materials. Conditions that compromise optimum oral health and function and the needs of the patient will be identified. Communication of findings to the patient will be the student's responsibility. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO125 and DEN123 and DEN126 and DEN130 and DEN211 and ENL111. Corequisite(s): DEN202 and DEN204 and DEN208 and DEN212. Fall Only.*

DEN220

Community Dental Health

This course gives an introduction to the philosophy of community dental health and explores principles of public health programming, special dental programs, alternative dental settings, fluoridation, dental health education, epidemiology of dental disease, and the use of statistical methods and materials. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): DEN202 and DEN204 and DEN208 and DEN212 and DEN214. Corequisite(s): DEN224 and DEN227. Spring Only.*

DEN224

Dental Law and Ethics

Ethical, legal, and management considerations for the dental office. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): DEN202. Corequisite(s): DEN220 and DEN224. (Writing Enriched) Spring Only.*

DEN227

Dental Hygiene Theory and Practice

Topics that address preparing the dental hygiene student for meeting the dental hygiene licensing criteria and incorporating relevant information into dental hygiene practice will be presented. Practice settings, roles for dental hygiene, risk assessment, and clinical management of special cases will be discussed. Continuation of clinical practice will culminate to prepare the student for licensure and employment. 5 Credits (1 Lecture -12 Lab) *Prerequisite(s): DEN202 and DEN204 and DEN208 and DEN212 and DEN214. Corequisite(s): DEN220 and DEN224. Spring Only.*

DEN288

Clinical Practice Update

Designed on an individual basis, this course will help the dental hygienist in need of clinical practice updating to develop knowledge and skills considered to be necessary for current dental hygiene practice. The dental hygienist will further develop knowledge and skill basics that help provide current treatment modalities to clients and readily adapt to future changes and developments in the field. Participation in presentations on selected topics and achievement of selected clinical proficiencies are necessary. 1 Credit (0 Lecture -3 Lab) **Scheduled by Special Arrangement.**

DEN300

Credentials Proven by License

This course exists for the purpose of verifying transfer of Dental Hygiene course credits only. Eligible candidates who submit a copy of the Dental Hygiene National Board scores and who have earned at least a 75% on that examination and a copy of their current Dental Hygiene license to the Admissions office at Penn College will be credited with 44 Dental Hygiene credits. These 44 Dental Hygiene credits reflect the Penn College Associate Degree program Dental Hygiene credits. Candidates must meet all Penn College baccalaureate program admission requirements prior to acceptance into the degree completion program. 44 Credits (44 Lecture -0 Lab)

DEN301

Issues in Professional Dental Hygiene

Current issues and controversies in dental hygiene and their impact on professional practice are examined. Advances in dental hygiene are explored for possible incorporation into the dental hygienist's philosophy and practice. Roles and responsibilities of dental hygienists are clarified. Emphasis will be placed on oral and written communication skills. A student may schedule this course only after acceptance into the baccalaureate curriculum. 3 Credits (3 Lecture -0 Lab) (Writing Enriched) **Fall Only.**

DEN305

Current Concepts In Periodontology

The student will be challenged to advance from the basic working knowledge of periodontics to the level of evaluating and applying the current research into the practice of periodontics. The most current literature regarding the factors involved in the occurrence and treatment of periodontal diseases will be explored. Special emphasis will be placed on the role of the dental hygienist as the periodontal cotherapist. Students may schedule this class only after acceptance into the baccalaureate curriculum. 3 Credits (2.50 Lecture -1.50 Lab) *Prerequisite(s): DEN288. Corequisite(s): DEN312. Summer Only.*

DEN312

Techniques in Pain Control

Theoretical and clinical knowledge of safe and effective administration of local anesthetic agents in dentistry will be presented. Modular videotape instruction is supplemented by classroom discussion, readings, clinical simulations and practice. Students may schedule this class only after acceptance into the baccalaureate curriculum. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): BIO115 and BIO125 and DEN107 and DEN204. Spring Only.*

DEN320

Application of Teaching and Learning Styles in Clinical Dental Hygiene

This course is designed to provide the student with an overview of current issues facing clinical dental hygiene educators. Special topics related to clinical instruction will be discussed, such as motor skill development, communication in the clinical setting, analysis of performance, and outcomes assessment. Instruction will include lecture, seminar and clinical application sessions. 3 Credits (2 Lecture -3 Lab) **Summer Only.**

DEN330

Special Populations

This course emphasizes the planning of comprehensive health care in four major areas of patients with "special needs." Areas include: radiation and chemotherapy treatment; physical and sensory impairments; mother/infant/child clients; and alcohol and drug rehabilitation. Students may schedule this class only after acceptance into the baccalaureate curriculum. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

DEN445

Field Study in Special Needs

This field study provides a variety of experiences through social service agencies or clinical facilities. The student will apply comprehensive dental hygiene knowledge and skills to aid the special needs patient and/or caregiver to achieve optimum oral health. Students may schedule this class only after acceptance into the baccalaureate curriculum. 4 Credits (2 Lecture -10 Lab) *Prerequisite(s): DEN330 and HTH327. Fall Only.*

DEN495

Dental Hygiene Capstone

This course provides an opportunity to synthesize, analyze, and develop solutions to a health care issue or problem. Under guidance of a faculty mentor, the student will use an interdisciplinary approach to develop a program for implementation in the health care environment, to complete a major written health related project, or to develop a written portfolio with relevance to the health care sector. 3 Credits (3 Lecture -0 Lab) **As needed.**

COMPUTER-AIDED PRODUCT DESIGN (DSG)

DSG321

Introduction to Product and Systems Design

This course introduces the theory and application of the design and development of industrial products and systems. The course develops an awareness of the many cultural, physical, and historically based variables that impact the finished product. Special emphasis is placed on the design process and problem solving. Students work in teams to design simple tools and products. Parametric solids modeling software is used to develop basic designs and create production drawings. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CAD237 and CCD243. Fall Only.*

DSG322

Design for Manufacturability

This course provides the skills to analyze and develop designs that can be moved from concept to finished product. Emphasis is placed on quality improvement, time to market, creative use of manufacturing systems, automation, and reduction of part number and complexity. The course stresses bringing a competitive product to market through the use of concurrent engineering for simultaneous product/process design. Parametric solids modeling and surfacing software are used to develop basic designs and create production drawings. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): DSG321. Spring Only.*

DSG323

Design Statics and Strength of Materials

This course introduces fundamental principles used in determining the force and moment set that maintain structures in static equilibrium. In this program the corresponding material stresses will be determined in a combined state when required. This will include Mohr's circle, stress-strain relationships, and factors of safety. Special applications will also be introduced including springs, press fits and torsion of shafts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH240 and PHS115. Corequisite(s): MTH242. Fall Only.*

DSG324

Design Dynamics

Quantitative analysis of particles and rigid bodies in two and three dimension, with an emphasis on basic principles, visualization, and problem solving as applied in product design. Topics include kinematics of translation and rotation, Newton's laws, vibration, resonance and fatigue. This course builds on previous knowledge of statics and strengths of materials. Calculus is used. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): DSG323. Corequisite(s): MTH242. Fall Only.*

DSG421

Product Design and Engineering Analysis

This course further develops skills in the engineering aspects of the design process. The use of engineering analysis, materials, techniques, and models will direct the development and documentation of products and tools. The intensive use of CAD and FEA to develop and test geometry is introduced. The databases are used for a variety of engineering analyses and validation techniques. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): DSG322 and DSG324. Fall Only.*

DSG422

Applied Product and Systems Design

This course builds on and reinforces concepts learned in the previous design and engineering courses. Students work individually or in a team to solve design problems, selecting materials, testing alternatives, collecting data, conducting design analysis, preparing engineering documents, and recommending manufacturing processes. Concepts of product liability, computer integrated manufacturing (CIM), materials handling, and product tracing is discussed. A student may take this course through a cooperative education arrangement with instructor approval. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): DSG421. Spring Only.*

DSG423

Design Colloquium

This course presents current topics of interest on design and engineering by means of guest speakers, video conferences, field trips, Internet exchanges, and other multi-media methods. Students receive up-to-date information on design and the profession. Participation in student chapters of professional societies will be encouraged. Presentations, journals and technical reports will be developed on current topics of interest covered in the course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): DSG321. Spring Only.*

DSG495

Senior Seminar-Lecture

This course provides an opportunity for the student to define, plan and develop a proposal for the senior project. Using knowledge and skills acquired in previous design courses, the student will develop a design proposal, conduct preliminary analysis, present findings, and prepare a final report for a product design or system. Working on industry based design problems and using concurrent engineering techniques will be emphasized. Each student or design group will complete an approved project for the senior seminar lab course. 1 Credit (1 Lecture -0 Lab) **Fall Only.**

DSG496

Senior Seminar-Lab

In this course the student will be responsible for working under a faculty mentor to develop and deliver a finished project as outlined during the lecture, planning portion of the senior seminar experience (DSG495). Successful completion of the project will require a finished project including a report with an executive summary, an evaluation process, and a verbal presentation. 3 Credits (0 Lecture -9 Lab) *Prerequisite(s): DSG495.* **Spring Only.**

DIESEL (DSM)

DSM100

Equipment Operation and Safety

Introduction to safety, daily inspection checklist, start-up procedures, and proper operating techniques and application to the work site using several major types of heavy equipment. 1 Credit (1 Lecture -0 Lab)

DSM113

Tools and Hardware

This course will provide an overview of the basic tools, fasteners, and fittings used in the Diesel Equipment Technology field. This course will focus on shop safety and operation dealing with tools and hardware. Topics to be covered will include: tool identification, proper use of basic tools, basic fitting identification, bolt and bolt hole identification, proper thread repair, wire and connector identification and repair. 1 Credit (1 Lecture -0 Lab)

DSM114

Applied Failure Analysis

Fundamental procedures and steps used in determining causes of component failures specific to diesel engine, transmissions, differentials, hydraulic pumps, motors and cylinders, planetary gears and chassis. 1 Credit (1 Lecture -0 Lab) *Corequisite(s): DSM113.*

DSM115

Diesel Engines

This course will provide an introduction to the theory of a diesel engine operation, mechanical functions, component terminology and manufacturers' engine nomenclature. Basic overhaul procedures necessary to service and repair diesel engines are discussed. (Formerly DSM 131) 4 Credits (4 Lecture -0 Lab) *Corequisite(s): DSM116.*

DSM116

Diesel Engines Laboratory

Introduction to the practical application of basic mechanical operations and procedures emphasis on component nomenclature, correct service, maintenance and safety procedures. (Formerly DSM 130) 4 Credits (0 Lecture -12 Lab) *Corequisite(s): DSM115.*

DSM117

Introduction to Hydraulics

This course is an introduction to mobile hydraulic principles and systems. Students will study flow, pressure, and multiplication of force and velocity of a liquid within a confined state. Hydraulic schematics will be used. 1 Credit (1 Lecture -0 Lab) *Corequisite(s): MTH011 or MTH124.*

DSM118

Fuel Systems

This course will provide a basic introduction to the theory and operation of mechanical and electronic fuel injection systems as they apply to the heavy-duty diesel engine field, with a focus on operation, maintenance, troubleshooting and repair, and safety. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): CSC110 and ELT111 or CSC110 and DSM120.*

DSM120

Basic Electricity

Introduction to the basic principles of electricity, electrical safety, multimeters, Ohm's Law, magnetism, electrical terminology, operating procedures of analog and digital instruments, introduction to schematic reading, chemical and mechanical generation of electricity, starting circuits, charging circuits, voltage regulators, switches, solenoids, electrical control devices. Circuit analysis of parallel, series and series-parallel networks. Emphasis on diagnosing and locating electrical malfunctions located in a circuit. (Formerly DSM 127/128) 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): MTH111 or MTH011 or MTH120 or MTH124 or MTH180.*

DSM139

Hydraulic Components

Hydraulic Components is the study of the various elements that make up a hydraulic system. The course is designed to show the students how components work, evaluation of failures, and what precautions must be taken to prevent these failures. Students will disassemble, explain the operation, evaluate failures, assemble and test hydraulic components. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): DSM117.*

DSM140

Truck Tractor Chassis and Alignment

The study of suspension, frame and steering components, including the alignment and maintenance of system components. 3 Credits (1 Lecture -6 Lab)

DSM141

Heavy Duty Brake Systems

Explanation and theory of brake systems common to heavy duty vehicles and equipment. Selected topics include air, hydraulic and anti-lock systems with emphasis on troubleshooting and practical applications of repair and maintenance. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): DSM142.*

DSM142

Power Train and Brake Systems Lab

Hands-on applications of heavy vehicle power train and brake system components. Overhaul, adjustment, and repair procedures of heavy transmissions, drive lines, differentials, clutches and final drives. Troubleshooting and repair of hydraulic and pneumatic brake systems and other instructor selected topics. 4 Credits (0 Lecture -12 Lab) *Corequisite(s): DSM141.*

DSM143

Principles of Power Transmission

Introduction to the operation and theory of heavy-duty vehicle power train including transmissions, clutches, drive shafts, differential carriers, axles and final drives. Principles of torque multiplication and bearing adjustment. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): DSM142.*

DSM145

Construction Equipment Chassis

Introduction to the theory, operation, troubleshooting, adjustment and preventative maintenance of on and off-road heavy equipment drivelines, tracks and steering systems. (Formerly DSM 144) 1 Credit (1 Lecture -0 Lab) *Corequisite(s): DSM142.*

DSM146

Commercial Truck Power Train and State Inspection

Introduction to the theory of operations, maintenance, troubleshooting, and overhaul of commercial vehicle power trains. Topics to include clutches, manual and automatic transmissions, drive line and universal joint design, single and tandem drive systems, Pennsylvania State Inspection theory and practical procedures. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): DSM140 and DSM141 and DSM142.*

DSM147

Principles of Power Trains

Introduction to the operation and theory of heavy duty vehicle power train, including transmissions, clutches, drive shafts, differential carriers, axles and final drives. Principles of torque multiplication and bearing adjustment. (Formerly DSM 143) 2 Credits (2 Lecture -0 Lab) *Corequisite(s): DSM142.*

DSM148

Heavy Equipment Operating Methods

Introduction to safety, daily inspection checklist, start-up procedures, and proper operating techniques as applied to the work site. (Formerly DSM 136) 1 Credit (1 Lecture -0 Lab)

DSM151

Mack Dealership Internship

A specialized work experience to be performed in a participating Mack Trucks, Inc., dealership. The experience will apply knowledge and skills developed during the first year of diesel technology instruction. The course will be conducted in accordance with the guidelines established by participating Mack Trucks, Inc. dealerships. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): DSM127 and DSM128 and DSM130 and DSM131 and DSM140 and DSM141 and DSM142 and DSM146 or DSM115 and DSM116 and DSM120 and DSM140 and DSM141 and DSM142 and DSM146. Summer Only.*

DSM152

Electric Power Generation Internship

A specialized work experience to be performed in a participating dealership. The experience will apply knowledge and skills developed during the first year of Electric Power Generation instruction. The course will be conducted in accordance with the guidelines established by participating dealerships. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): CSC110 and DSM115 and DSM116 and EDT120 and ELT111 and ELT113 and ELT122.*

DSM153

Internship

A specialized work experience to be performed in a participating business. The experience will apply knowledge and skills developed during the first year of heavy equipment instruction. The course will be conducted in accordance with the guidelines established by the advisory committee. (Formerly DSM 150) 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): CSC110 and DSM115 and DSM116 and DSM120 and DSM147.*

DSM220

Site Engineering

Introduction to surveying, grade stakes, blueprint reading, and laser usage. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): DSM136 or DSM148. Corequisite(s): DSM221 and DSM222 and DSM223. Fall, Summer.*

DSM221

Operation of Crawler Tractors

The safe operation and proper field application of bulldozers and trackloaders. Project engineering applying site engineering techniques. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): DSM136 or DSM148. Corequisite(s): DSM220 and DSM222 and DSM223. Fall, Summer.*

DSM222

Operation of Ditch and Trenching Equipment

The safe operation of proper field application of backhoes, excavators, draglines, and truck mounted backhoes. Project engineering applying site engineering techniques. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): DSM136 or DSM148. Corequisite(s): DSM220 and DSM221 and DSM223.*

DSM223

Operation of Hauling and Finish Grade Equipment

The safe operation and proper field application of wheel loaders, skid steers, scrapers, graders, rollers, and off-road trucks. Project engineering applying techniques from DSM 220 will be emphasized. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): DSM136 or DSM148. Corequisite(s): DSM220 and DSM221 and DSM222. Fall, Summer.*

DSM240

Electronic Fuel Systems Operation/ Diagnostics

This course will provide an introduction to theory and operation of the different types of electronic fuel injection systems used by the major manufacturers of on-highway heavy-duty diesel engines. Topics to be covered will include: electronic fuel systems, parts and components identification, usage and operation, electronic governing, set up programmable functions using laptop computers and diagnostic readers. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): DSM118.*

DSM241

Diesel Electronic Systems

Introduction to advanced electrical/electronic system principals, sensor type and function, sensor testing, system analysis using Volt Ohm Meter (VOM) and/or special tooling, schematics, and wiring diagrams. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): DSM120.*

DSM242

Diesel Equipment Air Conditioning Systems

Introduction to basic heating and air conditioning systems with an emphasis on systems common to construction equipment and over-the-road trucks. Topics to be covered will include: basic heating systems, refrigeration principles, component identification, component function, refrigerants, environmental concerns, system testing, diagnosis and repair. (Formerly DSM267) 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): DSM120.*

DSM246

Allison Transmissions

Introduction to the theory of operation, preventative maintenance, diagnostics, and overhaul of Allison World Transmissions. Topics to include torque converters, planetary gears and power flows, hydraulic components, internal fluid management systems, internal and external electronic control and interface systems, and basic electricity as applied to the World Transmission (WT). 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): DSM142 and DSM146.*

DSM249

Gaseous Fueled Engines

Introduction to engines fueled by methane, natural gas and other gaseous fuels. This course will differentiate between diesel and gaseous-fueled systems. Topics include: gaseous combustion process, types of fuels and compression ratios, fuel regulation and delivery, ignition system, temperature regulation, emission controls, preventative maintenance and tune up. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): DSM115 and DSM116.*

DSM253

Truck Maintenance and Inspection

Basic preventative maintenance of both truck tractor and trailer, importance of preventative maintenance systems, methods of performing preventative maintenance, maintenance items covered on various preventative maintenance check points and time frames. Safety and Pennsylvania State Inspection theory and practical procedures. Basic hydraulics as applied to the trucking industry. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): DSM130 and DSM131 and DSM141 and DSM142 and DSM143. Corequisite(s): DSM254. As needed.*

DSM254

Truck Tractor Chassis and Alignment

The study of suspension, frame and steering components, including the alignment and maintenance of system components. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): DSM141 and DSM142. Corequisite(s): DSM253. As needed.*

DSM255

Diesel Mechanical Fuel Injection

This course will provide an introduction to the theory and operation of basic mechanical fuel injection systems as they apply to the heavy-duty diesel engine field, with a focus on operation, maintenance and repair, and safety. Topics to be covered will include: safety and health issues, basic fuel systems, maintenance and system adjustments, troubleshooting and repair, mechanical injection pumps, mechanical governors, fuel injection nozzles and injectors. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): DSM130 and DSM131. Corequisite(s): DSM256 and DSM257.*

DSM256

Diesel Electronic Fuel Injection

This course will provide an introduction to the theory and operation of electronic fuel injection systems as they apply to the heavy-duty diesel engine field, with a focus on operation, maintenance and repair, and safety. Topics to be covered will include: safety and health issues, basic electronic fuel systems, maintenance and system adjustments, troubleshooting and repair, electronic governing, computer analyzing and programming. (Formerly DSM251) 6 Credits (3 Lecture -9 Lab) *Prerequisite(s): DSM127 and DSM128 and DSM130 and DSM131. Corequisite(s): DSM255 and DSM257.*

DSM257**Diesel Engine Tune-Up**

This course will provide an overview of the basic tune-up procedures used in today's modern diesel engines with a focus on safety, proper tool selection and usage, maintenance and adjustment procedures, engine brake usage and adjustments, along with preventative maintenance and service intervals. (Formerly DSM252) 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): DSM130 and DSM131. Corequisite(s): DSM255 and DSM256.*

DSM258**Vehicle Electronics/Diagnostic Procedures**

This course will provide an introduction to the troubleshooting and repair of electronic fuel injection systems used by the major manufacturers of on-highway, heavy-duty diesel engines and the major truck manufacturers that utilize these engines. Topics to be covered will include: troubleshooting and repair, laptop computers and diagnostic readers, wiring circuitry and connections, wiring schematics, electronic component testing, maintenance and adjustments and tune-ups. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): DSM118.*

DSM259**Automated Power Train Products**

This course will expose students to the theory of operation, diagnostics, and maintenance procedures on electronically shifted, mechanical transmissions currently used in the commercial trucking industry. Theories covered in this course will be relevant to transmission models currently available from leading manufacturers in the industry. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): DSM142 and DSM146.*

DSM264**Basic Hydraulics**

Basic hydraulics is a course designed to introduce students to the principles of how a confined fluid is used to do work. Major topics that will be discussed will include: what causes fluid to move in a confined state, how pressure is created, multiplication of force, and the components used and how they work to do the above. Other topics will include contamination, hydraulic schematics, hydraulic systems and the calculation of hydraulic problems. 4 Credits (4 Lecture -0 Lab) *Prerequisite(s): MTH124 or MTH120 or MTH180.*

DSM265**Advanced Hydraulics Theory**

Advanced Hydraulics is a course that deals with hydraulic systems and how they are controlled. The course deals with open, closed and closed-loop systems; the valves, pumps, actuators, and accessories used in these systems and how they work. How to troubleshoot these systems using schematics and various hydraulic test equipment. Other topics that are covered include hydraulic assist transmissions, hydrostatics and torque converters. 4 Credits (4 Lecture -0 Lab) *Corequisite(s): DSM264 and DSM266.*

DSM266**Advanced Hydraulics Laboratory**

Hands-on application of theories and principles from DSM 264 and DSM 265. Pump overhaul and flow testing, application of control valves and actuators; overhaul, diagnosis, repair and testing of hydrostatic and power shift transmissions. 4 Credits (0 Lecture -12 Lab) *Corequisite(s): DSM265.*

DSM267**Heavy Duty A/C Systems**

Introduction to the basics of air conditioning and refrigeration systems, component identification and function, safety and handling of refrigerants, control systems operation and function, discharging, evacuation, and recharge procedures. Emphasis on systems commonly found in tractors and heavy construction equipment. Demonstrations of troubleshooting to include system diagnosis and repair. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): DSM127.*

DSM268**Truck and Tractor Refrigeration Systems**

Study of the operation, maintenance, repair and troubleshooting of highway vehicle refrigeration systems. Topics to include compressors, expansion valves, three-way valves, condensers, evaporators and control systems. 4 Credits (2 Lecture -6 Lab) *Corequisite(s): DSM242.*

DSM271**Maintenance Management**

On and off-highway preventive maintenance and shop scheduling. Emphasis on record keeping and oil analysis interpretation. Familiarity with forms such as repair orders, preventive maintenance inspection checklists, warranty claims, and vehicle condition reports. Improving shop productivity by including

scheduling of repairs and operating cost calculations. Other discussions include government regulations such as emission testing, oil and lubricant disposal, transportation of hazardous materials, work flow. Develops the student's ability to manage the process of setting and accomplishing goals through the use of human, technical and financial resources within the context of the environment. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): CSC110 and DSM127 and DSM130 and DSM131 and ENL010 or CSC110 and DSM127 and DSM130 and DSM131 and ENL111 or CSC110 and DSM127 and DSM130 and DSM131 and ENL201.*

DSM273**Transportation Hydraulics**

Transportation Hydraulics is a basic hydraulics course that includes both lecture and lab. This course will emphasize hydraulics used in the heavy-duty truck and trailer industry. Transportation Hydraulics starts with principles of hydraulics, continuing with hydraulic pumps, systems, valves, actuators and the associated components that make up a hydraulic system used in the trucking industry. Besides knowing the operation and proper repairs of these hydraulic components, the student will know the correct troubleshooting technique used in detecting problems associated with a hydraulic system. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM146 and MTH120 or DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM146 and MTH111 or DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM146 and MTH180 or DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM146 and MTH124 or DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM146 and MTH011. Corequisite(s): DSM271.*

DSM274**Equipment Maintenance Management**

On and off-highway preventive maintenance and shop scheduling. Emphasis on record keeping and oil analysis interpretation. Familiarity with forms such as repair orders, preventative maintenance inspection checklists, warranty claims, and vehicle condition reports. Improving shop productivity by including scheduling of repairs and operating cost calculations. Other discussions include government regulations such as emission testing, oil and lubricant disposal, transportation of hazardous materials, and work flow. Develops the students' abilities to manage the process of setting and accomplishing goals through the use of human, technical and financial resources within the context of the environment. (Formerly DSM 271) 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC110 and DSM115 and DSM116 and DSM120.*

DSM276**Site Modification**

The study of soil composition, types, maps, compaction and compaction equipment as they relate to heavy construction equipment operators. Includes government regulations, erosion control, planning and site application. 2 Credits (2 Lecture -0 Lab)

DSM281**CAT Engine Management Systems**

Introduction to the theory and operation of Caterpillar mechanical fuel-injection systems, Caterpillar electronic fuel-injection systems, and Caterpillar HEUI fuel system. The operations and troubleshooting of the various systems including fuel, emission control, engine control and tune-up are explored with emphasis on diagnostic testing using Caterpillar's Electronic Technician computer-based system. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): CSC110 and DSM127 and DSM130 and DSM131 or CSC110 and DSM115 and DSM116 and DSM120. Corequisite(s): DSM241 or DSM128. Fall Only.*

DSM282**CAT Vehicle Chassis Electronics and Diagnostic Procedures**

An introduction to CAD machine electronics and monitoring systems. Students will study the theoretical and practical operations of each system. Topics such as component and symbols identification, wiring diagrams and schematics, CAT Vital Information Management System (VIMS) and CAT Monitoring System (CMS) along with an overview of the automatic retarder control and electronic traction aids systems. Use of measuring instruments and tools, both hand and machine will be used for diagnostic and troubleshooting procedure. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CSC110 and DSM127 and DSM128 and DSM130 and DSM131 and DSM141 and DSM142 and DSM143 and DSM145 or CSC110 and DSM115 and DSM116 and DSM120 and DSM141 and DSM142 and DSM145 and DSM147 and DSM241. Fall Only.*

DSM283

Specialized Hydraulics

Specialized Hydraulics is the study of troubleshooting hydraulic systems, hydrostatic transmissions and hydraulic-assist transmissions. The course deals heavily in the use of test equipment and schematic reading. Troubleshooting of a hydraulic system is taking the basics one has learned and using a systematic approach, along with various test equipment, to determine problems within the system. Hydrostatic transmission is the use of pumps and motors in the propulsion of moving equipment. Emphasis will be placed on the operation, control and repair of the hydrostatic transmission. The control portion will emphasize on mechanical, hydraulic-over-hydraulic and electric-over-hydraulic controls. Hydraulic-assist transmission (Power-shift Transmissions) is the use of hydraulic engaged clutches that control gear ratios within a transmission. Operation, oil flow and repair are the main issues that are covered within this transmission. Torque converter and retarder operation is included within the hydraulic-assist transmission portion. 6 Credits (3 Lecture -9 Lab)
Prerequisite(s): DSM139.

DSM284

Introduction to CAT Vehicles

An introduction to the operation of most commonly used Caterpillar (CAT) earthmoving equipment. Safety, inspection checklist, start-up procedures and proper operation techniques will be explored. Service access and connection areas will be identified along with lifting, support and towing locations. (Formerly DSM 280) 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC110 and DSM115 and DSM116. Corequisite(s): DSM120 and DSM141 and DSM147.*

DSM285

CAT Vehicles Laboratory

An introduction to the operation of most commonly used Caterpillar (CAT) earth moving equipment. Safety, inspection checklist, start-up procedures and proper operation techniques will be explored. Service access and connection areas will be identified along with lifting, support and towing locations. (Formerly DSM 280) 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): DSM284.*

DSM290

V-MAC Electronics and Diagnostic Procedures

Specialized training with Mack Trucks, Inc. electronic fuel injection systems and service tools. The operations and troubleshooting of the various systems including fuel, emission control, engine control, and tune-up are explored with emphasis on diagnostic testing using Mack Trucks, Inc. computer based system. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): DSM127 and DSM128 and DSM130 and DSM131 or DSM115 and DSM116 and DSM120 and DSM241. Corequisite(s): DSM118 and DSM240 and DSM258 or DSM255 and DSM256 and DSM257.*

DSM291

Mack Failure Analysis and Dealer Procedures

Fundamentals of determining causes of failures of parts specific to components manufactured by Mack Trucks, Inc. Evaluation of failures of components such as diesel engines, transmissions, carriers and chassis will be covered. Other topics include, Mack special tools, parts procedures, warranty claims, and Mack vehicle familiarization. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): DSM127 and DSM128 and DSM130 and DSM131 and DSM140 and DSM141 and DSM142 and DSM146 or DSM115 and DSM116 and DSM120 and DSM140 and DSM141 and DSM142 and DSM146 and DSM241. Fall Only.*

ECONOMICS (ECO)

ECO111

Principles of Macroeconomics

Examines aggregate economic concepts from classical, Keynesian, monetarist, and supply-side perspectives. The influence of national income and monetary policies on individuals and social institutions will be emphasized. Issues relating to the global economy are also examined. 3 Credits (3 Lecture -0 Lab)

ECO112

Principles of Microeconomics

An introduction to microeconomic theory with emphasis on the function of the free market economy. Utility maximization by consumers, profit maximization by producers under different market structures, government regulation, and distribution of income are among topics examined. 3 Credits (3 Lecture -0 Lab)

ECO202

Economic Analysis

A study of the theory of the firm. Analysis of economic problems involved in public policy decisions. Recommended for students intending to major in economics. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ECO111. As needed.*

ECO257

International Economics

A study of the international economic community with emphasis on the conceptual frameworks that affect international economic policies and second and third world economic development. Specific attention is given to balance of payments, exchange rate determination, investment and debt, multinational corporations, tariffs, quotas, the World Bank, the International Monetary Fund, the United Nations, and relevant historical and current political alliances. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ECO111 or ECO112 or ECO202. As needed.*

ENGINEERING DRAFTING (EDT)

EDT104

Aircraft Drawings

Aircraft blueprint reading for aviation maintenance technicians. Emphasizes reading and interpreting multiview drawings. Includes installation diagrams, schematics, the use of charts and graphs. Making three-dimensional sketches for repair and alterations to aircraft. 2 Credits (1 Lecture -3 Lab) **Spring Only.**

EDT107

Blueprint Reading for Welders

This course will introduce the student to basic sketching, drafting, and print reading skills used in the welding profession. This course emphasizes the interpretation of multiview drawings, dimensions, notes, specifications, welding symbols and AWS standards. 2D Computer-Aided Drafting topics will be introduced. 2 Credits (1 Lecture -3 Lab)

EDT110

Technical Drawing and Print Reading

This course is designed for students enrolled in technical programs that require an understanding of basic mechanical drawing and print reading. Provides an introduction to drafting instruments, lettering, orthographic projection, geometric construction, sectional views, axonometric project, dimensioning, tolerancing, auxiliary views and technical sketching. Included is the interpretation of drawings, symbols, notation, technical information and geometric tolerancing used on industrial working drawings. 2 Credits (1 Lecture -3 Lab)

EDT120

Electrical Drawing and Print Reading

An introduction to preparation and interpretation of residential and commercial electrical drawings, diagrams, and schematics. Provides an introduction to drafting instruments, orthographic projection, sectional views, axonometric projection, and technical sketching. Included is the interpretation of construction drawings, electrical symbols, wiring diagrams, schedules, notation, technical information, and electrical specifications used on electrical drawings. 2 Credits (1 Lecture -3 Lab)

EDUCATION (EDU)

EDU100

Child Development

An overview of typical growth and development of young children from birth to age eight. Cognitive, language, physical growth, gross and fine motor, emotional and social developmental milestones are the focus of this course, with a special emphasis on the implications they have for the care and education of young children. Other topics include an introduction to the basic concepts of major developmental theories; principles of learning and development; and developmentally appropriate practice. A strong focus on a family-centered approach is integrated throughout the course. 3 Credits (3 Lecture -0 Lab)

EDU101**Introduction to Early Childhood Education**

A survey of the historical and theoretical aspects of Early Childhood Education. Topics include the societal attitudes; economic, political and legislative factors; orientation to career; alternative settings; and a forecasting of future trends and needs in the field. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100. Spring Only.*

EDU111**Introduction to Education**

Study of the foundations of education-historical, economical, philosophical and social-and their implications for education today. 3 Credits (3 Lecture -0 Lab) **As needed.**

EDU121**Children's and Young Adult Literature**

Comprehensive survey of children's and young adult literature. Basic knowledge and understanding of authors, illustrators, and literary forms serve as background for work in a public area of a library. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

EDU125**Methods and Materials for Early Childhood Education I**

Explores teaching methods and materials used for the Early Childhood classroom. Introduces the lesson planning process for individuals, small and large group activities. Methodology focuses upon motor, emotional, social and intellectual development with concentration on planning emotional and motor activities. Students plan and implement art, music, movement, dramatic play, sensory, fine/gross motor and field trip activities for young children. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100. Spring Only.*

EDU201**Health, Safety, and Nutrition for Early Childhood**

Focuses on the specific health and hygiene concerns of early childhood. Common childhood diseases, disorders, and conditions are discussed with emphasis on identification and management within a pre-school setting. Assisting young children in the development of personal hygiene and safety skills is a significant course component. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100. Spring Only.*

EDU210**Observation and Communication with Young Children**

This course is designed to acquaint the student with the means of observing and recording the behavior of young children. It will help the student to use an observation method to describe children's behavior by relating to developmental theories. Methods, including anecdotal records, running records, time samples, and frequency charts, will be used to gather information for the development of a student's children's development portfolio. This course will also focus on the interaction between various theories of communication and the process of child development. The course is designed to familiarize students with a broad range of communication techniques and will emphasize the mastery of positive communication skills, both verbally and non-verbally, in guiding young children's behavior. Positive guidance methods will be explored and related to how children develop self-control. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101 and PSY111. Fall Only.*

EDU225**Methods and Materials for Early Childhood Education II**

Introduces various curricula planning approaches: High-Scope, emergent, and thematic unit. Explores teaching methods and materials used for the early childhood classroom. Methodology focuses upon social, emotional, motor, and intellectual development with content including social and cognitive activities, mathematics, science, and language arts. The development of a unit plan is focused on an integrated, theme approach. Activities and instructional equipment include games, field trips, stories, and AV equipment. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101 and EDU125. Fall Only.*

EDU230**Young Child with Special Needs**

Introductory exploration of the young child with special needs (birth to eight years). A holistic conceptualization of behavior and development provides the focus to study the cognitive, affective, psychomotor, and self-help needs of "at risk" and "developmentally delayed" populations. Adaptive methods, early intervention services, assessment, inclusionary practices, and implementation of educational treatment plans will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101 and EDU125. Spring Only.*

EDU256**Early Childhood Practicum**

Students will participate in a supervised fieldwork experience in an assigned, licensed childcare facility. The fieldwork challenges the early childhood student to integrate theoretical knowledge into practice, to expand their awareness of diversity in children and families, to contribute to the development of the whole child, to interact with parents and other professionals, and to develop professional skills. (225 "direct-contact" hours plus participation in eight bi-weekly, two-hour seminar meetings.) At bi-weekly seminar meetings students will analyze concerns, issues, and successes, while developing strategies for improving instructional competence. Permission of the instructor per the following criteria: 1) successful completion of EDU100, EDU125, EDU201, EDU210, EDU225, EDU268, with a cumulative average of at least a 2.5 for these courses; 2) completion of ENL111, ENL121, PSY111, PSY210 with a cumulative average of at least 2.5 for these courses; 3) completion of FIT204 First Aid Responding to Emergencies, with an earned "C" or better OR documentation of American Red Cross training in Standard First Aid and documentation of successful completion of CPR classes with a valid current provider card; 4) completion of a standard basic health appraisal form (prior to starting date); 5) receipt of Children's Services Protection Act 33 and/or Act 34 clearances prior to starting date. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): EDU100 and EDU125 and EDU201 and EDU210 and EDU225 and EDU268 and ENL111 and ENL121 and FIT204 and PSY210.*

EDU262**Language Arts**

Comprehensive exploration of young children's communicative processes: listening, speaking, reading and writing. An integrated "whole language" approach is emphasized. Students design language arts activities that enable them to provide a language-rich environment while facilitating language growth in young children. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101. As needed.*

EDU264**Anti-bias Curriculum**

This special topic course identifies and defines the "anti-bias" philosophy. This philosophy promotes attitudes of respect and acceptance within an inclusionary atmosphere of diversity. This approach in early childhood education is critical in providing developmentally appropriate programming for young children and their families. Specialized focus of this topic/approach will relate to curriculum planning, evaluation and selection of materials, design of a responsive environment, evaluation of strategies and interactions of adults, decision-making processes, and provision of positive family relationships. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100. As needed.*

EDU266**Thinking Skills/Math and Science for Early Childhood Education**

This course is intended for students who seek a career in Early Childhood Education. Students will learn the theories of Jean Piaget on the cognitive development of the child to help them in planning a developmental and sequential approach to teaching math and science. Emphasis will be placed on the designing of activities to put this knowledge into practice with young children, birth to eight. Special attention will be given to ways of incorporating math and science into the everyday play of children and in caregiving routines. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101 and EDU125. As needed.*

EDU267**Enhancing Self-Concept In Early Childhood**

This course is intended for those students who seek a career in Early Childhood Education. The focus of this course will be to enable students to understand information related to self-concept theories and the empirical evidence supporting them and to incorporate this knowledge in their daily interaction with children. With the understanding of this information, the student can begin to integrate the practical and theoretical aspects of self-concept and contribute more successfully to the enhancement of the child's self. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU101. As needed.*

EDU268

Methods and Materials for Infants and Toddlers

This course examines appropriate caregiver strategies, materials and activities for young infants (birth-8 months), mobile infants (9 months-17 months), and toddlers (18 months-36 months) and their families. A theoretical approach structures the educational practices and methodology employed in the functional areas as defined by the Child Development Associate Credential (CDA). Students will design materials, activities, and strategies that are useful and appropriate with infants and toddlers. Appropriate documented life experience can be used to substitute for course prerequisites if approved by the advisor. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100 or PSY210 or PSY203. Fall Only.*

EDU270

Play Across the Early Childhood Curriculum

Using play as the medium, this course explores children's block play, art, music, movement, storytelling and the use of technology in the Early Childhood setting. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EDU100 and EDU125. As needed.*

EDU358

Instructional Methods

This course applies the foundations of psychology of education to instructional delivery and to all learners, including adults. The methodologies-design, delivery, evaluation-relate to all instructional settings; thus the course is appropriate for those who anticipate that teaching will be a part of their work or career. The lab component provides opportunity for students to apply theory, practice skills, and test their ability to transfer knowledge. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): EDU111 and PSY231. As needed.*

ELECTRONICS/ENGINEERING TECHNOLOGY (EET)

EET105

Microcomputer Maintenance

This course is designed for the person responsible for the operation of a microcomputer and who must perform upgrades to the equipment, troubleshoot error conditions and perform routine maintenance. Topics will include recognition of internal components, proper removal and insertion of expansion boards, proper cleaning and maintenance, and correction of errors through extended diagnostics. 1 Credit (.75 Lecture - .75 Lab)

EET110

DC-AC Basics

This is an introductory course in DC and AC electric circuits. Introduction to current flow, resistance, and units of electrical measurement. Circuit analysis will be limited to a basic understanding of series, parallel and series-parallel networks with Ohm's Law. AC time varying waveforms, capacitors, inductors, and transformers will be studied. Emphasis in this course will be on fundamental understanding of electrical concepts. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

EET111

DC-AC Measurements

Application of DC and AC theory concepts; wiring, soldering techniques, and basic circuit construction practices for electronic circuits; use of analog test equipment and measuring techniques; safety practices for electronics. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET110. Fall Only.*

EET112

Introduction to Solid State Devices

Introduction to discrete solid state devices; diodes, transistors and four-layer devices. These will be discussed for a basic understanding of how they function in common circuits. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): EET110 and EET113. Fall Only.*

EET113

Solid State Devices Applications

Prototype solid state circuits utilizing two and three terminal devices are constructed. Parameter measurements on these prototypes are made and documented. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET111 and EET112. Fall Only.*

EET114

Introduction to Digital Electronics

Digital number system and codes. Introduction to combinational and sequential logic circuits. Examination of logic families and their applications. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): EET112 and EET115 or EET110 and EET115. Fall Only.*

EET115

Digital Circuits Applications

Construction of prototype logic circuits. Measurement of both static and dynamic characteristics. Proto Board and wire wrapping prototyping methods are introduced. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET114. Fall Only.*

EET150

DC-AC Circuit Analysis

Analysis of DC and AC circuits utilizing network theorems and other mathematical techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET110. Corequisite(s): MTH180. Spring Only.*

EET151

Advanced DC-AC Circuit Applications

Extensive measurements with industrial standard oscilloscopes and other analog and digital measuring equipment will be made and documented. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET150. Spring Only.*

EET152

Intermediate Solid State Devices and Circuits

Analysis and basic design of two and three terminal discrete devices including multi-stage circuits and feedback methods. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET112. Spring Only.*

EET153

Intermediate Devices Applications

Construction and measurement of a variety of solid state devices and circuits; extensive measurement techniques are employed to collect data. Emphasizes the presentation of collected data in technical report form using narrative and graphic techniques. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET152. Spring Only.*

EET154

Introduction to Microprocessors

An introduction to the Intel 8088/8086 family of microprocessors; the architecture, instruction set, and basic interface practices. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

EET155

Microprocessor Applications I

Lab exercises complement the coursework of EET 154. Each student uses a personal computer in the generation of assembly language programs to perform basic interface experiments. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET154. Spring Only.*

EET202

Microprocessor Interfacing

Digital interfacing, analog interfacing and industrial process controls, multiple processor systems, data communication networks, and a variety of microcomputer system peripherals are studied in relation to their use in microprocessor interfacing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET154. Fall Only.*

EET203

Microprocessor Applications II

Lab experiments complement the coursework of EET 202. Each student will use a personal computer and prototyping hardware to perform a variety of interface experiments. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET202. Fall Only.*

EET204

Network Installation and Maintenance

The installation, maintenance and troubleshooting of the hardware for local area networks will be presented with an emphasis on the hands-on, practical experiences needed to service enterprise computing systems used in industry. Network topologies, protocols, cabling systems, and system fault tolerance and diagnosis will be covered at a level needed for the technician to become competent in network operation and maintenance. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): EET205. Spring Only.*

EET205**Network Maintenance Laboratory**

This course will provide hands-on experiences in the installation, maintenance and troubleshooting of the hardware used in local area networks. The emphasis will be on the skills and techniques required to service the enterprise-networked systems used in industry. The installation and maintenance of cable plants, interface cards, internetworking products and system fault tolerance and diagnosis will be covered at a level needed for the technician to become competent in network operation and maintenance. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET204.*

EET206**Linear Integrated Circuits**

Operational amplifiers, regulators, comparators, converters and specialized linear integrated circuits together with the associated circuitry to control and modify the characteristics of these devices. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET152.*

EET207**Linear Circuits Applications**

Laboratory experience with a wide variety of linear integrated circuits. Measurement of these circuits and troubleshooting techniques are explored. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET206.*

EET220**Cisco Systems® I**

This course is the first of two lecture courses in the Cisco Networking Academy Program covering the Semester 1 and 2 curriculums. Topics of study include networking basics, the specifics of each layer of the OSI model, cabling types and standards, router components and configurations, and TCP/IP protocols and IP addressing. The student should be familiar with basic digital electronics concepts and number systems. Admittance to this course is by satisfactory completion of prerequisites or permission of the instructor. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET154 and EET155.* *Corequisite(s): EET221.*

EET221**Cisco Systems® Applications I**

This course consists of laboratory exercises closely aligned to lectures in Cisco Systems I, EET 220, to give the student an opportunity to practice the skills needed to obtain the Cisco Certified Network Associate (CCNA™) certification. Projects include structured cabling systems design and documentation, router startup and setup, and network system troubleshooting. Students will use both actual router and switch hardware to perform lab exercises as well as computer simulation software to supplement their hands-on experiences. Admittance to this course is by satisfactory completion of prerequisites or permission of the instructor. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET154 and EET155. Corequisite(s): EET220.*

EET222**Cisco Systems® II**

This course is the second of two lecture courses in the Cisco Networking Academy Program covering the Semester 3 and 4 curriculums. Topics of study include a review of the OSI model and routing fundamentals, LAN switching, virtual LANs, WAN design, network management, configuration of the RIP, IGRP and IPX routing protocols, and the creation and use of access lists. Admittance to this course is by satisfactory completion of prerequisites or permission of the instructor. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET220 and EET221. Corequisite(s): EET223.*

EET223**Cisco Systems® Applications II**

This course consists of laboratory exercises closely aligned to lectures in Cisco Systems II, EET222, to give the student an opportunity to practice the skills needed to obtain the Cisco Certified Network Associates (CCNA™) certification. Projects include configuration of switches and Virtual LANs (VLANs), configuration of routers for use with RIP, IGRP and IPX routing protocols, creation and use of access lists, and network troubleshooting. Students will use both actual router and switch hardware to perform lab exercises as well as computer simulation software to supplement their hands-on experiences. Admittance to this course is by satisfactory completion of prerequisites or permission of the instructor. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET220 and EET221. Corequisite(s): EET222.*

EET230**Laser Optic Devices & Systems I**

Introduction to the basic operation of various laser systems. Safety requirements for safe operation of lasers at all power levels used in industrial applications. The interaction of optical components for laser applications will be studied. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

EET231**Laser Optic Devices & Systems Applications**

A companion laboratory course for EET 230. Safety practices associated with lasers. Techniques of light and optical measurements will be stressed in association with low power laser devices. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET230. Fall Only.*

EET240**Introduction to Computer Maintenance**

The basic structure, history, applications, and operation of computer systems will be studied. Theory of the computer systems will be taught on a basic block diagram level. Maintenance of the computer systems will include a variety of basic tasks to service the equipment on a board or subassembly replacement level. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

EET241**Computer Maintenance Applications I**

This laboratory course accompanies EET 240 with practical hands-on computer operation and maintenance experience. Preventative maintenance, proper use of diagnostic troubleshooting guides, replacement of circuit boards, and various sub-assemblies will be emphasized. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET240. Fall Only.*

EET242**Automated Systems Maintenance**

The basic theory behind automated manufacturing equipment will be presented, including the maintenance and interfacing of industrial control units, such as computer numerically controlled (CNC) machines, and industrial robots. Basic theory and control of motors, relays, hydraulics, and mechanical assemblies will be included. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

EET243**Automated Systems Maintenance Applications**

This lab accompanies EET 242 to provide students the opportunity to work with state-of-the-art automated manufacturing equipment such as computer numerically controlled machines and industrial robots. Hands-on maintenance and interfacing techniques will be an integral part of this course. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET242. Spring Only.*

EET250**Introduction to Sensing and Control**

Introduction to discrete sensing of physical phenomena; i.e., proximity, position, temperature and the interfacing of these devices to computer systems. Control of output devices; i.e., solid state, relay, valves, and the programming to allow an interaction between input sensing and output control will be examined. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET110 and EET112 and EET114. Fall Only.*

EET251**Sensing and Control Applications I**

Verifying sensing specifications by comparing manufacturing documentation with experimental data. Interfacing transducers to computer systems and the programming of the computer systems to achieve control. Industrial devices will be used almost exclusively. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET250. Fall Only.*

EET252**Intermediate Sensing and Control**

Continuation of EET 250. An in-depth examination of advanced transducers and sensing techniques. Communications techniques to allow information to be passed between components of industrial control systems will be analyzed. Advanced PLC functions will be studied including analog I/O, computer/PLC interfacing, ladder logic annotation techniques, etc. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET250. Spring Only.*

EET253**Sensing and Control Applications II**

Continuation of EET 252. Verifying sensing specifications by comparing manufacturing documentation with experimental data. Interfacing transducers to computer systems and the programming of the computer systems and the programming of the computer to achieve control. Industrial devices will be used almost exclusively. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET252. Spring Only.*

EET254**Process Control Theory**

Introduction to process control theory. PID control of parameters such as: level, flow, pressure, temperature, etc. Control strategies and tuning techniques for the various dynamic conditions will be examined. P & ID symbology and schematic conventions will be used. Single loop tuning, along with cascade and feed forward circuits, will be discussed in detail. Distributed control theory and strategies will also be converted. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): EET250. Spring Only.*

EET255**Process Control Applications**

Introduction to process control applications. System control will be designed and implemented. Tuning of computer simulated processes and "real" processes will be performed. Calibration of sensors, transmitters and converters will be done. Pneumatic controls will be examined and calibrated. Configuring of PID controllers will be done. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET254. Spring Only.*

EET260**Semiconductor Industry Equipment and Materials Handling Procedures (PSU: ESC211)**

This course will provide an overview of basic semiconductor industry processing equipment and materials handling procedures with a focus on maintenance, safety, environment, and health issues. Topics to be covered will include: cleanroom maintenance, safety, and health issues; vacuum pumping maintenance, environmental, safety, and health issues (covering direct drive mechanical, roots blowers, turbomolecular, and dry mechanical systems); furnaces maintenance, safety, environmental, and health issues (covering horizontal, vertical, rapid thermal annealing tools); chemical vapor deposition system maintenance, safety, environmental, and health issues (covering gas delivery, corrosive and flammable gas storage and plumbing, regulators, and mass flow controllers); and vacuum deposition/etching system maintenance, safety, environment, and health issues (covering microwave and RF power supplies and tuners, heating and cooling units, vacuum gauges, valves, and process controllers). Specific materials handling issues will include DI water solvents, cleansers, ion implantation and diffusion sources, photoresists and developers, metals, dielectrics, toxic flammable, corrosive, and high purity gases, and packaging materials. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET261**Thermal Processing: Oxidation, Diffusion, Ion Implementation & Epitaxy (PSU: ESC212)**

This course will cover in detail the thermal processing necessary for semiconductor fabrication. Growth and annealing processes, which utilize horizontal and vertical furnaces, will be examined as well as rapid thermal annealing. This course will cover single crystal growth (Czochralski, float-zone) as well as wafer slicing, etching, polishing, epitaxial growth, and substrate (bulk or epi) specifications. The course will address the impact of thermal processing and thermal processing history on defects, gettering, impurities and overall device properties. The student will grow and measure gate and field oxides, implant and activate source and drain regions, and evaluate thermal budget requirements using state-of-the-art tools. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET262**Thin Film Deposition and Etching (PSU: ESC213)**

The basics of thin films including growth, structure, mechanical properties, electrical properties, deposition equipment will be examined in the first part of this course. This will include atmospheric, low pressure, and plasma enhanced chemical vapor deposition and sputtering, thermal evaporation, and beam evaporation physical vapor deposition. Materials to be considered will include dielectrics (nitride, oxide), polysilicon (doped and undoped), and metals (aluminum, tungsten, copper, adhesion promoters, diffusion barriers). The second part of the course will focus on etching processes and will emphasize reactive ion etching (single wafer, batch), high-ion-density reactors (TCP, helicon, ECR, MERIE) and ion beam etching. Student will receive hands-on

experience in depositing and etching dielectric, semiconductor, and metal materials using state-of-the-art tools. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET263**Lithography for Nono- and Microfabrication (PSU: ESC214)**

This course will cover all aspects of lithography from design and mask fabrication to pattern transfer and inspection. The course is divided into three major sections. The first section describes the lithographic process from substrate preparation to exposure. Most of the emphasis will be on understanding the nature and behavior of photoresist materials. The second section examines the process from development through inspection (both before and after pattern transfer). This section will introduce optical masks, aligners, steppers and scanners. In addition, CD control and profile control of photoresists will be investigated. The last section will discuss advanced lithographic techniques such as c-beam, x-ray, EUV, and ion beam lithography. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET264**Interconnects, Planarization, and Packaging (PSU: ESC215)**

In this course the student will learn about the manufacturing issues involved in metal interconnects, dielectrics and final device assembly. Aluminum, refractory metals and copper deposition techniques and characterization will be discussed in detail along with topics such as diffusion barriers, contact resistance, electromigration, corrosion, and adhesion. The importance of planarization techniques such as deposition/etchback and chemical/mechanical polishing will be emphasized. Lastly, packaging procedures such as die separation, inspection bonding, sealing and final test will be examined. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET265**Process Measurements, Material Characterization and Device Testing (PSU: ESC216)**

This course examines a variety of measurements and techniques essential for device fabrication. Monitoring techniques such as residual gas analysis (RGA), optical emission spectroscopy (OES) and end point detection will be discussed. Characterization techniques such as SEM, XPS/Auger, surface profilometry, advanced optical microscopy, optical thin film measurements, ellipsometry, and resistivity/conductivity measurements will be used on real samples. Basic electrical measurements on device structures for yield analysis and process control will also be stressed. These will include breakdown measurements, junction testing, and C-V and I-V tests. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EET270.*

EET270**Professional Seminar in Semiconductor Processing**

This course provides an overview of the semiconductor processing industry. This course will help the student discover the nature of the semiconductor processing industry including global distribution, size, work environment, and typical employment possibilities. This course will present current topics of interest by means of invited speakers, video teleconferences, field trips, on-line Internet exchanges and other multi-media methods. The student will receive up-to-date information on the profession as well as prepare to search for jobs. Each student will develop a professional logbook. Student participation in a local chapter of a professional society will be encouraged. Appreciation of the need for continuing professional development after graduation will be fostered. This requirement may be satisfied by a cooperative education experience. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): EET112 and EET114 and ENL111.*

EET280**Analog Communications**

Analysis of amplitude, frequency and phase modulation and demodulation circuits. Operation of radio transmitters and receivers. Single and double sideband, video and data communications circuits and systems. Introduction to transmission lines, antenna theory, and electromagnetic wave propagation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET150 and EET152. Corequisite(s): EET281. Fall Only.*

EET281**Analog Communications Lab**

Measurement and analysis and communications circuits, including oscillators, rf amplifiers, mixers, multpliers and detectors. Analysis of analog modulation and demodulation circuits. Laboratory measurements in the time and frequency domains. Problems associated with radio frequency circuits are explored. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET151 and EET153. Corequisite(s): EET280. Fall Only.*

EET282**Digital Communications**

Digital communications circuits, systems, standards and techniques. A-to-D and D-to-A conversion, time and frequency division multiplexing, modems, terminals, and networks. Serial and parallel data transfer, synchronous and asynchronous protocols. The effects of noise on telecommunications systems, and error detection and correction techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET115 and EET150. Corequisite(s): EET283. Fall Only.*

EET283**Digital Communication Lab**

Analysis and troubleshooting of digital communications circuits. Signal sampling, filtering, D-to-A and A-to-D Converter circuit operation. Time Division Multiplexing, PAM, and PCM systems. Synchronization, signal conditioning, error detection and correction schemes. ASK, FSK, PSK, and QPSK Transmitters and receivers are explored. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET115 and EET151. Corequisite(s): EET282. Fall Only.*

EET284**Microwave Communications**

An examination of microwave components associated with satellite and point-to-point communications systems. Other advanced communication system techniques will be examined. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET280. Corequisite(s): EET285. Spring Only.*

EET285**Microwave Communications Lab**

Laboratory experiments in microwave components, circuits and systems. Manual and automated measurement techniques in the time and frequency domains. Communication satellite applications, and computer simulation of microwave systems. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET281. Corequisite(s): EET284. Spring Only.*

EET286**Optical Communications**

Examination and analysis of fiber optic cable as a transmission medium for telecommunications signals. Special requirements of this transmission mode with regard to passive and active electronic component usage. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET115 and EET150. Corequisite(s): EET287. Spring Only.*

EET287**Optical Communications Lab**

Application of active and passive electro-optical components, and skills to install and apply these components in fiber optic communications. Use of specialized test instruments for measurement of fiber optic systems. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET115 and EET151. Corequisite(s): EET286. Spring Only.*

EET300**Analog Systems**

This course provides a continuation of analog electronics developed in EET 206, Linear Integrated Circuits. Topics include advanced circuit design of operational amplifiers as used in signal processing and filtering systems. Signal preparation for sampling and conversion is included. Translation of mathematical functions such as integration and differentiation into analog computational blocks will be included. Diagnostic methods for circuit performance will be included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET200 or EET206. Fall Only.*

EET301**Analog Systems Lab**

Laboratory course to accompany EET 300, Analog Systems. Construction and testing of analog systems developed in EET 300. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET300. Fall Only.*

EET302**Industrial Electronics and Applications**

This course is designed to prepare the student for employment in fields that have a high degree of integrated electronics in jobs that use electronic controlled equipment for industrial operations. Emphasis will be on basic industrial electronics, industrial motion control and process control system concepts. 3 Credits (2 Lecture -3 Lab)

EET304**Digital Systems**

The study of advanced digital electronics systems concepts including processor interrupts, direct memory access, multiple process systems, microcontrollers and RISC processors. Programmable array logic (PAL), gate array logic (GAL) and semi-custom programmable digital circuits will be covered. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET202. Fall Only.*

EET305**Digital Systems Lab**

Laboratory course to accompany EET 304, Digital Systems. The emphasis will be on the skills and techniques required to transfer a product from the concept stage to actual production and test of the system. Construction and testing of digital systems developed in EET 304. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): EET203. Corequisite(s): EET304. Fall Only.*

EET320**Measurement and Tests**

The course provides theory and technique of electronic measurement and test systems. Topics include indicating, recording, and controlling systems for both analog and digital methods. An understanding of standards of electrical measurement will be developed. Sources of error and effects of noise, instrument limitations and transducer effects will be covered. Computer-based data acquisition and analysis will be stressed including bus-style test systems development with automated software support. "Intelligent" sensor technology will be included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET200 and EET202 or EET202 and EET206. Spring Only.*

EET321**Measurement and Tests Lab**

Laboratory course to accompany EET 320, Measurement and Tests. Construction and testing of test equipment, transducers, and systems developed in EET 320. The student will design and develop an independent test system as part of the requirements of the laboratory. Transducers designed and built by students will be tested and compared to commercial equivalents. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET320. Spring Only.*

EET324**Electronic Prototyping and Design**

This course covers construction and packaging techniques for electronic circuits and systems. The course concentrates on computer-based circuit design, schematic capture, and printed circuit fabrication methods. Surface mount and through-hole design methods are covered. Single-layer and multi-layer printed circuit board computer-aided design techniques are developed. Additional topics include design considerations for heat, radio frequency interference, power distribution, assembly testing and production standards. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET200 or EET202 or EET206.*

EET325**Electronic Prototyping and Design Lab**

Laboratory course to accompany EET 324, Electronic Prototyping and Design. Hands-on experiences in the construction and testing of circuit boards and projects developed in EET 324. Surface mount and through-hole soldering methods in single and multi-layer boards, verification and design methods are practiced. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET324. Spring Only.*

EET340**Control Theory**

Control theory is essential for understanding, designing, and troubleshooting engineering applications. The subject matter provides a fundamental, yet comprehensive coverage of continuous time systems commonly used in engineering applications and the problems associated with these systems. The theory is supplemented with a hands-on laboratory. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): EET114 and EET150 and EET152.*

EET400**Digital Signal Processing**

This course will provide an introduction to digital signal processing with an emphasis on applications. The theory behind DSP will be studied and applied to practical problems. Applications in control systems, audio and speech processing will be explored. Analog to digital and digital to analog conversion methods will be included. Use of the discrete cosine and z-transform. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET300 and EET304 and MTH242. Fall Only.*

EET401

Digital Signal Processing Lab

Through the use of an individual DSP trainer kit, the course will investigate applications in digital signal processing. Applications in control systems, audio and speech processing will be explored. Professional documentation of all phases of experiments will be required. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET400. Fall Only.*

EET420

Senior Electronic Colloquium

This course will present current topics of interest by the means of invited speakers, video teleconferences, field trips, on-line Internet exchanges and other multi-media means. The student will receive up-to-date information on the profession as well as prepare to search for jobs. A professional log book will be developed by each student. Student participation in a local chapter of the IEEE will be encouraged. Appreciation of the need for continuing professional development after graduation will be fostered. This requirement may be satisfied by a cooperative education experience. 3 Credits (3 Lecture - 0 Lab) *Prerequisite(s): EET200 and EET202 or EET202 and EET206. Spring Only.*

EET440

Aerospace Electronics

This course prepares students to design and construct electronic systems which are employed in aerospace applications. Special standards for flight-ready electronics packages will be covered. Students will be introduced to the major electronic subsystems of spacecraft and their ground support facilities. Special attention is given to communications subsystems, telemetry and spread-spectrum transmission and reception methods. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EET200 and EET202 or EET202 and EET206. Spring Only.*

EET441

Aerospace Electronics Lab

Laboratory course to accompany EET 440, Aerospace Electronics. Development of flight-competent payload hardware systems, ground equipment and/or radio astronomy research equipment. Specific laboratory projects will vary depending on current mission opportunities, but may include space flight hardware for launch by Space Shuttle or Ariane boosters. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): EET440. Spring Only.*

PRE-ENGINEERING (EGS)

EGS101

Engineering Graphics

Techniques and applications of graphical communication for engineers. Drawings will be done both on the drafting board and computer. Basic drawing skills will include pictorials, dimensioning, multiviews, space analysis, and integrated use of drawings in a text. Computer drawing skills will include solid modeling. Course includes a design project and engineering lab with written and verbal reports. 3 Credits (1 Lecture -6 Lab) **As needed, Spring.**

EGS201

Statics

Quantitative analysis of equilibrium configurations of mechanical and structural systems. Includes concurrent and noncurrent force systems in two and three dimensions, rigid bodies, distributed loads, internal forces and torques, centroids, moments of inertia, friction, stability, and the method of virtual work. Calculus will be used extensively. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PHS201. Corequisite(s): MTH242. As needed, Fall.*

EGS202

Strength of Materials

Quantitative analysis of the properties of engineering materials with specific applications to mechanical and structural design. Includes stress and strain in tension, compression, torsion and shear; design of simple and composite beams, columns, trusses, and space trusses; statically indeterminate structures; materials standards and testing. Calculus will be used extensively. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PHS201. Corequisite(s): MTH242. As needed, Spring.*

EGS250

Engineering Thermodynamics

Principles of thermodynamics with emphasis on engineering applications. Topics include thermal and bulk properties of materials, equations of state, phase changes, the first and second laws of thermodynamics, control volumes,

irreversibility and entropy, heat transfer, process efficiency, and refrigeration and power cycles. Calculus will be used extensively. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CHM111. Corequisite(s): MTH340. As needed.*

EGS260

Dynamics

Quantitative analysis of the motion of particles and rigid bodies in two or three dimensions. Includes kinematics of translation and rotation; relative motion, work and energy methods; impulse, momentum, and collisions; mechanical vibrations; and Lagrange's equations. Calculus will be used extensively. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): EGS201. Corequisite(s): MTH340. As needed.*

ELECTRICAL (ELT)

ELT110

Electricity for the Trades

Theory and laboratory assignments in electrical design. Symbols used on building construction blueprints. Explanation of electrical diagrams. The use of the National Electrical Code as a governing agent which establishes wiring requirements. Residential wiring, switching, lighting, receptacles, and service entrances in the laboratory. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

ELT111

Direct Current Fundamentals

Basic principles of electricity and the laws and formulas which are used to solve electrical problems. Principles of magnetism and their relationship to direct current generators and motors and other electrical machinery. Laboratory work trains students to connect equipment and instruments. 5 Credits (4 Lecture -3 Lab) *Corequisite(s): MTH180. Fall Only.*

ELT113

Accident Prevention

Principles of accident prevention in industry. Electrical safety procedures in all human activities; lifesaving techniques. 2 Credits (2 Lecture -0 Lab)

ELT116

Construction Lab I-Residential

An introduction to residential wiring, plans, specifications and codes. Theory and lab assignments in developing wiring diagrams, wiring basic lighting and receptacle currents, low voltage switching and control circuits. Blueprint reading and the N.E.C. are included in the course. 5 Credits (3 Lecture -6 Lab) **Fall Only.**

ELT117

Applied Direct Current Fundamentals

Basic electrical laws, electrical terms, batteries, electrostatics, electrical meters and instruments. 6 Credits (4 Lecture -6 Lab) *Corequisite(s): MTH120 or MTH124. Fall Only.*

ELT120

Construction Lab II-Commercial

Theory and laboratory assignments in commercial wiring, blueprint reading, and N.E.C. as it applies to commercial circuits. Students will plan, layout, and install circuits and devices used in commercial buildings. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): ELT116. Spring Only.*

ELT122

Alternating Current Fundamentals

The fundamental principles of the behavior and flow of alternating current electricity. Includes problem solving current, voltage, impedance, reactance and power factor in series and parallel circuits. The above AC principles are developed to form a foundation of the fundamentals which are needed to better understand the operating principles of AC motors, generators and control equipment. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): ELT111. Spring Only.*

ELT126

Applied Alternating Current Fundamentals

Alternating current electricity as it relates to residential, commercial, and industrial power use. Laws and formulas used to solve problems in the use of AC electrical principles. Practical experiences in the use of equipment and instruments. 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): ELT117. Spring Only.*

ELT127

Motor Maintenance and Repair

Electrical and mechanical feature of various single phase motors; lab work; development of knowledge and skills in rewinding and repairing single phase motors. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): ELT117. Spring Only.*

ELT128

Electrical Drawing and Print Reading

An introduction to preparation and interpretation of residential and commercial electrical drawings, diagrams, and schematics. Provides an introduction to drafting instruments, orthographic projection, sectional views, axonometric projection, and technical sketching. Included is the interpretation of construction drawings, electrical symbols, wiring diagrams, schedules, notation, technical information, and electrical specifications used on electrical drawings. (Formerly EDT 120) 2 Credits (1 Lecture -3 Lab)

ELT231

Industrial Motor Control

This course represents a practical and theoretical approach to the understanding, designing, development and use of relay logic diagrams in the installation, operation, and maintenance of industrial logic control systems. 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): ELT117. Fall Only.*

ELT234

Electrical Motor Control

An introduction to the understanding, designing and development of relay logic diagrams for use in the installation, operation, and maintenance of relay motor control systems for industry. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT111. Fall Only.*

ELT235

Industrial Electronics

Fundamentals of electronic devices, analog and digital circuits, and troubleshooting solid-state I/O control circuits. Practical laboratory work with prewired analog and digital circuits. 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): ELT122. Fall Only.*

ELT236

Applied Power and Electronics

Laboratory analysis and theoretical aspects of control circuits, machinery and transformers used in industry. 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): ELT122. Fall Only.*

ELT237

Construction Lab III - Industrial

An introduction to industrial wiring, blueprint reading, and the N.E.C. Theory and Lab assignments in bus systems, unit substations, panelboards, subfeeders, conduit, and special equipment. (Formerly ELT 230) 4 Credits (2 Lecture -6 Lab)

ELT238

Basic Electronics for Industry

Basic electronic concepts as used in industrial control. Primarily a devices course, introducing the student to discrete devices, integrated circuits (both linear and digital), symbols, basic circuit configurations, the use of test equipment and measuring techniques, the study of these devices in the laboratory to supplement lecture. (Formerly ELT232) 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): ELT126.*

ELT239

Fundamentals of Electronics for BBT

This course is designed to meet the needs of HVAC and transfer students that lack the necessary basic electronics needed to complete the Building Automation Technology (BBT) major. Topics include a review of basic electronic test instruments as well as an introduction to semiconductor devices and their use in control systems such as Direct Digital Controls. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): ELT252.*

ELT240

Construction Lab IV-Practical Experience

Practice in the installation of rigid conduit and other electrical wire ways. Pulling in and wiring motor controllers and other electrical equipment. Study of blueprints for large electrical construction jobs. 3 Credits (0 Lecture -9 Lab) *Prerequisite(s): ELT120.*

ELT243

Programmable Control

A practical and theoretical approach to the installation, programming, and maintenance of programmable control (P.C.) equipment. The application of P.C. in manufacturing processes. Theory covers the proper installation of P.C. equipment, especially the correct grounding application of processor units and the development of P.C. Ladder diagrams. The practical work includes programming and changing operational programs to prepare the student to work as "line mechanic" on production lines using programmable controls. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT231 and ELT232 or ELT231 and ELT238. Spring Only.*

ELT244

Advanced Electrical Theory

Solution of network problems. Problems involving Kirchoff's Laws; Mesh and Nodal Analysis; Thevenin's and Norton's Theorems; Voltage and Current Division. Problem sets using second and third order determinants using phasors. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ELT122 and MTH180. Spring Only.*

ELT245

Introduction to Programmable Logic Control

An introductory course in the understanding, programming and operation of programmable logic control and the utilization of such controls as an aid to effective production and quality control processes for production line industrial control systems. The practical application includes the programming and changes of operational programs and generated control commands which will provide a complete system for efficient high speed production requirements. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT234 and ELT235. Spring Only.*

ELT246

Electrical Machinery Analysis

Theory and laboratory instruction in the use and operation of electrical machinery and transformers, meters and metering methods used with this equipment, and troubleshooting procedures using schematic diagrams. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ELT126. Spring Only.*

ELT247

Industrial Control and Troubleshooting

Hands-on troubleshooting of solid-state circuits used for industrial applications. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT238 or ELT232. Spring Only.*

ELT248

Electrical Systems Analysis

Lecture and laboratory instruction to provide a comprehensive program through laboratory experiments and report writing to master the principle and operation of machines and devices that generate, transform and use electrical power. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ELT122. Spring Only.*

ELT249

Programmable Logic Control Input/Output Devices

This course provides the student with the essentials needed to establish a foundation in industrial automation and control (input/output devices). Specific product experience with high end I/O devices includes, but is not limited to, the design and use of sensors, final control elements, recorders, operator interfaces, and electronic controllers. The course will present the principals, methods, and rationale on how remote sensing and actuation are combined with modern communication techniques to effectively monitor and control industrial processes. Automatic timing, control, and communications offer a challenging and accelerated opportunity that will prepare the student for the needs of industry. In addition the course will also explore the concept of front end engineering. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT234 and ELT235.*

ELT250

HVAC/R Electricity

This course covers the basics of AC and DC circuits, the use of electrical meters, reading electrical diagrams, electrical distribution systems in residential and commercial buildings and the installation of electrical equipment. Sections of the National Electrical Code are also studied. Hands-on work is carried out in the lab portion of the course. 5 Credits (3 Lecture -6 Lab)

ELT252

HVAC Controls I-Residential

This course covers the installation and operation of residential line and low voltage controls used to control warm air heating, air conditioning, and heat pump applications. Solid state residential control systems are also covered. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT250.*

ELT253

HVAC Controls II-Commercial

This course covers basic control theory and control terms, hydronic heat control, electrical control systems including economizer control reset, and proportional control. The course also covers introductory pneumatic control and electronic and direct digital control of single zone systems. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ELT250.*

ELT263

Electrical Power Generator Installations

Fundamentals of generator set installations. Topics include: air flow requirements for combustion and cooling, methods of air ducting, thermodynamic principles as applied to heat exchangers, acceptable methods of mounting of generators, and vibration analysis. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): DSM115 and DSM116 and EDT120 and ELT122.*

ELT264

Power Generation System Controls

Intensive instruction in troubleshooting, servicing and repair of power generation system controls to include Woodward Governors and switch gear. Lecture discussions and laboratory applications will focus on parallel generator set installation. Service of specialized devices such as reverse power relays, volt-amp reactive (VAR) power factor controllers, and circuit protection devices. Discussion topics will also include load sharing and cross current compensation. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): ELT263.*

ELT300

Advanced HVAC Controls

This course is a continuation of work in HVAC Controls II-Commercial. Proportional, integral and derivative control as they apply to the control of building environmental systems. Work is done with stand-alone electronic controls as well as the integration of pneumatic systems with computer control systems. Integrated direct digital control systems are also studied. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ELT250 and ELT252 and ELT253. Fall Only.*

ENGLISH (ENL)

ENL001

Basic English

Emphasis on writing skills: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, and personalization of grammar instruction are characteristic of the course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): Placement by Examination.*

ENL010

Communications

Skills and competencies in basic writing for the workplace and oral communication to meet the needs of the applied arts certificate student. 3 Credits (3 Lecture -0 Lab)

ENL111

English Composition I

Composition: language structure; rhetorical principles; orderly, clear writing; and readings in expository prose. Offers a variety of methods for developing individualized written expression. Analysis, discussion, and practice of such methods as description, definition, narration, comparison, classification and argumentation. Students use writing to explain and explore, gaining experience in essential writing and research skills. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL001 or Placement by Examination.*

ENL112

Technical Communication: Introduction to the Profession

The course introduces the skills and responsibilities required for a professional technical communicator. The course surveys professional concerns from both theoretical and practical perspectives. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

ENL121

English Composition II

Continues the writing principles developed in ENL 111. Includes the study of poetry, prose, and drama. Emphasizes critical analysis and interpretation of literature through discussion and written assignments. Through writing about literature and its themes, students apply the skills learned in ENL 111 to examine the purpose, argument, and style of literary writing. Students explore the importance of literature to society and study the impact of language upon the reader. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.*

ENL201

Technical and Professional Communication

Intensive survey of technical writing with practice in preparing reports, instructions, memos, and other communications for business and industry. Students develop skills in analyzing audiences and writing for readers both with and without technical expertise. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.*

ENL221

Detective Fiction

The serious treatment of crime and detection by such sleuths as Dupin, Sherlock Holmes, Perry Mason, Mike Hammer, and Philip Marlow. Also examines the development of the traditional mystery story and the hard-boiled detective story in terms of how each reflects the values of the culture that produced it. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. Fall Only.*

ENL231

World Literature

Explores the variations and developments in eastern and western world views through the literature of the ages. Offers a sampling of essays, poetry, fiction, and drama from the ancients through the moderns. Through an analysis of the literature of the world, the course seeks to trace the shifting perspectives of our world, the powers that reign and the condition of humankind. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. As needed.*

ENL235

Creative Writing

Develops the insights, sensibilities and skills necessary for the creation and refinement of expressive and imaginative writing. Early emphasis is upon the principles and techniques common to all genres of writing that seek to define, challenge and celebrate the individual. After cultivating observation, memory, and consistency, students will then focus upon crafting fresh and significant works that add to the traditions of poetry, fiction, and/or dramatic scripts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. (ART) Fall Only.*

ENL240

Early American Literature

Overview of literary trends in American literature from the colonial period to the Civil War with focus on individual stories, essays and poems of representative authors. Applies such concepts as theme, image, symbol and irony and encourages critical analysis of literature in light of these contexts. Class discussions of reading assignments assist students in understanding the contexts out of which the literature grows, how the literature reflects the times and how it reveals the nature of the characters who make the times. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. Fall Only.*

ENL241

American Literature Since 1865

Overview of literary trends in American literature since the Civil War with focus on individual stories, essays, poems and plays of representative authors. Emphasizes literary movements such as romanticism, realism and naturalism and encourages critical analysis of literature in terms of these concepts. Class discussions of reading assignments assist students in understanding the contexts out of which the literature grows, how the literature reflects the times and how it reveals the nature of the characters who make the times. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. Spring Only.*

ENL250

Literature of the American Indian

Readings in the oral and written literature of Native Americans, with emphasis on literature produced in North America. The works will be approached through literary criticism, philosophy, religion, psychology, history, and social criticism. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **Spring Only.**

ENL251

Masters of Horror: Horror in Literature and the Mass Media

Explores the serious treatment of "horror" by authors from the 17th century to modern time, including Shakespeare, Shelley, Poe, Lovecraft, and Bradbury. Also examines the evolution of the pulps, the horror comic, the horror radio series, and the horror film as forces that shape and mirror the mainstream of American social thought. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. Spring Only.*

ENL252

Women in Literature

Explores twentieth-century American literature written about women by women, including Gilman, Chopin, Plath, Porter, Oates, Walker, and Welty. The course uses literature to examine the archetypes and stereotypes, from classical times to the present, that have shaped the ways women see themselves and the ways others view them. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. As needed.*

ENL255

Introduction to Dramatic Literature

Using Jacques' "All the world's a stage" speech as a springboard, this course focuses on drama as a reflection of the world. Class analyses of plays assist students in understanding the techniques of dramatic literature and how drama "holds the mirror up to nature." Beginning with an introduction to the elements of drama and stage mechanics, this course provides an overview of dramatic literature, with most readings arranged chronologically to help students assimilate the development of the dramatic art form in various cultures. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. As needed.*

ENL257

The Graphic Novel

This course explores a recent and still emerging genre of narrative literature. The course will tie together various cross-disciplinary approaches in an investigation of several significant modern novels that use both words and images to tell their complex tales. Course topics include Words and Images; Perception and Interpretation; Visual Thinking; Literary Roots of Sequential Art; Underground Comix as Satire and Critique; Crazy Kat and Surrealism; Time, Space and Planes; Women and Sequential Art; Culture, Power and Pleasure. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. As needed.*

ENL261

Writing Nonfiction

Students develop skills in writing both critical and creative essays centered on issues in science, technology, social sciences, and humanities. Students write at least three substantial essays during the semester and submit their work for peer review and criticism. Students are encouraged to submit their essays for publication in appropriate journals. A major focus of the course is on the emerging genre of creative nonfiction. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121. As needed, Spring.*

ENL281

Sex, Death and Morality: Identity through Literature (Multicultural Perspectives)

The culture in which one lives strongly influences attitudes toward sex, death, morality, and identity. This diversity-focused course explores how novels, stories, poems, plays, and essays both reflect and shape identity depending on one's ethnicity, religion, gender, and sexual orientation. Approximately half of the readings are from non-Western cultures. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. (Cultural Diversity) As needed.*

ENL301

Advanced Technical Communication

Students learn advanced concepts of document organization and design, the processes of information exchange, and document specifications. Each student completes two documentation projects in a specific technical discipline, resulting in two of the major types of technical documents: manual, proposal, or report. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL201. Fall Only.*

ENL321

Rhetoric of Persuasion

Students learn advanced concepts of persuasion (also called argument). Students participate in two types of activities: evaluating other people's persuasive messages and creating persuasive messages of their own. They will examine the various forms of persuasion and the conditions under which persuasion works best through discussions, readings, three written assignments, and an oral presentation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and ENL112 and SPC101 or ENL111 and ENL112 and SPC201. As needed, Fall.*

ENL330

Language, Writing and Signs

Students study the cognitive system of unconscious knowledge that underlies our ability to produce and interpret language within situational contexts. Students investigate the features that all human languages have in common: use, structure, and symbolic representation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121 or ENL201. As needed.*

ENL331

Proposal and Grant Writing

The course prepares students to participate in the process of managing, planning, writing, and reviewing proposal documents. Each student will complete short commentaries on various kinds of proposals (technical contracts, nonprofit fundraising proposals, and individual research proposals); an interpretation of Request for Proposal (RFP) or grant specifications; and a profile of a major funding agency. In response to an RFP or nonprofit funding agent, students will organize a proposal-writing team, plan, manage, write, and review a proposal for submission. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL301 and ENL321. As needed.*

ENL350C

Professional Issues and Standards(Co-op)

Through a co-op experience, students investigate issues and standards in the profession, including ethics, copyright, liability, document quality, usability analysis, and professional status. Students contrast theoretical frameworks with practical perspectives and experiences. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL112 and ENL301 and PHL210. As needed.*

ENL351

Document Design

The course provides a survey of research on effective hard-copy and online document design, investigates design approaches that help users accomplish tasks and access information efficiently; provides workshop experience designing hard-copy and online documents. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CSC110 and ENL201. Spring Only.*

ENL361

Technical Scriptwriting

Students gain the basic writing and production skills required to produce a corporate technical video script. Students write three scripts: 1) a 60-second public service video, 2) a 7-minute product promotion script, and 3) a 12-minute instruction video. Students complete individual and group assignments working with a client recruited from industry. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL301 and ENL321. As needed, Spring.*

ENL411

Document Regulations and Specifications

The course provides overviews of document specifications, publication style sheets, and regulatory agency documentation requirements. In a workshop setting, students review and produce technical study area documents that fulfill the requirements of the appropriate document specification. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL301. As needed.*

ENL421

Technical and Scientific Editing

The course introduces the philosophy, theory, and practice of editing technical and scientific documents. Prepares students to deal with a variety of editing problems encountered in technical reports, proposals, and manuals. Views the editing process from the perspective of readers' needs, authors' styles, and the discourse community's expectations. Students will edit one technical or scientific document collectively under the instructor's supervision, then each student will solicit and edit a "client" document. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL301 and ENL351. As needed, Fall.*

ENL430

Online Documentation 1: From Paper to Hypertext

An overview of the process for producing computer documentation, with special emphasis on techniques for improving user information. The course moves the student from established paper documentation strategies to online documentation requirements. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ENL351. As needed, Fall.*

ENL432

Online Documentation 2: Online Information Products

Focuses on creating online documents that help software users learn program features and use them to work productively. Provides the foundation for developing a complete process for analyzing software users, learning a software program, and designing task-oriented information products, as well as screen interface design. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ENL430. As needed, Spring.*

ENL441

Designing Product Information Systems

The course focuses on the two stages required to design and produce a product information system: development of systems and document specifications. Students develop a plan overviewing all the publications involved in the documentation of a product, then develop in-depth plans for each document needed to support the product. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL301 and ENL351 or ENL301 and ENL411. As needed.*

ENL495

Capstone I: Senior Research Project

Students synthesize BPC coursework and technical study area by designing, administering, and reporting a quantitative or qualitative research project focused on technical communication practices within the student's technical study area. Students must have completed all BPC required courses through ENL421 and at least 6 credit hours of BPC electives and at least 15 credit hours in a technical study area. 3 Credits (3 Lecture -0 Lab) **As needed.**

ENL496

Capstone II: Technical Communication Internship

Students complete an internship, working on a client's documentation project; they write a final report, produce a portfolio for evaluation by committee, and make a public presentation. The course offering depends upon the availability of internships. Either ENL495 or ENL496 is required for BPC students; if ENL496 is not available, students will take ENL495. Students must have completed all BPC required courses through ENL421 and at least 6 credit hours of BPC electives and at least 15 credit hours in a technical study area. 3 Credits (3 Lecture -0 Lab) **As needed.**

ENVIRONMENTAL TECHNOLOGY (ENV)

ENV110

Origin, Classification and Engineering Properties of Soils

The study of soil composition, types, maps, compaction and other properties. Included are all regulations related to soils and wetlands. Practical applications of identification, erosion control, and planning. 2 Credits (1.50 Lecture -1.50 Lab)

ENV125

State and Federal Environmental Regulations

This course provides students with a comprehensive review of environmental laws, and the federal, state or local agencies that enforce them. The course will present insights into how these laws are being interpreted and enforced and how they affect employer or employee. Explanations of record keeping and reporting procedures. Discussion of the liability for noncompliance and the effects on the workplace. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

ENV135

Air Pollution Control

Identifying air pollution issues and developing strategies for pollution control. Selecting air-monitoring equipment, monitoring of air quality, interpreting data, and effectively using data to resolve and/or control air pollution. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CHM111 and ENV125 and Placement by Examination. Spring Only.*

ENV151

Source Reduction and Industrial Processes

A survey of various industrial processes concentrating on the raw materials and the wastes, emissions and discharges generated. The materials balance concept is emphasized. Special attention is given to source reduction of wastes, including the economic value, the social value, and the regulatory requirements. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM111 and ENV125 and Placement by Examination. Corequisite(s): CHM123 or CHM203. Spring Only.*

ENV161

Water Pollution and Treatment

An in-depth study of water pollution problems and control technologies with special emphasis on sewage treatment. Water supply treatment and industrial wastewater treatment are also covered. Wastewater treatment system design as well as operation is given special attention. Attention is also given to non-point source pollution control. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO123 and CHM123 and CSC110 and ENV125 and MTH180 or BIO208 and CHM123 and CSC110 and ENV125 and MTH180 or BIO201 and CHM123 and CSC110 and ENV125 and MTH180. Fall Only.*

ENV170

Sampling and Analysis

Emphasis is on the methodology of sampling, analyzing, and interpreting the results of sample analysis including industrial hygiene monitoring, pH testing, introduction to chemical methods of analysis, and criteria for selecting analytical laboratory services. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CHM123 and ENV125 or CHM203 and ENV125. Corequisite(s): MTH160 or MTH158. Fall Only.*

ENV201

Waste and Waste Disposal

A study of various solid wastes generated. Special emphasis is given to hazardous waste disposal methods and the selection of waste disposal facilities. Other topics covered include: residual wastes, municipal wastes, chemotherapeutic and medical wastes, radioactive wastes and underground storage tanks. Completion of all proper forms and permits for disposal. Also included is the transportation and packaging of hazardous materials under DOT regulations. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ENV125 and ENV151. Spring Only.*

ENV220

Environmental Compliance Plans

This course will develop an understanding of the environment, the impact human activity has on various aspects of environmental quality, and how the environmental, economic, and cultural factors shape legislative enforcement strategies. The technical aspects will be addressed in order to understand the conflicts among scientific solutions, culturally acceptable solutions, and economically feasible management programs. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENV125 and ENV151. Corequisite(s): ENV201. Spring Only.*

ENGLISH (ESL)

ESL001

Basic English for English as a Second Language Students

Emphasis on writing skills and conversational English: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, personalization of grammar instruction, and improved Standard American English conversation are characteristic of the course. 3 Credits (2.50 Lecture -1.50 Lab) **As needed.**

ESL111

English Composition I for English as a Second Language Students

Composition; language structure; rhetorical principles; orderly, clear writing; and readings in expository prose. Offers a variety of methods for developing individualized written expression. Analysis, discussion, and practice of such methods as description, definition, narration, comparison, classification and argumentation. Students use writing to explain and explore, gaining experience in essential writing and research. Additional instruction will be provided in vocabulary, grammar, pronunciation, and conversation. 3 Credits (2.50 Lecture -1.50 Lab) **As needed.**

**HOSPITALITY MANAGEMENT/CULINARY ARTS/
BAKING & PASTRY ARTS/DIETARY MANAGER (FHD)**

FHD105

Sugar Art

The student will learn the main techniques of casting, blowing and pulling sugar and the principles of decorations and centerpieces created with gum paste. The student will plan showpieces with attention to proportion, color and arrangement. The student will also learn to produce simple pieces that can be used for plated dessert presentations. Some assignments created in this class will be used in a grand buffet presentation in FHD 280 only. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): FHD118 and FHD221 and FHD280 or FHD118 and FHD223 and FHD280. Spring Only.*

FHD106

Introduction to the Hospitality Industry

Students will examine four large segments of the hospitality industry: food service, lodging, travel and tourism, and meeting and convention planning. The food service business is the most expansive and diverse segment and will constitute a majority of the career examination. 1 Credit (1 Lecture -0 Lab)

FHD108

Foundations of Food Preparation

This course will introduce modern and classic theories and application of food preparation through lecture and student centered labs. Kitchen organization and sanitation practice in presentation and food evaluation will be stressed to create an awareness of the standards of culinary arts as a profession. Techniques of food preparation and the performance of manual skills applicable to a defined category of foods and or cooking method are emphasized. 4 Credits (2 Lecture -6 Lab) *Corequisite(s): FHD118.*

FHD116

Nutrition Application

Principles of the science of nutrition, guidelines for making food choices and techniques for analyzing nutritional deficiencies, claims and fads will be discussed and studied. The students will study their own nutrient intake and its effect on the total healthy life style. Emphasis on designing diet for improved health. 3 Credits (3 Lecture -0 Lab)

FHD117

Purchasing

Impart buying techniques and product information so that hospitality students can gain reasonable appreciation of the scope of the purchasing activity. 2 Credits (2 Lecture -0 Lab)

FHD118

Sanitation

This course integrates the Applied Foodservice Sanitation Certification Course as approved by The Educational Foundation of the National Restaurant Association. The course covers principles of food microbiology, applied measures for the prevention of food borne illness and emphasis on working through people to maintain a sanitary foodservice operation. Hazard Analysis Critical Control Point, (HACCP) fundamentals and steps for implementation is a key component of the course. This course will prepare students for the ServSafe® certification test and is part of the Professional Management series of the National Restaurant Association. 1 Credit (1 Lecture -0 Lab)

FHD125

Menu Planning and Cost Control

Introduction to concepts and principles for managing and controlling food, labor and operating costs in food service. Emphasis on developing, evaluating and marketing menus. Practice in methods of controlling food quality and developing pricing support system. Analysis of factors which affect labor costs and development of strategies for staffing for profit. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FHD117.*

FHD132

French Influence in Culinary Arts

Primary emphasis on recognition and pronunciation of French terms common to restaurant service is presented. Appreciation of the contribution of the French to modern dining and practice in the utilization of French terms in menu writing are included. Class will include practice in pronunciation, menu reading and menu terminology. The course will culminate in the development of a French lunch and dinner menu in correct form. 1 Credit (1 Lecture -0 Lab) **Fall Only.**

FHD133

Tableservice

Tableservice will provide instruction in the following styles of service: American, English, Russian, French, Banquet, and Butler. Students will understand the selection and application of service styles predicated on the specific nature of the function and food to be served. Course requires Tableservice Practicum to be taken simultaneously. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): FHD134.*

FHD134

Tableservice Practicum

This course gives the student the opportunity to practice the knowledge and skills developed in FHD 133. Students will be responsible for a minimum of 75 hours of tableservice in Le Jeune Chef Restaurant and at selected catered functions. 1 Credit (0 Lecture -5 Lab) *Corequisite(s): FHD133.*

FHD135

Wine and Beverage Management

Introduction to wine, liquor, and beverage operations. Guides for planning, equipping, staffing, operating, and marketing a profitable enterprise. Study of industry standards for variable beverages with instruction in consistency of product and service, including study of selection, care, and serving of wine,

liquor, beer, and selected beverages. Responsibilities, techniques of control, and perspective on government regulations are covered. Knowledge of TIPS (Training and Intervention Procedures for Persons Serving Alcohol) program is given. Course requires Wine and Beverage Practicum to be taken simultaneously. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): FHD136.*

FHD136

Wine and Beverage Practicum

This practicum gives the student the opportunity to practice and refine the skills taught in FHD 135, Wine and Beverage Management. Students will be responsible for a minimum of 75 hours of wine and beverage service in Le Jeune Chef Restaurant and at selected catered functions. 1 Credit (0 Lecture -5 Lab) *Corequisite(s): FHD135.*

FHD137

Introductory Baking

The student will learn the fundamental principles and procedures used to prepare a variety of bakery products and desserts. A study of ingredients and mixing methods for producing various baked goods. 3 Credits (1 Lecture -6 Lab) *Corequisite(s): FHD118.*

FHD138

Cakes and Decorations

This course demonstrates the basics of cake decorating. Hands-on practice by the student includes the identification and use of cake decorating equipment, making and tinting of four types of icings, and icing various types of cakes (layered and shaped), using writing, star, leaf, drop flower and rose tips. The student will also learn to make bouquets of flowers to decorate cakes. American decorating styles will be featured. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): FHD118.*

FHD140

Food Preparation, Application and Production

This course will continue the development of the fundamental skills associated with mise en place, cooking methodology, and culinary presentation of hot and cold foods in a professional hospitality operation. Additional production experience will include stock, soup, and sauce preparation and meat, poultry, and seafood fabrication and cookery. An emphasis will be placed on safety training and efficient use of institutional food service equipment. (Formerly FHD 130) 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): FHD108 and FHD117 and FHD118. Corequisite(s): FHD125.*

FHD141

Principles of Chocolate Works

The student will learn the basic principles of chocolate identification, chocolate history, and its many uses. Proper tempering, handling, and storage will be practiced. The student will have hands-on experience in preparing assorted chocolate candies, molded items, sculptures, and decorations. (Formerly FHD 139) 1 Credit (0 Lecture -3 Lab) *Corequisite(s): FHD118.*

FHD203

Cakes, Pastries and Desserts

The student will learn to prepare quality cakes, pastries and desserts by following production recipes and methods. European style dessert making techniques will be featured. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): FHD204 or FHD208. Fall Only.*

FHD205

Issues and Perspectives in Hospitality

The course will use a seminar format to explore, discuss, evaluate and clarify implications and perspectives of issues present in the hospitality industry. Students will use research and writing to help them develop responsible positions on issues they will deal with as future managers/owners in the industry. 2 Credits (2 Lecture -0 Lab) **Spring Only.**

FHD206

Historical Culinary Perspectives

Introduction to the history of food and cuisine in states/countries outside the mainland United States is given in this course. Emphasis will be on skills developed in the preparation and evaluation of traditional dishes and their cooking methods. Practice in plating food for service in an a la carte restaurant setting will be included. Use of regional spices and herbs and regional ingredients will be emphasized. 2 Credits (1 Lecture -3 Lab)

FHD208

Principles of Quantity Baking

This course will emphasize fundamental procedures and principles of quantity baking. Students will rotate through established pastry stations and participate in the production of scratch baking and commercial product usage. Baker's percentages and metric conversions will be emphasized. Group practice skills in team building and communication will be covered. American and European style bakery and pastry products will be featured. (Formerly FHD 204) 6 Credits (2 Lecture -12 Lab) *Prerequisite(s): FHD137.*

FHD222

Diet Therapy and Application

The study of nutrition and the life cycle with a concentration on various states of physical health and its effects on nutritional needs. Diet therapy and modification, nutrition interviewing and assessment, care planning, cultural foods and concerns, and state and federal regulations will be discussed. There will be an institutional feeding emphasis. Laboratory portion of the course will provide students with a hands-on approach to learning. A GPA of 2.5 is required. FHD 225 and 285 are prerequisites and FHD284 is a corequisite for this course for Dietary Manager Technology students only. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): FHD116 and FHD140 and FHD225. Corequisite(s): FHD284.*

FHD223

Baking and Pastry Arts Application

This course will enhance the baking students' knowledge and skills through the production of advanced pastries, desserts, and showpieces. The students will use marketing and merchandising techniques to sell products in a retail bakery environment. The students will use international recipes to emphasize the global business culture. The students will study management principles including team building strategies, performance appraisals, equipment justification, and recipe standardization, conversion, and costing. Current bakery technologies will be featured. Some assignments from this class will be used in a final grand buffet project in FHD280. (Formerly FHD 221) 6 Credits (2 Lecture -12 Lab) *Prerequisite(s): CSC110 and FHD203 and FHD204 and MTH112 or CSC110 and FHD203 and FHD204 and MTH113 or CSC110 and FHD203 and FHD208 and MTH113. Corequisite(s): FHD105 and FHD280.*

FHD225

Food Service Management and Systems

This course will introduce food service management principles and human relation techniques to be applied in the Dietary Management Practicum II experience. Systems unique to a dietary team such as food procurement, production, team care conferencing, client interaction and food for life principles will be defined with controlled application in the Practicum II experience. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): FHD116 and FHD125 and FHD140. Corequisite(s): FHD285 and SPC201.*

FHD244

Rolls and Bread Baking

An introduction to the various white, whole wheat, and specialty breads and rolls, with emphasis on exact weights and measures, types of flours, shortening, bakeshop tools, and equipment. Special attention is placed upon a multitude of shapes and designs of roll doughs. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): FHD118. Corequisite(s): FHD118.*

FHD252

Spa and Nouvelle Cuisine

Emphasis on creativity! New innovations in menu design, food preparation and presentation. Limiting salt, fats, and heavy sauces and adaptation of classical techniques to lighter and healthier alternatives. A study of several alternative eating and cooking styles and trends; including the vegetarian menu and various ethnic cuisines. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): FHD116.*

FHD255

Advanced Dining Room Management

This course will teach the students to maximize the productivity and profit of the dining room operation. The focus of the course will deal with the positions of maitre d'hotel, host/hostess, and banquet manager. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): FHD133 and FHD134.*

FHD258

Artistic Buffet Decoration

Introduction to the creative art of ice carving. Study of ice selection, tools, designs, and the art of carving. Includes an additional unit of fast ice molds and practice in tallow, salt dough, and bread sculpting. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): FHD118. Corequisite(s): FHD118.*

FHD264

Cake Decorating II

This course demonstrates advanced skills in cake decorating including lattice work, string work, lily nail flowers, figure piping, basket weave, gum paste, sugar molds and assembling and decorating a wedding cake. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): FHD202 or FHD138.*

FHD266

Catering

This course will provide opportunity for a student to develop professional catering skills in administration, planning, selling showmanship, and leadership. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): FHD130 or FHD140.*

FHD268

Facilities Planning

This course is designed for those who want to own, manage or supervise a restaurant. Topics include concept development, projecting sales and costs, staffing and equipping the kitchen. Marketing and customer relations will be studied. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FHD269 or FHD279 or FHD289.*

FHD269

Culinary Internship

Practical application of culinary production techniques in a retail setting. Participation in and observation of production and management controls in a restaurant will provide an opportunity to hone skills and assist in analyzing personal career goals. Student will gain enhanced competency and speed in the performance of the basic skills covered to date. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): FHD130 or FHD140.*

FHD270

Classical and Specialty Dessert Presentation

The student will learn the preparation and presentation of hot and cold desserts used for restaurant service. The student will prepare a variety of traditional and nouvelle desserts using hot and cold dessert sauces with appropriate garniture for plated presentation. Classical preparation methods will be featured. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): FHD204 or FHD208. Corequisite(s): FHD203.*

FHD273

Breakfast and Brunch Lecture

This course introduces the student to breakfast and brunch preparation focusing on past, present, and future trends in the industry. Many of the principles covered can be applied to various hospitality and institutional breakfast operations. An emphasis on breakfast and brunch menu planning will include traditional and contemporary variations. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): FHD130 and FHD137 or FHD131 and FHD137 or FHD137 and FHD140. Corequisite(s): FHD274.*

FHD274

Breakfast and Brunch Practicum

This course focuses on preparation and presentation of items for use in breakfast and brunch. Emphasis will be placed on the production skills necessary to deliver a quality breakfast and brunch meeting industry standards. Through the practicum experience, the student will develop an awareness of the demands within breakfast/brunch operations. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): FHD130 and FHD137 or FHD131 and FHD137 or FHD137 and FHD140. Corequisite(s): FHD273.*

FHD275

Front Office Management

This class will introduce students to hotel management. It will focus on the essential front office procedures, management systems and issues affecting the management of rooms in lodging establishments. Included will be a study of modern patterns of ownership, management, and marketing of hotels, motels, resorts, and inns. Additional topics will include: Yield Management, reservations management, front office accounting, service management, guest security, and Quality Service Management. (Formerly FHD 249) 3 Credits (3 Lecture -0 Lab) *Corequisite(s): FHD140 or FHD130.*

FHD277**Advanced Garde Manger**

Perfection of techniques in the production of cold food presentations. Preparation of aspics, forcemeats, pates, mousse, marinades, galantines, curing, and smoking techniques. Platter and mirror designs to highlight buffet work. (Formerly FHD 267) 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): FHD140 or FHD108.*

FHD279**Baking and Pastry Arts Internship**

Practical application of baking and pastry arts production techniques in a wholesale and/or retail setting. Participation in and observation of production and management controls in a restaurant, commercial bakery, or grocery store bakery will provide the opportunity to hone skills and assist in analyzing personal career goals. Student will gain enhanced competency and speed in the performance of the basic baking, preparation, and/or plating skills covered to date. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): FHD204 or FHD208.*

FHD280**Pastry Food Show and Buffet Presentation Concepts**

This course will emphasize industry professional rules and guidelines for pastry and baking preparation for food show presentation. It will also feature the theory and practice of pastry buffet planning including themes and presentations. 1 Credit (0 Lecture -3 Lab) *Prerequisite(s): FHD203 and FHD204 and MTH112 or FHD203 and FHD208 and MTH112 or FHD203 and FHD204 and MTH113 or FHD203 and FHD208 and MTH113. Corequisite(s): FHD105 and FHD221 or FHD105 and FHD223.*

FHD284**Dietary Management Practicum I**

Students will concentrate on nutritional therapy, nutritional screening, and their personal interaction and communication with residents/patients/clientele. Students will also be involved in various stages of therapeutic modified food production and services, along with the practical day-to-day operations of the entire food service department during the field experience. Practical experiences, documentation, attending seminars and interdisciplinary meetings, assisting in the creation of a care plan, completing assigned projects, and tracking completed competencies will develop skills and insights relevant in the Food Service field. Attendance at various community sponsored work shops, seminars, and/or screenings will be required along with documentation of attendance and journal entries. Selected topics will be discussed during the eight hours of on campus seminar sessions. Total contact hours equal to/or exceed 160. FHD 285 is a prerequisite for this course for Dietary Manager Technology students only. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): FHD116 and FHD125 and FHD269 and FHD285. Corequisite(s): FHD222.*

FHD285**Dietary Management Practicum II**

The student will concentrate on the observation, development, and implementation of food service systems, and management techniques. Areas of focus within this course include Continued Quality Improvement Surveys, cost containment principles, supervision, food production, and personal interaction and communication between department employees, administration, and outside vendors. Practical experiences, journaling, attending and conducting department seminars, completing assigned projects, and tracking completed competencies will develop skills and insights relevant in the Food Service field. Attendance at various community-sponsored workshops, seminars, and/or screenings will be required along with documentation of attendance and journal entries. Selected topics will be discussed during the eight hours of seminar sessions, which will be held on campus. Selected topics will include Wine and Beverage Management, Guest/Patient and Dietary Staff interaction, and CPDA, PDA, DMA, or ADA sponsored workshops and seminars. Total contact hours equal or exceed 160. GPA of 2.50 required to enroll in course. 2 Credits (0 Lecture -10 Lab) *Corequisite(s): FHD225 and FHD273 and FHD274.*

FHD289**Hospitality Management Internship**

Practical application of management and leadership skills in a hospitality setting. Participation in and observation of production and management controls in a restaurant, hotel, catering or conference center will provide an opportunity to develop hospitality skills and assist in analyzing, guiding and directing the work of subordinates in a team environment. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): FHD106 and FHD108 and MGT115.*

FHD300**Credentials Proven By ACFAC Accreditation**

This course exists for the purpose of verifying transfer of Culinary credits only. Eligible candidates who submit an official transcript indicating graduation from an American Culinary Federation Accrediting Commission accredited Associate Degree program, will be credited for 42 Culinary credits. These 42 credits reflect the Penn College Associate Degree Culinary courses. Graduation from an accredited ACFAC Associate Degree Program reflects the candidates ability to meet the Associate Degree level Culinary course requirements. 42 Credits (42 Lecture -0 Lab)

FHD301**Meat Fabrication and Processing**

This course will deliver advanced knowledge and application of the sources and production of meat, wild and domestic game, farm raised and wild fish and seafood. Students will learn the physical structures of common culinary protein sources, with a goal of fabricating, portioning and utilizing meat, fish and game profitably in a restaurant hospitality operation. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): FHD140 and FHD269.*

FHD302**Seafood Cookery**

This course concentrates specifically on seafood cookery. This will entail procuring, handling, and preparation of fish, shellfish and sea vegetation. This course will continue to reinforce the objectives, methods, and procedures introduced and established in previous courses. Seafood Cookery will aggressively explore, pursue and execute the most up to date and progressive methods and preparations of seafood while applying classical procedures and basic cooking methods. Product knowledge, proper handling and receiving, storing, sanitation, nutrition, as it relates to seafood will be highlighted. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): FHD125 and FHD130 and FHD308 and FHD309 or FHD125 and FHD140 and FHD308 and FHD309.*

FHD303**Game Cookery**

This course concentrates specifically on game cookery. This will entail procuring, handling, and preparation of game. This course will continue to reinforce objectives, methods, and procedures introduced and established in previous courses. Game Cookery will aggressively explore, pursue, and execute the most up to date and progressive methods of preparation of game while applying classical procedures and basic cooking methods. Product knowledge, proper handling and receiving, storing, sanitation, and nutrition, as it relates to game, will be highlighted. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): FHD125 and FHD130 and FHD308 and FHD309 or FHD125 and FHD140 and FHD308 and FHD309.*

FHD304**Culinary Internship II Le Jeune Chef Restaurant**

This semester practicum focuses on skills in food production and service. Hands-on exposure and rotation in the kitchen brigade stations, including Pantry Garde Manger, Saucier, Rotisseur/Grillardin, Entremetier, and Pâtissier, will allow students to maintain organization and structure within the back of the house operation. This course also includes the rotation through the Storeroom, Dishroom, and Kitchen/Equipment Maintenance areas. Provides additional exposure in event preparation, production, and service. Internship requires a minimum of 120 documented hours. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): FHD269.*

FHD305**Regional American Cuisine Lecture**

This course is a study of the evolution of Regional American Cuisine and application of traditional and modern cooking techniques for service in the Le Jeune Chef restaurant. Students will research the food influences and noteworthy culinarians of the Mid-Atlantic, Mid-Western, New England, Northwestern, Southeastern and Southwestern United States. Through readings and videos students will explore culinary composition and be challenged to foster a personal philosophy of food. Lecture will emphasize critical thinking skills and problem solving related to various restaurant situations particularly when functioning as a student manager. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): FHD116 and FHD125 and FHD130 or FHD116 and FHD125 and FHD140. Corequisite(s): FHD306.*

FHD306

Regional American Cuisine Practicum

This course is a study of the evolution of Regional American Cuisine and application of traditional and modern cooking techniques for service in Le Jeune Chef restaurant. This Practicum emphasizes the preparation and presentation of the styles of cuisine represented by six regions of the United States. Students will be expected to apply previous technical skills in all stations of the kitchen and will be permitted to take on more responsibility in the interpretation of recipes as the kitchen and market demands. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): FHD116 and FHD125 and FHD130 or FHD116 and FHD125 and FHD140. Corequisite(s): FHD305.*

FHD307

Wines of the World

Wines of the world focuses in depth on the relationship between vinifera, labrusca and hybrid grapes to the climate, micro-climate, geography and geology of traditional and emerging wine producing regions of the world. The science of enology will be studied. The relationship wine has had historically with society and religion will be identified and related to wine's mystique, tradition and influence. A study of the international packaging and marketing of wine will be included, with its relation to tradition and its evolution in today's global marketplace. Sensory evaluation of the many types of wines will be undertaken, with a view toward understanding wine as a living, evolving beverage that is paired with foods, has health benefits, and has maintained a place as a beverage of choice on the tables of consumers in all social and economic circles around the world. NOTE: Students will be expected to provide proof of age for the legal responsible consumption of alcoholic beverages in the state of Pennsylvania. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FHD135 and FHD136.*

FHD308

Classical Cuisines of the World Lecture

The focus of this course deals with understanding the influence and impact that classical cuisine has on contemporary culinary arts. Through reading and research students will be directed to explore and evaluate the important discoveries of technical systems relating to the development of culinary arts as a science and artistic expression. Thorough advanced study and evaluation of the contributions and cuisine of classical European masters Leonardi, Scappi, Careme, Escoffier, Point and Bocuse will enable the student to develop an understanding of unique influences that shaped the evolution of haute cuisine, nouvelle cuisine, and cuisine minceur. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): FHD130 and FHD137 and FHD269 or FHD137 and FHD140 and FHD269. Corequisite(s): FHD309.*

FHD309

Classical Cuisines of the World Practicum

This course will apply the advanced cookery and culinary systems explored in the lecture component of Classical Cuisine. Students will execute variations on classic preparations involving creation of menu concepts, use of exotic ingredients, and delivery of products within a classical haute cuisine menu system. The use of the classical brigade structure will continue to enforce the development of the student's concept of culinary arts within a traditional and contemporary hospitality operation system. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): FHD130 and FHD137 and FHD269 or FHD137 and FHD140 and FHD269. Corequisite(s): FHD308.*

FHD310

Legal Issues and Applications in Hospitality

This course will study the legal duties and responsibilities faced by operators of hotels, motels, restaurants, foodservice and tourism properties. Civil liability, contract law, bankruptcy law, labor law, property rights, legal forms of business, the court system and out of court settlements will all be covered. The course centers on case studies and the prevention of costly legal actions. 3 Credits (3 Lecture -0 Lab)

FHD402

Classic French Cookery and Service Lecture

This course will explore the writings and professional accomplishments of the great French chefs, including Careme, Escoffier, Montagne, Point, Bocuse and the Trois-Grois family. It will also include an exploration into the service philosophy established by Ritz and Escoffier. Students will be encouraged to analyze and differentiate the influences of these culinarians' theories on contemporary dining and cooking in the modern hospitality industry. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): FHD125 and FHD130 and FHD308 and FHD309 or FHD125 and FHD140 and FHD308 and FHD309. Corequisite(s): FHD403.*

FHD403

Classic French Cookery and Service Practicum

This course will allow the student to execute application of the influence of the classical masters' advanced theories on fine cooking and dining. Exclusive preparation of foods fully cooked tableside from gueridon with rechaud will be employed from all courses in a classical dining experience. Service will include employment of the classical service brigade team system. 2 Credits (0 Lecture -10 Lab) *Prerequisite(s): FHD125 and FHD130 and FHD308 and FHD309 or FHD125 and FHD140 and FHD308 and FHD309. Corequisite(s): FHD402.*

FHD404

Hospitality Systems Management

Students will study and learn the duties and responsibilities involved in managing the hospitality facility as an asset. Basic understanding of the assembly and maintenance of heavy equipment will be taught in an actual professional operation. Students will learn to evaluate the use of contract services and staffed maintenance employees for fire safety, refrigeration, heavy kitchen equipment, waste disposal, scullery operations and structure maintenance. Comparison of the advantages and disadvantages of rent to own agreements for kitchen accoutrements will be examined. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FHD265 and FHD268 or FHD268 and FHD310 or FHD300 and FHD310.*

FHD405

Culinary Internship III, School of Hospitality Lab Assistant

In this paid position, students will rotate through three specific experiences during the semester allowing exposure to entry-level skill development, specialized skill development and lunch service, and advanced skill development and advanced production and service. Organization and communication skills in laboratories activities, class demonstrations, and special projects will be emphasized. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): FHD304.*

FHD455

Culinary Capstone Internship IV

This extensive final experience aims to provide the student with an in-depth practical learning experience by working with industry leaders in the Hospitality Industry. During the internship, students will be exposed to conditions and experiences of the highest caliber, working with those who have earned recognition in our industry, applying theory to practice. Rotation among the kitchen stations, in specialized areas, focusing attention on excellence and detail, will be its emphasis. Represents 540 "on-site" or "direct contact" hours. This course also includes research in a parallel area of interest to the operation the student is involved. All major coursework must be completed prior to the registering of FHD455, except FHD495, Culinary Capstone, which is a co-requisite. 9 Credits (0 Lecture -45 Lab) *Prerequisite(s): FHD405. Corequisite(s): FHD495.*

FHD495

Culinary Arts Capstone Project

This course is designed to consolidate and synthesize the students' knowledge of culinary arts and students' self-perceptions related to their selection of a culinary/hospitality profession. Oral and written communications during the students' learning experience in the culinary capstone internship is an integral part of this course. Students will complete an experience portfolio and related projects detailing completion of the FHD455 and FHD495 student outcomes. Students will be expected to contribute to and evaluate the internship experience and site. The course is designed with the expectation that most students will be completing the majority of the coursework off main campus. All major coursework must be completed prior to registering for FHD495, except FHD455, the Culinary Arts Capstone Internship IV. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FHD405. Corequisite(s): FHD455. (Writing Enriched)*

FINANCE (FIN)

FIN150

Principles of Banking

Students enrolled in this course are provided an overview of banking from colonial times to the present day, with emphasis on current issues and trends. Bank organizational structure, line/staff functions and employee responsibilities are reviewed. The regulatory environment of banking is studied including the involvement of the Federal Reserve and monetary policy. Bank deposit services are examined, focusing on types and requirements of deposit accounts, negotiable instruments, payment flows, and the check collection process. The credit function is also studied, reviewing sound underwriting guidelines for consumer, mortgage and commercial loans. Specialized products such as trust services, cash management, international banking, and brokerage services are reviewed as is the importance of marketing in today's competitive environment. Lastly, students will learn ways in which to measure and analyze the performance of financial institutions. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

FIN220

Finance

To provide a broad approach to basic financial principles assuming the student is the financial manager of an enterprise. Areas of study include financial analysis and planning, working capital, time value of money, cost of capital, budgeting, and sources of long-term financing. (Formerly MGT220) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 and ACC122 and MTH112 or ACC112 and ACC122 and MTH160 or ACC112 and ACC122 and MTH180 or ACC112 and ACC122 and MTH113 or ACC113 and ACC123 and MTH112 or ACC113 and ACC123 and MTH160 or ACC113 and ACC123 and MTH180 or ACC113 and ACC123 and MTH113.*

FIN250

Banking Practicum

This course is specifically designed as a capstone experience for students in the Associate Degree in Banking program. It will allow students to gain practical experience in integrating and applying the concepts studied in the program. It is intended to be completed as one of the student's final courses prior to graduation. Students will be required to develop and complete a project in a functional banking area of their choosing such as lending, investments, accounting, trust, information systems, human resources, branch administration, or operations. They will identify and describe a problem, concern, or an area/process in need of improvement in a selected banking institution. The student, working in concert with the bank's appropriate functional manager and the course instructor, will develop a plan to address the problem, concern or process, present it to senior bank management for approval, and then implement it and monitor the results. This course will provide the practical experience that students need to fully synthesize and integrate the earlier coursework. 3 Credits (.50 Lecture -12.50 Lab) **As needed.**

FIN305

Fundamentals of Financial Planning

This course serves as a guide to personal finance for achieving financial objectives and making effective financial decisions. The course is a study in fundamentals of personal financial planning. Topics include: personal financial statements, budgeting taxes, major purchases, use of credit and bank loans, insurance, investing, retirement planning, and estate planning. (Formerly FIN 230) 3 Credits (3 Lecture -0 Lab)

FIN310

Principles of Insurance

This course is a survey of the nature and significance of risk and insurance. It emphasizes the basic ideas, problems, and principles found in modern insurance and other methods of handling risk. Analysis of insurance needs and methods of determining the type and amount of insurance will be covered. Topics include: life insurance, property and liability insurance, medical and disability insurance, long-term care policies, social insurance, and the business uses of insurance. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FIN305 or FIN230.* **Fall Only.**

FIN320

Investments

This course introduces students to the world of investments, including various types of investment vehicles, techniques and strategies. Students will study the investment environment, role and scope of investments, measuring risk and return and types of investment markets and transactions. Traditional short- and long-term investment instruments will be analyzed, such as: common and

preferred stocks, bonds, government issues, convertible investments and mutual funds. Higher-risk, more complex investments, e.g., options, futures, real estate, precious metals, artwork, will also be reviewed. Tax implications of the various investments will be studied. Lastly, portfolio management will be analyzed, including techniques and strategies. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FIN220 or FIN305.* **Spring Only.**

FIN370

Money and Banking

Will allow students to gain an in-depth understanding of the role and function of money, the Federal Reserve System and the United States banking system. Specific subjects covered include: monetary standards, financial instruments, monetary theory, capital and money markets, rationale for interest rates, fiscal and monetary policy, inflation, sources and uses of credit and the role of financial institutions. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ECO111.* **Fall Only.**

FIN420

Estate Planning

This course emphasizes the process of planning the accumulation, conservation, and distribution of an estate to accomplish personal tax and nontax objectives. Topics include: federal estate and gift taxes, wills, intestacy, the probate process, the use of trusts, property ownership forms, life insurance, lifetime gifting, the unified credit, charitable deductions, intrafamily and business transfers, valuation planning, and postmortem planning techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC330 and FIN305 or ACC331 and FIN305.* **As needed.**

FIN430

Retirement Planning and Employee Benefits

This course emphasizes personal tax-deferred retirement programs and the framework for calculating annual savings needed to reach income goals. A focus is placed on qualified plan design, with an emphasis on the advantages and disadvantages of specific types of qualified plans for the owners of small to medium sized businesses. Topics include qualified plan design; retirement planning; deferred compensation; group life and health insurance; and other employee benefits. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC330 and FIN305 or ACC331 and FIN305.* **As needed.**

FIN450

International Finance

Traditional concepts of international financial management are presented such as the international financial environment, international funds flows, foreign exchange markets, exchange rate behavior and risk management. The student will study the governmental influence on exchange rates and the philosophical systems, e.g. fixed exchange, freely floating exchange, managed-float exchange and pegged exchange systems. Multinational capital budgeting is presented with consideration given to exchange rate fluctuations, remittance provisions, inflation and blocked funds. Risk analysis techniques are used to determine country risk. Macro and micro assessments of country risk are compared. Discussion will center on sources and instruments of international export and import financing, balance of payments, governmental regulations and policies, as well as accounting for international transactions. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FIN220 and MGT216 and MGT355 or MGT116 and MGT220 and MGT355 or FIN220 and MGT116 and MGT355.*

FITNESS AND LIFETIME SPORTS (FIT)

FIT109

Tennis/Table Tennis

Basic skills, fundamentals, game strategies and etiquette necessary to participate actively and enjoy the games. 1 Credit (.50 Lecture -1.50 Lab)

FIT111

Cardiopulmonary Resuscitation (CPR)

Life saving skills used in respiratory and cardiac emergencies for infant, child, and adult are taught. The American Red Cross CPR: Basic Life Support for the Professional Rescuer system and criteria will be followed. Some basic first aid skills will be included as time permits. 1 Credit (1 Lecture -0 Lab)

FIT142

Badminton/Volleyball

Instruction in the fundamental skills of badminton. Volleyball instruction for beginners and those who wish to improve playing skills. 1 Credit (.50 Lecture -1.50 Lab)

FIT143

Weight Training/Volleyball

An individualized progressive strength program using resistive modes to develop either muscular bulk or tone. May include a cardiorespiratory efficiency program. Volleyball instruction for beginners and those who wish to improve playing skills. 1 Credit (.50 Lecture -1.50 Lab)

FIT169

Aerobic Dance

A vigorous physical fitness course combining locomotive movements for cardiorespiratory endurance, exercise for muscle tone and flexibility and basic dance steps for rhythmical development and coordination. The sequences are performed to a variety of musical scores. 1 Credit (.50 Lecture -1.50 Lab)

FIT170

Step Aerobics

A dynamic intense cardiorespiratory exercise program utilizing the "Bench Step" as the mode for movement. Course is designed for the student who currently has attained an average or better level of cardiorespiratory efficiency. Due to the intensity of physical activity in this course, students will be expected to meet set physical standards and/or bring written physician clearance before they will be allowed to use the step equipment. 1 Credit (.50 Lecture -1.50 Lab)

FIT172

Weight Training

An individualized progressive strength program using resistive modes to develop either muscular bulk strength or tone. May include a cardiorespiratory efficiency program. 1 Credit (.50 Lecture -1.50 Lab)

FIT173

Aerobic Cross Training

This personal fitness course uses an integrated instructional approach including cognitive, affective and psychomotor objectives. Contents include: an introduction to personal fitness, utilizing fitness facility equipment, cardiovascular training, body composition intervention, applying aerobic cross-training designs, active participation in a progressive program designed to increase personal fitness, and monitoring personal workouts. 1 Credit (.50 Lecture -1.50 Lab)

FIT174

Free-Weight Training

This personal fitness course uses an integrated instructional approach including cognitive, affective and psychomotor objectives. Contents include: an introduction to personal fitness, utilization of a free-weight room facility, comprehension of muscle origin-insertion-action and resulting outcome, active participation in a progressive program designed to increase muscle development, creation of a personal muscle training routine and monitoring personal workouts. 1 Credit (.50 Lecture -1.50 Lab)

FIT175

Basic Fitness Training

This personal fitness course uses an integrated instructional approach which includes cognitive, affective, and psychomotor objectives. Contents include: an introduction to personal fitness, utilizing fitness facility equipment, cardiovascular training, body composition intervention, explanation of resistance training methods and techniques, principles of nutrition, applying aerobic training and resistance training knowledge to monitor personal workouts. 1 Credit (.50 Lecture -1.50 Lab)

FIT176

Shotokan Karate

This course consists of training in the philosophy, principles and techniques of Shotokan Karate for self-defense and improvement of overall fitness. The course includes blocking, punching, striking, kicking and body shifting techniques and application of these techniques against an opponent. Rules of conduct will be distributed; students not adhering to rules of conduct will be subject to dismissal from the course. 1 Credit (.50 Lecture -1.50 Lab)

FIT182

Introduction to Scuba Diving

This course combines classroom and pool training to provide students with the knowledge and skills they need to safely gain experience in the diving environment. The course is performance based and designed to prepare a student to complete all training necessary for certification as an Open Water Diver except open water training experiences. The course follows the training methods of the Professional Association of Diving Instructors (P.A.D.I.). 1 Credit (.50 Lecture -1.50 Lab)

FIT190

Personal Fitness

An individualized program of activities designed to increase the student's level of physical fitness. 1 Credit (.50 Lecture -1.50 Lab)

FIT192

Walking and Physical Fitness

A personal fitness course integrating and confluent instructional approach including cognitive, affective and psychomotor objectives. Content includes: An introduction to fitness walking, cardiovascular walking, walking and weight control, walking and relaxation, and developing a personal fitness walking program. Classroom and activity sessions are utilized in the course. 1 Credit (.50 Lecture -1.50 Lab)

FIT201

Personal and Community Health

Discussions of up-to-date relevant information concerning personal and community health problems of today's college students. 2 Credits (2 Lecture - 0 Lab)

FIT204

First Aid, Responding to Emergencies

There is a need to know what to do in an emergency before medical help arrives. Since the citizen responder is the person most likely to be the first on the scene of an emergency, it is important that they know how to recognize emergencies and how to respond. This course will prepare the student to make appropriate decisions regarding first aid care and to act on those decisions. The course also emphasizes the importance of a healthy lifestyle. 2 Credits (2 Lecture -0 Lab)

FIT205

Coping with Stress

The purpose of this course is to study stress reactivity and its effect on health. The student will examine individual stressors, analyze how each person reacts differently to stress, and experiment with a multitude of ways to manage stress. The culminating activity will be a stress management plan to be composed by each student. 2 Credits (2 Lecture -0 Lab)

FIT207

Choices: Wellness for a Lifetime

The course addresses the lifestyle choices necessary to maintain long term wellness. The student will examine the meaning of wellness, recognize the short and long term effect of personal choices on wellness, understand the interrelationship of the course topics to continued wellness, understand how to manage a lifestyle change and assess personal lifestyle. Topics included in course are: component and benefits of wellness, nutrition, body composition, diet and weight control, cardiovascular health, cardiorespiratory endurance, muscular strength, flexibility, stress management and the impact of lifestyle on common diseases. 2 Credits (2 Lecture -0 Lab)

FIT220

First Responder: Advanced First Aid

This course presents an opportunity to develop emergency medical skills and knowledge that will enable the student to assist people who have sustained an accidental injury or who are suffering from a sudden illness or medical emergency. This course follows a national curriculum that was designed by representatives from many federal and state agencies and from professional medical groups. To practice these skills, as a "First Responder", some states require certification or registry. Students must investigate the guidelines or policies of the state in which they reside. 3 Credits (3 Lecture -0 Lab)

FOREST TECHNOLOGY (FOR)

FOR111

Dendrology

Classification, identification, and distribution of woody plants in the United States. Emphasizes species of local commercial importance. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

FOR113

Forest Mensuration

Measurement of standing trees, logs and other cut wood products. Calculating the contents of these products in terms of board feet, cubic feet, cords, and pounds. Measuring growth in trees and forests. 3 Credits (2 Lecture -3 Lab)

FOR120

Forest Surveying I

Introduction to surveying, including the fundamentals of plane surveying and the use and care of equipment. 2 Credits (1 Lecture -3 Lab) **Spring Only.**

FOR122

Photogrammetry

The basic techniques of photogrammetry (the use of photographs in surveying and forest measurement), photo interpretation. 2 Credits (1 Lecture -3 Lab) **Spring Only.**

FOR124

Advanced Forest Mensuration

Determining the quality of logs and trees. Estimating volumes of large timber areas by different sampling techniques. The use and interpretation of aerial photos in forest surveys. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

FOR127

Forest Ecology

Introduction to ecology, upon which the management of forest and wildlife resources may be used. Improves the student's understanding of the ecological relationship of forest and wildlife communities. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

FOR210

Forest Products

This course is designed to introduce the student to the myriad of products that come from wood fiber. It will cover primary and secondary wood product processing and marketing. Specifically, it will cover those areas of sawmilling and lumber conversion, "value added" products, veneer manufacturing, particle board, plywood and other wood composite products, paper production and lumber exportation. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ENL111.* (Writing Enriched)

FOR230

Sawmilling

Emphasizes practical skills in sawing lumber to grade in a safe and economical manner. 3 Credits (1 Lecture -6 Lab) **As needed.**

FOR232

Forest Surveying II

Theory and practice of plane surveying techniques used in property and boundary surveys, map making, construction surveys, and computations. Emphasizes the use of these techniques in forestry. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): FOR120.* **Fall Only.**

FOR236

Silviculture

Forestry practices and systems used to grow and manage trees and forests for the sustained production of timber products. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

FOR237

Forest Recreation

The development, construction, and maintenance of recreation facilities in a forest environment. 1 Credit (0 Lecture -3 Lab) **Spring Only.**

FOR238

Lumber Drying

The process of drying lumber by natural or artificial methods. Includes layout of the lumber yard, dry kiln operation and the handling and storage of green lumber. 3 Credits (2 Lecture -3 Lab) **As needed.**

FOR239

Wood Properties and Utilization

Physical characteristics, identification and use of wood. Includes machinery and manufacturing major wood products derived from commercially important species. 1 Credit (0 Lecture -3 Lab)

FOR240

Production Management

Introduction to the processes of obtaining, manufacturing and marketing wood products in order to produce a profit. 3 Credits (1 Lecture -6 Lab) **As needed.**

FOR241

Lumber and Log Grading

Separating and grading (sorting wood on the basis of quality) hardwood and softwood lumber according to wood industry standards. Sorting hardwood and

softwood logs on the basis of lumber grade to assure high quality lumber products. 3 Credits (1 Lecture -6 Lab) **Spring Only.**

FOR243

An Introduction to GIS/GPS

This course will provide the student with an overview of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technology as it pertains to forest technology. Specific emphasis will be placed on the GIS technology of ARC VIEW and ARC INFO. The introduction will afford the student the ability to move back and forth between Geographic Information Systems (GIS) and Global Positioning Systems (GPS) applications. Geographic Information Systems (GIS) technology deals with the manipulation of data using computerized software data. Geographic Positioning Systems (GPS) technically deals with the capture of location data via the 24 satellites that orbit the earth. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH120 and MTH122 or MTH180 or MTH124.* *Corequisite(s): CSC110.*

FOR245

Wildlife Management

The natural history and environmental impact of animals and nature to Pennsylvania and other parts of the world. Emphasis will be placed in wildlife's influence on the forest. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

FOR248

Forest Protection

The cause and effects of forest fires. Methods used to control forest fires. The identification, effects and control of other harmful agents, principally insects and diseases. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

FOR249

Forest Land Management

Basic concepts of managing publicly and privately owned forestlands used for more than one purpose (for example, recreation and logging). Shows the importance of managing the land for recreation, wildlife and water. This course is designated as writing enriched/writing intensive. (Formerly FOR 246) 3 Credits (2 Lecture -3 Lab) (Writing Enriched)

FOR252

Timber Harvesting and Equipment

This course will provide the student with the basic planning, maintenance and operation of logging equipment and machinery while conducting a harvest operation whereby trees are safely felled, limbed and bucked into their highest economic values utilizing Best Management Practices (BMP) where applicable. 3 Credits (1 Lecture -6 Lab)

FRENCH (FRE)

FRE111

Beginning French I

Basic grammar and language structure, comprehension, speaking, and reading, with emphasis on pronunciation and accent. 3 Credits (3 Lecture -0 Lab) **As needed, Fall.**

FRE121

Beginning French II

Review and continued development of language fundamentals for increased proficiency and confidence in speaking, understanding, reading and writing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): FRE111.* **As needed, Spring.**

GEOLOGY (GEL)

GEL105

Physical Geology

Basic concepts in the study of the Earth, relationships between Earth materials and the geologic agents and processes that create and modify minerals, rocks, landforms, continents, and the ocean basins. 4 Credits (3 Lecture -3 Lab) **Fall Only.**

GEL106

Historical Geology

Origin of the Earth, evolution of its crust, and the development of evolution of life. Relationships among rock units as evidence for geologic history, fossils as documents of evolution, chronology and environment; relative and absolute age dating of the Earth. 4 Credits (3 Lecture -3 Lab) **Spring Only.**

GEOGRAPHY (GEO)

GEO111

Introduction to Cultural Geography

This course will examine major themes in the field of geography with a focus on the relationship between culture and environment. Includes locational analyses of non-western cultures. Special attention will be given to the breadth, intellectual challenge, spatial insights of the discipline, and the logical interconnections of its subfields. 3 Credits (3 Lecture -0 Lab)

GRAPHIC COMMUNICATIONS (PNP)

PNP110

Introduction to Printing and Publishing Professions

This preliminary course acquaints students with the Printing and Publishing Technology major, the printing industry, safety issues, and career opportunities. Students study the history of printing and the makeup of the printing industry, including printing processes, technical market segments, and professional organizations. They are also introduced to key procedures in career planning and job applications. 2 Credits (2 Lecture -0 Lab) **Fall Only.**

PNP114

Electronic Typography

This course focuses on the fundamental use of the computer in the preparation of images and on the study and applications of standards used for the selection and application of type for the printed page. Topics include the history of type, classification of type and its uses, software/hardware components, and outputting type to various output devices. Students will use popular software packages to create, edit, and print various documents. 3 Credits (2 Lecture -3 Lab)

PNP123

Digital Imaging I

This course focuses on digital hardware and software applications used in the graphic imaging workflow, with particular emphasis on image editing of grayscale and line art images. Topics will include computer platforms, operating system functions, application software used in the imaging process, digital scanners, storage devices, output devices, troubleshooting, and maintenance. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

PNP124

Offset Lithography

This course covers the basic principles of lithography and helps students develop skills in lithographic platemaking and operating small offset presses and selected bindery equipment. Among the topics covered are press systems, press maintenance, and safety practices, as well as papers, inks, and chemicals related to the lithographic process. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

PNP125

Page Layout and Design

This course will introduce students to the concepts behind using page layout software as a production tool to create various types of documents, including flyers, newsletters, brochures, and books. Students will use various popular software applications to establish document geometry and structure, compose type, and merge existing graphics. Also involved is the output and proofing phases of document creation. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP114.*

PNP134

Electronic Publishing and Design

Basic design and production for electronically created pre-press and printed materials. Presents a variety of programs for both IBM and Macintosh systems using laser printers. Includes basic setups for hardware and standard installations for software as well as simple troubleshooting. Presents overview of the history of electronic publishing and current trends within the industry. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP114 or MCM121 or MCM131.*

PNP210

Digital Imaging II

This course involves the advanced study of digital color systems. Through study and practice, students investigate techniques for scanning, color correcting, proofing, and evaluating color images. Applying color management technology, learners create International Color Consortium (ICC) color profiles, calibrate system components and use profiles in color workflow. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP123.* **Spring Only.**

PNP212

Screen Printing

This course provides an overall perspective of the screen printing trade. Students explore copy preparation, screen and stencil systems, printing techniques, ink and substrate compatibility, reclamation of screens, and finishing processes. Technical concepts and theory provide a foundation for skills acquired through the actual production of screen printed products. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP123.* **Fall Only.**

PNP215

Flexography

This course explores the printing process of flexography. Students study the process, explore related techniques, and practice design, platemaking, press operation and finishing techniques as they pertain to flexography. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP210.* **Spring Only.**

PNP220

Output Workflow

This course examines the critical last stages of digital pre-press production, which include file analysis, file repair, trapping, imposing, and output of electronic pages to digital proofs, film, plates, or substrate. Students become involved in production and problem-solving experiences using the latest software applications available. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP125 and PNP210.*

PNP232

Finishing and Distribution

The last phase of printing production involves preparing printed sheets for final form such as brochures, books, posters, and packages. This course concentrates on the wide range of finishing and binding operations, as well as on the sorting and organizing of printed materials for shipping and mailing to the customer. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP124.* **Fall Only.**

PNP234

Advanced Offset Lithography

This course covers sheet-fed and web-fed lithographic press systems and provides opportunities for hands-on experiences with single-unit and multi-unit sheet-fed presses. Content includes principles and measurement of accurate registration and pressure settings, physical interactions of papers, inks, and fountain solutions, and quality-control measurement of process color. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP124.* **Fall Only.**

PNP252

Production Printing

This course serves to integrate skills and knowledge learned throughout the PNP major. Students take a variety of printing jobs through the phases of design and layout, digital imaging, image assembly, platemaking, presswork, finishing, and bindery. Throughout the process students apply quality control. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): PNP125 and PNP210 and PNP234.*

PNP272

Digital Media Publishing

This course provides an opportunity for students to produce various forms of digital media such as Internet web pages, CD-ROM media, and interactive systems with particular emphasis on multi-purposing digital image data. Students also have hands-on experience with computer networking systems and data transmission methods. (Formerly PNP472) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP125 and PNP210.*

PNP350

Ink and Substrates

This course investigates the many measurable properties of inks, papers, and other substrates used in the printing industry. Students explore manufacturing processes of paper and inks, including environmental concerns, while gaining experience with paper and ink testing devices, data collection, data analysis, and reporting of testing results. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PNP234.* **Fall Only.**

PNP352

Printing Estimating

This course introduces students to the principles and practices involved in estimating costs of printing production, including the determination of production standards, all-inclusive hourly rates, cost centers, materials costs, and the analysis of production variables. Students employ a problem-based approach using both paper and pencil and computer-application software. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PNP242 or PNP252.* **Fall Only.**

PNP354

Trends and Issues in Printing and Publishing

To understand the complexity of the printing industry, students review United States laws including those related to human health and safety, freedom and ownership of information, waste handling and emissions, employment, and labor organizations. This course also explores ethical issues facing printers, including management and technical worker relations and problems and policies on printed content. Required writing assignments (graded and ungraded) provide experience in understanding and adapting to different discourse communities and in using multiple technical vocabularies. In response to selected readings, students generate both expressive and transactional prose. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121 and PNP234 or ENL201 and PNP234.* (Writing Enriched) **Fall Only.**

PNP355

Internship

Students gain practical experience working in a printing and publishing firm by focusing on a technical or managerial project that requires that they meet pre-determined, work-related objectives that have been mutually established by the student, a faculty advisor, and the employer. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): PNP242 or PNP252.* **Summer Only.**

PNP470

Printing Production Management

This course introduces the student to a variety of key printing management concepts and practices including sales of printed materials, communication of specifications, scheduling of print production, inventory control, printing plant layout, job costing, and quality assurance. Students gain experience on integrated management software packages designed specifically for managing printing production. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PNP352.* **Fall Only.**

PNP495

Capstone

This course is designed to integrate knowledge and skills learned throughout the Printing and Publishing Technology major. Students research a technical area, write a significant technical article, and produce a complete publication that encompasses design, layout, digital imaging, presswork, finishing and binding, and distribution. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PNP470.* **Spring Only.**

HISTORY (HIS)

HIS115

World Civilization I

A study of the history of humankind from its beginnings to A.D. 1500. Equal emphasis is placed on the political, economic, and social development of Western and non-Western civilizations. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **Fall Only.**

HIS125

World Civilization II

A study of the history of humankind from A.D. 1500 to the present. Equal emphasis is placed on the political, economic, and social development of Western and non-Western civilizations. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **Spring Only.**

HIS135

United States Survey to 1877

Political, economic, and social development of the United States from colonial times through the Civil War and Reconstruction Period. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

HIS145

United States Survey since 1877

Political, economic, and social development of the United States from 1877 up to and including the Civil Rights Movement. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

HIS210

Latin American Civilization

A study of the growth and development of Hispano and Luso America from the Age of Discovery and Conquests to the present day. Emphasis will be given to the interrelationships among the commercial sector, the Roman Catholic Church, the military, and the state and the effects of this relationship on the development of society. Special emphasis will be placed on the emergence,

success and/or failure of democratic procedures, the relationship between Latin America and the United States and the future economic development of the region. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS212

Twentieth Century Europe

An analysis of major events, social movements and ideas that have shaped the contemporary world. Emphasis on industrialization, nationalism, social upheaval, totalitarianism, anti-imperialism, and war. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS214

The Making of Modern Africa

The political, economic, social, and environmental currents shaping the emergence of the modern African states. Topics include the early cultures, the Arab/Islamic influence, the age of exploration, the slave trade, colonization and the "new borders;" the imposition of European religion, education, and medicine upon the cultures of Africa; the countervailing responses of the African societies, and an analysis of current conflicts and political movements on the African continent. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS250

Popular Culture in the United States

An examination of major forms of popular culture in the United States from colonial times to the present with emphasis on the twentieth century. Analysis focuses on social class and ideology. Popular culture will be compared and contrasted with traditional, official, high and mass culture. Special attention will be given to food, clothing, leisure activities-such as sports, entertainment, literature, music, art and media-movies, television and advertising. 3 Credits (3 Lecture -0 Lab) **As needed, Spring.**

HIS262

Technology and Society

Analysis of the interaction of society, culture and technology with emphasis on industrial transitions; evaluation of the implications for the arts, ideology, popular culture and social structure. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* (Science, Technology and Society, Writing Enriched) **As needed.**

HIS280

United States Labor History

The United States labor movement and the U.S. worker from early national beginnings to the present, placed in a historiographical framework. The establishment of beliefs, values, and experiences that defined the workers as a social class in the community and at the workplace is a major theme. Also examined are the historical relationships between ethnicity, religion (or lack thereof), skill, and social segregation. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS285

Russian and Soviet History

A study of the growth and development of the Soviet Union beginning with the influences surrounding the founding of the original state of Kiev in the ninth century, through the rise and fall of Tsarism, to the Revolution(s) of 1917, then proceeding from the ordeal of Stalinism through the Cold War to the contemporary setting of Glasnost and Perestroika. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS310

Historical Investigation

An introduction to historical methodology designed to assist the student to think historically, to evaluate historical literature critically, and to draw on appropriate resources in analyzing historical events and trends. Emphasized is the development of intellectual and communicative skills that are applicable across all liberal arts disciplines. Students should have at least one HIS (history) course completed before enrolling. 3 Credits (3 Lecture -0 Lab) **As needed.**

HIS315

Technology and Propaganda

Analysis of human communication in relation to cultural contexts and technological systems as they relate to propaganda. Emphasis given to how visual images exert a particular influence on public perceptions of reality which enables propagandists to move from tactics aimed at persuasion to techniques aimed at control of the public mind relating to economic, political and social attitudes. Focus given to technological systems that have developed since the early nineteenth century: printing, photography, film, television and computer. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* (Science, Technology and Society, Writing Enriched) **As needed, Spring.**

HEALTH INFORMATION TECHNOLOGY (HIT)

HIT110

Health Data Content and Structure

This course provides an introduction to health information theory supplemented with hands-on simulation and projects. Topics to be covered include, but not limited to: the content, uses and format of the health record; the methods of storage, retrieval and retention of health information; the preparation and uses of indexes and registers, documentation requirements, and the role of health information in reimbursement, quality improvement, and other important functions. 4 Credits (3 Lecture -3 Lab) **Spring Only.**

HIT120

Computers in Health Care

This course will introduce the concepts of computer technology that are related to healthcare and will introduce the tools and techniques for collecting, storing, and retrieving health care data. The students will also be exposed to various healthcare and health information related software applications. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110.* **Spring Only.**

HIT210

Healthcare Statistical Data

This course will present basic descriptive and vital statistics and the concepts of data validity and reliability for measures used in healthcare. The course will also cover definitions of healthcare statistical terms, data collection methods, analysis and interpretation of data, calculation of healthcare statistical formulas, and methods of presenting statistical data. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): MTH112 or MTH150 or MTH113 or MTH151.* **Fall Only.**

HIT220

Healthcare Quality Improvement

This course introduces the principles of quality assessment and improvement and provides a basis for developing skills in collecting and analyzing data. Students will learn about both health care evaluation systems and the role of medical record professionals in quality assessment and improvement, clinical critical pathways and case management, utilization management, risk management and infection control, and medical staff credentialing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HIT110 and HIT120.* **Fall Only.**

HIT230

Clinical Classification Systems

This course introduces the students to various methods and systems for classifying patients along with an emphasis on the International Classification of Diseases and the Current Procedural Terminology classification systems. Students will learn about the conventions, principles and guidelines for abstracting coding of diagnoses and procedures for hospital inpatient and outpatient medical records. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO125 and HTH125.* **Fall Only.**

HIT231

Advanced Coding and Reimbursement

This course will provide students with a detailed exposure to ICD-9-CM and CPT-4 coding with an emphasis on practical application of coding skills to actual patient records. Students will utilize an automated encoder and DRG grouper software program as well as manual coding techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HIT230.* **Spring Only.**

HIT240

Health Information Internship I

Clinical experience in the maintenance of medical records in a hospital and specialty health care organizations. Areas to be covered include: record content; data collection, storage, retrieval, and retention; release of information; monitoring accreditation and licensing standards; utilizing appropriate classification systems; evaluating and using secondary records; and calculating, analyzing statistics, and preparing statistics for presentation. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): HIT120. Corequisite(s): HIT210 and HIT220 and HIT230.* **Fall Only.**

HIT241

Health Information Internship II

This course provides clinical experience in the management and supervision of a health information department and all of its functions. Emphasis is placed on coding, DRG assignment and reimbursement, external reviews by the PRO and accreditation/licensing agencies, and the role of the medical record professional in quality assessment, utilization review and risk management. Students will also complete a management project during this internship experience. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): HIT240. Corequisite(s): HIT250.* **Spring Only.**

HIT250

Health Information Management

This is a capstone course in the Health Information Technology program. The topics covered include health information department operations, current issues in health information and in healthcare delivery; the American Health Information Management Association's (AHIMA) professional practice standards; Code of Ethics for the health information professional; and a review of health records competencies to help prepare students for the national accreditation exam. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): HIT241.* **Spring Only.**

HORTICULTURE (HRT)

HRT110

Soils and Fertilizers

Study of soil texture, structure, organic matter and plant nutrients as related to the use of pH controllers and fertilizers. Includes synthetic soils and techniques used to control insects, disease and weed problems. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT112

Horticulture Operations and Structures

An introduction to the greenhouse and nursery industry with topics covering specialized horticultural structures (such as various types of greenhouses, overwintering structures, lath houses, cold frames and hot beds), wholesale and retail marketing of horticultural products, the economic impact of the industry and job availability. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT113

Ornamental Plants

An introduction to the fields of study of horticulture. Outdoor identification of annuals, perennials, woody shrubs and trees, weeds and wildflowers. The use of these plant materials in the landscape will be stressed. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT119

Herbaceous Plant Production

All phases and operations of commercial production of annual and perennial flowering plants will be studied and practiced. 3 Credits (2 Lecture -3 Lab)

HRT121

Landscape Plants

The identification and use of deciduous trees, shrubs, vines, ground covers, and their varieties and cultivars. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): HRT113.* **Spring Only.**

HRT122

Fresh and Permanent Floral Designs

Instruction in and application of the principles in the art of floral design, including the mechanics of basic design specific to form, style, and composition. Topics on designing floral arrangements, baskets, flowers, and the mechanics of taping and wiring flowers for corsage work will be covered. Time and pricing arrangements will be stressed. 3 Credits (1 Lecture -6 Lab) **Spring Only.**

HRT210

Plant Propagation

Theory, practice, and principles of plant propagation by sexual and asexual means-applications in floriculture production and nursery production. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT213

Interior Plantscape Plants

Identification, culture, propagation and use of house and conservatory foliage plants. Course includes artificial lighting, interior landscaping for homes, malls and business, soils and fertilizers for commercial growing, insects, diseases and cultivation problems associated with foliage plants. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

HRT215

Landscape Plants and Design Applications

Advanced study of plant identification. Emphasizes broad-leaved and narrow-leaved evergreens, their varieties and cultivars. The basics of landscape plant usage, development of plant symbols and their meaning in the landscape plan is covered. Preliminary sketches using symbols are assigned. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): HRT111 and HRT121 or HRT113 and HRT121.* **Fall Only.**

HRT216

Turf Management

Principles and practices of the establishment and maintenance of turfgrass areas for ornamental and recreational purposes. Commonly used grasses are studied for their characteristics, growth habits and uses. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT217

Atrium/Greenhouse Techniques and Maintenance

An introduction to growing foliage, holiday, and color accent plants in greenhouses, atriums, and sunspaces. This course covers the use of sprayers, fertilizer injectors, soil handling equipment, and the use of proper cultural techniques needed to produce containerized plants. Actual work experience in the greenhouse will give the student the practical skills needed to grow various ornamental crops. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

HRT218

Landscape/Nursery Operations

Identifies and describes plant propagation as it relates to nursery crop production methods and practices. Strong emphasis is placed on management practices as well as nursery field and container crop production cultural practices and production cycles of selected groups of ornamental plants, transplanting, production pruning, containerizing (potting) practices and general nursery operations. Topics relating to landscape operations include a wide range of landscape topics from the preparation, layout and installation of landscape projects and job logistics, ball and burlapping, drum lacing of larger nursery and landscape plants. All phases of contractor/client interaction from initial contact through selling the job are covered. Introductory topics include a history of the nursery industry, a classification of nurseries, nursery careers, trade organizations and industry publications. 3 Credits (2 Lecture -3 Lab)

HRT224

Landscape Construction

Techniques used to build landscape features. Includes the construction of patios, walks, retaining walls, fences, fountains, waterfalls, pools and steps using various materials. Specifications, bidding and pricing of landscape jobs, basic surveying techniques, drainage and grading are also covered. 3 Credits (1 Lecture -6 Lab) **Spring Only.**

HRT225

Landscape Design

Covers the principles and problems of landscape design. Emphasizes the effective use of plant materials in developing landscaped areas—for residential, public and commercial areas—to make them as attractive and useful as possible. Includes basic drawing and drafting principles; stress is placed on the preparation of planting plans, detail drawings such as cross sections and specifications. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): HRT111 and HRT121 or HRT113 and HRT121.* **Spring Only.**

HRT226

Landscape Management

Care and maintenance of trees and shrubs including pruning, fertilizing, planting, climbing, guying, cabling, staking, plant protection, spraying and proper spray application, tree and shrub evaluation, landscape equipment and their proper use. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): HRT239.* **Spring Only.**

HRT227

Interior Plantscape Design

Basic principles of interior plantscape design concepts and how these concepts relate to the use of color, form, texture, and motif of the overall design, and the ergonomics of the interiorscape. This course also includes topics on plant groupings, selection of containers, specifications for installations, plant selection for specific environments, client budgeting, proposals, and presentations. Basic drawing techniques will also be covered along with the presentation of several interiorscape sketches and designs. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): HRT118 and HRT213.* **Spring Only.**

HRT228

Interior Plantscape Installation and Maintenance

This course presents the specific problems of the logistics involved with the installation of both small and large plant material in the interior of completed or nearly completed structures such as shopping malls, hotel lobbies, office buildings, and private residences. The course will also include discussions on HVAC systems, lighting and watering systems, soils and drainage. Topics on proper plant care fertilization techniques, insect and disease control, and the development of maintenance schedules and contracts will also be covered. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): HRT213.* **Spring Only.**

HRT229

Wedding Designs and Flower Shop Management

This course stresses development of individual style, construction of complete wedding designs, instruction on bridal and party consultation; emphasis on pricing, sales, inventory control, and the general principles of retail flower shop operation will also be stressed. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): HRT122 and HRT213 and HRT240.* **Spring Only.**

HRT230

Landscape Accessories

The construction, operation and maintenance of horticulture equipment, to include outdoor lighting, water gardens, pools, and fountains. Preventive maintenance practices for tractors, small power equipment, electrical systems, irrigation systems, and greenhouse environmental controls will be investigated. The course will also familiarize the student with basic tools and skills in plumbing, electricity, and carpentry. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

HRT239

Plant Insects and Diseases

The insects and diseases of ornamental plants. The nature, structure, harmful effects and control of insects and related forms. The most common and harmful plant diseases are studied for identification and control. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO111.* **Fall Only.**

HRT240

Special Occasion, Dried and Sympathy Floral Designs

This course addresses topics on the principles and applications of dried materials in various floral designs and the principles of construction of all types of funeral designs. The use of seasonal materials and specialized containers in holiday designs will also be covered. Buying practices and routine procedures in everyday operation of a flower shop will also be stressed. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): HRT122 and HRT213.* **Fall Only.**

HRT260

The Art of Floral Design

This course is an elective for those who wish to develop an appreciation of the history and art of floral design, and an appreciation and the application of the basic design principles used in many other forms of artistic expression and artistically enhanced professions. The course will cover the study of floral design dating back to the 10th Century BC in early Chinese and Egyptian civilizations, through the development of European civilizations, to the modern era and the use of floral art currently in Japan, Europe, the United States and throughout the world. The students will explore, through a hands-on study in floral design techniques, the use and application of such important basic elements of design as: color, texture, balance, scale, rhythm, unity, and proportion. The students will also explore the psychological impact of flowers and plants, not only on that of the individual, but also on society as a whole as a means to express deep feelings, from heartfelt sympathy to exuberant levels of happiness and love. The student who brings to this course an open mind and a willingness to learn will reap benefits which will last a lifetime. 3 Credits (2 Lecture -3 Lab) (ART)

HUMAN SERVICES (HSR)

HSR115

Introduction to Human Services

Examines the range of human problems and the programs and systems designed to help individuals address problems. Students explore the roles they might assume as human service workers and engage in a supervised field experience. 3 Credits (3 Lecture -0 Lab)

HSR121

Helping Process and Crisis Intervention

Designed to familiarize students with the fundamental techniques involved in interviewing and crisis intervening in human service practice. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): PSY111 or HSR115.* **Spring Only.**

HSR125

Fundamentals of Counseling

Refines students' interviewing skills and develops skills in group work, behavior modification, decision making, relaxation therapy, assertiveness training and other counseling techniques. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR121.* **Fall Only.**

HSR240**Management and Administration in Human Services**

Develops students' understanding of planning, evaluation, management, community relations and other activities which affect the operation of a human service agency. Focuses on the special needs, such as fund raising, of non-profit agencies. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121. Spring Only.*

HSR241**Group Processes**

A comprehensive exploration of the history, techniques, and various models of group counseling as viable therapeutic intervention. Special emphasis is placed upon group dynamics, leadership skills and brief focused applications. Experiential as well as traditional learning is expected of enrolled students. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR125. Spring Only.*

HSR255**Human Services Internship I**

Supervised field work experience allows students to learn via actual participation in a human service agency. During the practicum, students will work alongside professionals, study the agency in which they work and relate theory to practice. (220 "on-site" or "direct-contact" hours plus participation in 8 bi-weekly, two-hour seminar meetings.) Permission of the instructor per the following criteria: 1. Completion of at least HSR 111/HSR 112 or HSR 115 and HSR 121 with a 2.5 cumulative average for those three courses; 2. Completion of ENL 111, ENL 121 and either PSY 201 or PSY 203, having performed at a "C" level or better in all such courses; 3. Completion of FIT 204 (First Aid: Responding to Emergencies), performed at "C" level or better or properly endorsed documentation of successful completion of American Red Cross training in Standard First Aid, and a current card validating successful completion of B.C.L.S./C.P.R. curriculum; 4. Completion of standard basic health appraisal form and receipt of Children's Services Protection Act 33 clearance may also be required per the field work placement site. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and ENL121 and FIT204 and HSR111 and HSR112 and HSR121 and PSY201 or ENL111 and ENL121 and FIT204 and HSR111 and HSR112 and HSR121 and PSY203 or ENL111 and ENL121 and FIT204 and HSR115 and HSR121 and PSY201 or ENL111 and ENL121 and FIT204 and HSR115 and HSR121 and PSY203.*

HSR260**Chemical Dependence: Treatment and Management**

Chemical Dependence: Treatment and Management is focused on the identification and analysis of drug usage and chemical dependency from a historic, medical and psychological perspective. Topical issues explored in the course include the medical model of dependence, generic diagnosis, impact of the disease on family, treatment models, outcomes research and systemic service processes. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115. As needed.*

HSR261**Families in Crisis**

Explores family interaction from developmental, systems and crisis theory perspectives with an emphasis on family crises as temporary dysfunctional states which can be successfully resolved with and without therapeutic intervention. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115 or PSY111 or SOC111. As needed.*

HSR263**Criminal Justice**

Analysis of relevant topics relating to criminal justice, including the goals and values from present systems, problems in the operation of existing systems; remedies and alternatives to these problems; and future trends. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115. As needed.*

HSR264**Children's Services**

By studying a particular problem or population, students learn how theory and skills are applied in a specific setting. Course introduces local, state, and national services that are available to children and their families. Analysis centers on the total community resources needed to provide an effective service to children, their natural and/or substitute families. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115 or EDU101. As needed.*

HSR269**Psychiatric Rehabilitation**

This course will introduce students to psychiatric rehabilitation for persons with long-term mental illness. Psychiatric rehabilitation program philosophy, principles, models of service delivery, and selected management issues will be explored. Improved access to education, employment, housing, and social integration will be emphasized in the context of achieving community membership for this population. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY201. As needed.*

HSR270**Community Inclusion for People with Disabilities**

This course is intended to explore issues in the arena of community support for people with disabilities. The understanding of the history and philosophy of "support" as an organizing framework for the relationship of individual professionals and service systems to people with disabilities and their families is central to this course. Strategies, models, and resources that support the full participation of persons with disabilities and their families across the lifespan to live, learn, work, and recreate in their own communities will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115 or PSY111. As needed.*

HSR275**Serving and Surviving in the Human Service Field**

The course challenges students to examine the idealism that frequently motivates individuals to select the human services field as a career by exploring the real demands of working with coworkers, rules, regulations, policies, procedures and customs of organizations. The course explores the belief systems that characterize effective and ineffective helpers, strategies for recognizing and dealing with personal issues that may influence the provision of services to clients, and the development of a personal plan of action for surviving in the field as an ethical, self-caring practitioner. 3 Credits (3 Lecture -0 Lab) *As needed.*

HSR300**Corrections Technology and Human Services**

Corrections Technology and Human Services is an introduction to technology and its effect on certain target populations. The focus of this course will be on the application and documentation of specific electronic advancements and the effect on community corrections, client rights and needs. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC104 and PSY111 and WRSEL or CSC104 and SOC111 and WRSEL or CSC110 and PSY111 and WRSEL or CSC110 and SOC111 and WRSEL. As needed, Spring.*

HSR301**Medications Technology and Human Services**

Medications Technology and Human Services is an introduction to technology and its effect on certain target populations. The focus of this course will be the application and documentation of specific pharmacological advancements and the effect on client rights and needs. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC104 and PSY111 and WRSEL or CSC104 and SOC111 and WRSEL or CSC110 and PSY111 and WRSEL or CSC110 and SOC111 and WRSEL. As needed, Spring.*

HSR302**Records Technology and Human Services**

Records Technology and Human Services is an introduction to technology and its effects on certain target populations. The focus of this course will be the application of software advancements in case management and records documentation. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC104 and PSY111 and WRSEL or CSC104 and SOC111 and WRSEL or CSC110 and PSY111 and WRSEL or CSC110 and SOC111 and WRSEL. As needed, Spring.*

HSR305**Assistive Technologies and Human Services**

Assistive Technology and Human Services is an introduction to technology and its applications for use with certain target populations. The course will focus upon advances in electronic and non-electronic adaptive devices and their effects on individuals with various physical, sensory and cognitive impairments. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled or permission of instructor prior to scheduling this

course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC104 and PSY111 and WRSEL or CSC110 and PSY111 and WRSEL or CSC104 and SOC111 and WRSEL or CSC110 and SOC111 and WRSEL. As needed, Spring.*

HSR311

Community and Organizational Change

Community and Organizational Change enables students to develop the skills for recognizing existing and emergent human needs and for planning successful community and organizational responses to those needs. The course explores how to apply human service providers' advocacy responsibilities in a macro setting, while at the same time supporting a process of empowerment for both providers and service recipients (the stakeholders). 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR111 and HSR240 and SOC111 or HSR115 and HSR240 and SOC111. Fall Only.*

HSR321

Advanced Crisis Intervention

This course is designed to enhance student understanding of crisis theory and to familiarize students with advanced techniques of crisis intervention in human service practice. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR311 and WRSEL. As needed.*

HSR323

Contemporary Policies and Issues in Serving Children

This course is designed to expand a student's understanding of contemporary issues that affect children. Students will be introduced to a variety of alternative readings and ideologies as they examine policy, programs, and funding that impact children. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115 and HSR264 and PSY203 and SOC231 and WRSEL. As needed.*

HSR325

Advanced Counseling in Human Services

Advanced Counseling in Human Services introduces students to an array of the most recent counseling strategies. In addition, students will consider challenges presented by culturally different, difficult, atypical, or multi-problem clients. Students will enhance their skills in analyzing preferred approaches to working with clients (using both recent as well as established theoretical approaches), and strategies for working with the unusual client. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR311 and SOC313 and WRSEL. As needed.*

HSR327

Expressive Psychotherapies

A comprehensive exploration of theories and techniques which emphasize enhancing communication, reducing resistance, and engendering creativity in a therapeutic context. The integration of art, music, writing, and movement activities within specific psychotherapy approaches is emphasized. Experiential as well as traditional learning is expected of enrolled students. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR125 and WRSEL or EDU255 and WRSEL or OCT220 and WRSEL. As needed.*

HSR329

Residential Programs

Residential Programs is an intensive survey of programs which meet residential, educational, and therapeutic needs for a variety of target populations. The focus will be program evaluation, de-institutionalization, normalization and client rights. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR240 and WRSEL. As needed.*

HSR330

Outdoor Recreation as a Therapeutic Tool

Outdoor Recreation as a Therapeutic Tool develops student competency in planning, adapting and facilitating a variety of play, structured outdoor activities, challenge games and selected techniques intended to meet a diverse range of client needs in educational, human services and health care settings. The course will explore the development, design, selection, application and safety considerations when employing these techniques/activities. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling for this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR241. As needed.*

HSR360

Assessment in Human Services

This course is designed to acquaint the student with the theory and techniques of measurement and appraisal in human services and the application of assessment procedures with various populations. Considerable emphasis will be placed upon familiarizing the student with the utilization of tests, other assessment techniques, and decision making techniques to plan for the community participation of diverse populations in work, home, community, leisure activities, and personal relationships. The basic thrust is performance-based in that the student is to demonstrate assessment-related skills in the selection, administration, scoring, and verbal and written interpretation. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR115 and MTH152 and WRSEL or HSR115 and MTH160 and WRSEL or MTH152 and PSY111 and WRSEL or MTH160 and PSY111 and WRSEL or HSR111 and MTH153 and WRSEL or MTH153 and PSY111 and WRSEL. As needed.*

HSR411

Legal Issues in Human Services

Introduces students to specific legislation and court decisions that delineate specific client rights, that shape the provision of services, or that indicate the direction of future legal decisions about services to clients. In addition, the code of ethics adopted by relevant organizations in the field of human services is studied. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR311 and PHL210 and SOC313 and WRSEL. Fall Only.*

HSR453

Human Services Internship IIA

The internship in Human Services is an extensive supervised field work experience which affords enrolled students in-depth practical learning experiences via immersion in a human service agency. During the internship, students will work as professionals, contribute to and evaluate the agency in which they work and apply theory in practice. HSR453 and HSR454 allow students the option of completing the internship in Human Services on a part-time basis. HSR453 represents 280 "on-site" or "direct contact" hours plus participation in 10 three-hour seminar meetings. All major coursework must be completed prior to registering for HSR453, with the following exceptions: (1) HSR495, which is offered Spring only; and (2) one 300-level HSR elective and HSR411, both of which are corequisites. Enrolling students must present a current card validating successful completion of B.C.L.S./C.P.R. In addition, completion of a standard basic health appraisal clearance may also be required by the placement site. In addition to listed corequisites, students must also complete one 300-level HSR elective and obtain permission of the instructor to enroll in this course. 4.50 Credits (0 Lecture -22.50 Lab) *Corequisite(s): HSR411 and HTH447. Fall Only.*

HSR454

Human Services Internship IIB

The internship in Human Services is an extensive supervised field work experience which affords enrolled students in-depth practical learning experiences via immersion in a human service agency. During the internship, students will work as professionals, contribute to and evaluate the agency in which they work and apply theory in practice. HSR454 is a continuation of HSR453 and must be taken in the same academic year as HSR453. Represents 280 "on-site" or "direct contact" hours plus participation in 10 three-hour seminar meetings. All major coursework must be completed prior to registering for HSR454 except HSR495, which is a corequisite. Enrolling students must present a current card validating successful completion of B.C.L.S./C.P.R. In addition, completion of a standard basic health appraisal clearance may also be required by the placement site. 4.50 Credits (0 Lecture -22.50 Lab) *Prerequisite(s): HSR453 and HTH447. Corequisite(s): HSR495. Spring Only.*

HSR455

Human Services Internship II

The internship in Human Services is an extensive supervised field work experience which affords enrolled students in-depth practical learning experiences via immersion in a human service agency. During the internship, students will work as professionals, contribute to and evaluate the agency in which they work and apply theory in practice. Represents 560 "on-site" or "direct contact" hours plus participation in 10 three-hour seminar meetings. All major coursework must be completed prior to registering for HSR455 except HSR495, Human Services Capstone, which is a corequisite. Enrolling students must present a current card validating successful completion of B.C.L.S./C.P.R. In addition, completion of a standard basic health appraisal clearance may also be required by the placement site. 9 Credits (0 Lecture -45 Lab) *Prerequisite(s): HSR411 and HTH447. Corequisite(s): HSR495. Spring Only.*

HSR495**Human Services Capstone**

This course is designed to consolidate and synthesize the student's knowledge of human services and the student's self-perceptions related to his/her selection of a career in the human services arena. Students complete both a personal portfolio and an analytical case study in order to fulfill course requirements. All major coursework must be completed prior to registering for HSR 495 except HSR 455, Human Services Internship II, which is a corequisite. In addition, all Capstone proposals are subject to instructor approval. The writing proficiency requirement (WRSEL) for the BHS Degree must be fulfilled prior to scheduling this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR411 and HTH447 and WRSEL. Corequisite(s): HSR455. Spring Only.*

HEALTH (HTH)**HTH100****Introduction to Health Careers**

This course is designed to introduce the student to career options available in health promotions and professions and to assist the student in an appropriate selection of a career in the health field. Career exploration will include a discussion of the requirements, roles, employment opportunities and projections for the future in health care. An overview of health care delivery in the United States, including health promotion and community health, as well as issues facing the health care worker in the 21st century, will be presented. 2 Credits (2 Lecture -0 Lab)

HTH115**Pathology and Disease Process I**

This course, the first in a set of two, begins to introduce students to the fundamental study of pathology and the process of disease. Common disease conditions, prevention, etiology, signs and symptoms, diagnoses, treatment, prognoses, and the use of medical references for research and verification are studied. Specific attention is given to medical emphasis areas of infectious disease and immunology, oral medicine, nutritional and metabolic medicine, dermatology, musculoskeletal system, ophthalmology, gynecological and obstetrical medicine, and endocrinology. Corequisites of BIO103 or BIO115 and MTR101 are required for Medical Transcriptionist majors; BIO115 and MTR104 are required for Health Information Technology majors; and BIO103 or BIO115 and MTR100 or MTR101 or MTR104 are required for other majors. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): BIO103 and MTR*** or BIO115 and MTR***.*

HTH125**Pathology and Disease Process II**

This course is the second in a set of two. It continues to introduce the student to the fundamental study of pathology and the process of disease. Common disease conditions, prevention, etiology, signs and symptoms, diagnoses, treatment, prognoses, and the use of medical references for research and verification continue to be studied and skills refined. Specific emphasis is given to the areas of cardiovascular and hematologic medicine, ear/nose/throat and respiratory/pulmonary systems, gastrointestinal medicine, renal and urologic medicine, hepatic and biliary medicine, neurologic medicine, and psychiatric medicine. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and HTH115 and MTR104 or BIO103 and HTH115 and MTR102 or BIO115 and HTH115 and MTR104.*

HTH210**Emergency Management and Organization**

This course provides an overview of the sequence of historical changes in Emergency Management Services (EMS). Students will become familiar with aspects of EMS operations including, but not necessarily limited to, establishing ambulance systems, interfacing with other health care entities, and budget preparation and application. Special emphasis on crisis intervention in terms of communications, negotiations, and scene management will occur. Students will be expected to plan and participate in field observations and experiences. (This course will require self-study time for class, observations and field experiences.) Students should be aware that the use of physical maneuvers in self defense and crisis intervention might be necessary. Students must meet with Health Sciences division prior to enrollment. 4 Credits (4 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH220**Transitions in Clinical Adaptations**

This course is designed to supplement and enrich the clinical and teaching knowledge of the practicing paramedic, but is open, by approval, to other health care workers. The impact of legal issues upon health care and the importance of quality control in health care situations will be explored.

Specific body systems, pathophysiology, and emotional and psychosocial situations will be explored as they relate to the paramedic health care provider. Nutrition, wilderness rescue, and altitude physiology will also be addressed. Technical knowledge will be built upon to help the student understand the holistic implications of health care and society upon patients/clients for whom they provide care, and upon the self. Field observations and experiences will be planned on student time. Students must meet with Health Sciences division prior to enrollment. 4 Credits (4 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH230**Nutritional Pathways**

This course covers the fundamentals of nutrition with an emphasis on the relationship of diet and health. Food habits, socio-economic status, metabolic pathways, and the food environment will be examined at length. The application of this knowledge in the form of a personal dietary analysis project is designed to give students an opportunity to apply critical thinking skills while they modify personal eating habits. Students are advised that to maximize successful learning opportunities, chemistry at least at the high school level, is needed prior to taking this course. 2 Credits (2 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH300**Credentials Proven By Certification**

This course exists for the purpose of verifying transfer of HTH credits only. Eligible candidates who submit a copy of the certification for their health profession to the Admissions office will be credited with 47 HTH transfer credits. These credits reflect the credit awarded for the professional core or their associate degree curriculum. Candidates must meet all Penn College baccalaureate program admission requirements prior to acceptance into the Applied Health Studies curriculum. 47 Credits (47 Lecture -0 Lab)

HTH305**Holistic Perspectives of Health and Wellness**

This course offers health career students the opportunity to explore the concepts of caring, healing and wellness from a holistic perspective. The application of alternatives from traditional models will be examined. Restricted to BHM/BHP (degree completion), BHS, BAH, BPA or permission of Health Sciences Program Director or instructor. 1 Credit (1 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH306**Holistic Approach to Men's Health Issues**

This course is designed to provide the student with a holistic approach to men's health. Among the topics to be discussed are: risk factors relating to specific diseases in men, diet and exercise, governmental spending on programs for men's health, and work-related issues such as stress management, middle age crisis, and retirement. It is assumed that students have a working knowledge of human anatomy. This course is open to students enrolled in the BAH, BSDH, or BSN majors, and others with permission of the instructor or director. 2 Credits (2 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH307**Women's Health Issues**

This course provides students with an opportunity to examine current health issues and health care services as they affect women. Unique perspectives on women's lifestyles and health are examined as they interrelate with family, the environment and society. Restricted to BHM/BHP (degree completion), BHS, BAH, BPA or permission of Health Sciences Program Director or instructor. 1 Credit (1 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH310**Health Issues and Transitions**

The issue of the aging United States population and its impact on the health care delivery system is examined. Included are the impact of culture and ethnicity on your perceptions and attitudes toward aging, the normal physiological changes of aging, common diseases of the aged, and the resulting demands for health care, alternative physical, physiological and living accommodations required, technology's impact on the provisions of health care and the health care related financial consequences of aging. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* (Cultural Diversity, Science, Technology and Society, Writing Enriched) **As needed.**

HTH320**Cross Discipline Case Management**

This course introduces the subject of case management, a "collaborative process that assesses, plans, coordinates, monitors, and evaluates the options and services to meet an individual's health needs..." to health care practitioners with non-nursing backgrounds. The course will begin with a historical

perspective of the changes and current climate in the American health care delivery system and the emerging role and opportunity for the case manager in both traditional medical model and community-based programs. The attributes of a successful case manager: a focus on outcomes awareness of economic impact of services, and good communication, negotiation, and conflict resolution skills will be examined. The course is restricted to students enrolled in the BAH program or by permission of the Dean. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH325

Health Care Delivery Systems

Systems for the delivery of health services and related issues will be examined. The impact of societal, economic, political and technological changes on the organization and financial operation of health care delivery systems will be presented. A section will be presented on international health care systems. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

HTH327

Health Issues in Geriatrics

Appropriate oral health treatment for the elderly is emphasized. Students will be involved with dealing with concerns which are unique to the geriatric population. An emphasis will be placed on a multidisciplinary approach to treatment and on interpersonal skills needed to interact and communicate with older adults, family members, and other caregivers. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

HTH330

Medical Ethics

The fundamental principles of ethics as they apply to the provision of health care is the focus of this course. The impact of advances in science and technology and its relation to the care of patients is addressed. Topics such as physician-assisted suicide, genetic engineering, termination of pregnancy, fetal tissue research, euthanasia, etc., will serve as the focal points for classroom discussion and lecture. Basic principles for gaining and maintaining the confidence of the patient, the trust of professional associates and the support of the community are emphasized. 2 Credits (2 Lecture -0 Lab) **Fall Only.**

HTH332

Quality Assurance for Healthcare Workers

This course is designed to expose students to the need for and value of Quality Assurance in the healthcare arena by reviewing the historical evolution of Quality Assurance and by analyzing present-day theories. Students will be introduced to several universal methods for developing and organizing a Quality Assurance Program; they will also develop a Quality Assurance Plan based on a problem-solving project in their particular healthcare fields. This course is open to students enrolled in BAH, BSDH, or BSN majors, and others with permission of the instructor or director. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH333

Human Cadaver Anatomy

This course, which is conducted in a cadaver dissection laboratory, focuses on exploration of the human body as is applicable to the practice of clinical medicine. Cadaver dissection as well as the examination of prosected cadavers is used to gain an understanding of the gross structure of the body. The course has three components which focus on: 1) the extremities; 2) the chest cavity; and, 3) the abdominal cavity. These components require extensive laboratory time in and out of class and cover the musculoskeletal, nervous, cardiovascular, respiratory, gastrointestinal, urinary, and reproductive systems. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): BIO115 and BIO125.* **Fall Only.**

HTH335

Special Populations

This course emphasizes the planning of comprehensive health care in four major areas of patients with "special needs". Areas include: radiation and chemotherapy treatment; physical and sensory impairments; mother/infant/child clients; and alcohol and drug rehabilitation. Students can schedule this class only with permission of the Dean of Health Sciences or the Director of Dental Hygiene. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH360

The Role of the Health Care Provider Related to Death and Dying

The course explores the role of the nurse and other health care professionals in the provision of care for the dying patient. The student will be provided an opportunity to explore personal feelings, as well as the professional, spiritual and ethical issues surrounding the care of the dying patient and his/her family. Palliative care choices will be analyzed from a multidisciplinary perspective.

The course will also give the student insight into the implications for nursing and health care practice of how different cultures view and experience death and dying. Restricted to BAH, BHS, BBA, BHM, BHP, BLA, BPA majors. 1 Credit (1 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH361

Informatics in Health Care Delivery

This course will provide an introduction to various computerized information systems, such as: HIS (hospital information systems), NIS (nursing information systems), medical information databases, and bedside computing systems. The emphasis will be the application of these information systems to professional health care. Restricted to BAH, BHS, BBA, BHM, BHP, BLA, BPA, BDC majors. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC110.* **Scheduled by Special Arrangement.**

HTH373

Collaborative Health Care

This course explores the roles of the members of the health care team in various health care delivery settings. Several issues will be addressed including team building, collaborative health care, leadership and group dynamics. Restricted to BAH, BHS, BBA, BHM, BHP, BLA, BPA majors. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SPC101 or SPC201.* **Scheduled by Special Arrangement.**

HTH380

Pharmacology in Health Care

This course will provide a major review of all drug classifications as well as an in-depth study of prototypes specific to each drug category. This in-depth study will include discussion of the pharmacokinetics, pharmacodynamics, therapeutic effects, untoward reactions, and food/drug interactions of these medications, as well as pertinent legal and ethical aspects of medication administration. Students will be expected to write a pharmacological profile based on a client's medication regime or on a predesignated group of drugs. Restricted to BPA, BAH, BHM, BHP majors. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO115 and BIO201 and CHM100.* **Scheduled by Special Arrangement.**

HTH381

Health Promotion in Health Care

This course introduces students to concepts related to the encouragement of positive health changes among individuals and groups. Health promotion is defined by Pender (1987) as "increasing the level of well being and self actualization of a given individual or group." Health promotion addresses the current health care issues of cost increased life expectancy, and maintaining and/or improving one's quality of life. Topics to be explored include the changing populations and health; health policy and the health care delivery system; relevant ethical issues; individual, family, and community health assessment; and health education strategies. Restricted to BAH, BHS, BHM, BHP, BPA majors. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH382

Ethical and Legal Issues Related to Medicine

This course will provide valuable information in dealing with ethical and legal issues related to medicine. Issues related to medical ethics are multi-faceted which requires a strong knowledge base in both ethical and legal aspects. Students will gain this knowledge through lecture, independent research, small group projects, and individual assignments. Restricted to BAH, BAO, BAR, BAP, BDA, BDD programs or by permission of the instructor or program director. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* **Spring Only.**

HTH447

Health and Human Services Public Policy Development

The focus of this course is the formation and execution of public policy in local, state, and federal government. Theoretical and comparative study of public policy with case studies of specific issues in health and human services policy are combined. Approaches for accessing government and provider agencies, and effective mechanisms to influence public policy are emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSC231 or PSC241.* **Fall Only.**

HTH448

Health Care Public Policy Development

The focus of this course is the formation and execution of public policy in state and federal government. Theoretical and comparative study of public policy with case studies of specific issues in health care policy are combined. Approaches of how to access government and agencies, and effective mechanisms to influence public policy are emphasized. 4 Credits (4 Lecture -0 Lab) *Prerequisite(s): PSC231 or PSC241.* **Fall Only.**

HTH460

Philosophy, Ethics and Integrity in Health Care

This course will be a discussion-oriented seminar allowing the student to explore and articulate their own values and beliefs surrounding current health care issues. Ethical decision making and analysis of potential conflicts between personal and professional obligations will be discussed. Restricted to BPA, BAH, BHM, BHP majors. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): ENL111 and SPC101 or SPC201. Scheduled by Special Arrangement.*

HTH464

Family Issues in Health Care Practice

This course is designed to create an awareness in the practicing health care provider of health related issues facing the contemporary family. The practicing health care provider will learn to assess families using a variety of assessment tools. The student will discuss interventions for families with chronic illnesses, families caring for elderly relatives and families experiencing stress related to life changes. Health promotion strategies for maintaining healthy families will be examined. The student will examine the impact on health care of families who have experienced such things as the death of a child, adoption, and inadequate health care coverage. The role of the professional in delivering alternative approaches to health care, such as music therapy, touch, and spirituality will be discussed. Restricted to the BAH, BHS, BHM, BHP, BPA majors. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HTH495

Applied Health Studies Capstone

This course will follow completion of all other related coursework in the major. It will provide an opportunity to synthesize, analyze, and develop solutions to a health care issue or problem. Under guidance of a faculty mentor, the student will use an interdisciplinary approach to develop a program for implementation in the health care environment, to complete a major written health care project, or to develop a written portfolio with relevance to the health care sector. 3 Credits (3 Lecture -0 Lab) **Scheduled by Special Arrangement.**

HUMANITIES (HUM)

HUM223

American Indian Perspectives

The course presents perspectives of Native Americans who draw from their own traditions to reflect upon the institutions and mores of Western Society, Native American contributions to it and conflicts with it. Also examined are elements of Native American cultures that have endured and which may offer guidance on current social issues and problems. Special focus is put on the educational outreach to non-Indians by individuals and groups in the United States and Mexico who respect the guidance of the Circle of Traditional Elders. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **Fall Only.**

HUM225

Fairy Tales and Fables

This course entails the study of storytelling and of stories as core binding elements in the social fabric of one's culture. It includes a cross-cultural and an historical examination of selected stories which present both similar and divergent themes. The course emphasizes the constructions and mechanisms found in the stories as well as the social, cultural, political and aesthetic values which they perpetuate and transmit. The impact of the stories upon ethnocentrism and gender role expectations will be discussed. Contemporary adaptations of ancient and classical stories will also be discussed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* (Cultural Diversity) **Fall Only.**

HUM301

Scientific Literature: Historical and Social Contexts

A survey of 7,000 years of technical and scientific literature in Western culture, concentrating on excerpts from classic, revolutionary works by major Western philosophers and scientists. The course explores the process of technological and scientific revolutions at key points in Western culture; analyzes the social conditions that contributed to and resulted from major scientific and technical advances; and applies those insights to practical situations that students face in their technical areas. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121 or ENL201.* (Science, Technology and Society, Writing Enriched) **Fall Only.**

PROFESSIONAL DEVELOPMENT (IDC)

IDC260

Professional Development

This course will introduce students to the current social issues/rules, proper protocol, and business manners, thereby enabling students to enter the current business world with decorum, confidence, professionalism, and dignity. 1 Credit (1 Lecture -0 Lab) **Spring Only.**

INDUSTRIAL MAINTENANCE TECHNOLOGY (IMT)

IMT122

Facilities Maintenance: Electrical

This course is designed to provide the student with the basic knowledge necessary to maintain building electrical systems. Theory and laboratory assignments emphasize electrical design in residential and commercial wiring, blueprint reading and the explanation of electrical terms. The National Electric Code is used as a governing agent. The student will plan, lay out and install circuits and devices used in commercial structures. 5 Credits (3 Lecture -6 Lab) **Fall Only.**

IMT210

Industrial Hydraulics and Pneumatics

This course is designed to present the basic theory and application of hydraulic and pneumatic components and systems in an industrial environment. Basic and advanced hydraulics and pneumatics, safety, and troubleshooting will be the main topics. No previous knowledge in these areas is required. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHS100.* **Fall Only.**

IMT220

Equipment Repair and Troubleshooting

Introduction to the strategies and logic used in testing and troubleshooting and industrial maintenance applications. Lab exercise will consist of troubleshooting for repair and/or maintenance in one or more of the following areas: electrical control systems, pneumatic controls and equipment, hydraulic components and systems, industrial mechanical equipment. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): IMT120 and IMT210.* **Spring Only.**

IMT221

Commercial/Industrial Equipment Installation and Troubleshooting

Installation and troubleshooting of commercial/industrial components such as electrical control systems, pneumatic controls and equipment, and industrial mechanical equipment. Material selection will be determined by job specification and installation will follow nationally recognized standards such as the N.E.C. (National Electrical Code). 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): ELT111 and ELT116 and ELT122.*

LEGAL ASSISTANT (LAS)

LAS100

Introduction to Paralegal Studies

The course is designed to provide a general perspective of the legal system and knowledge of the present and the potential role of the legal assistant (paralegal) within the legal process. Emphasis will be placed on introducing the legal assistant to the structure and operation of the court system, to the type of work done in private and public sector law firms, and to the tasks handled by the legal assistant in a variety of special areas. Ethical obligations of paralegals and the ABA Model Code will also be emphasized. This course is a prerequisite for all other Legal Assistant courses. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

LAS110

Business Organizational Law

This course presents the principles of law applicable to the various forms of business organizations-sole proprietorships, general and limited partnerships, and corporations. The basic characteristics of each of these legal entities will be studied; and documents for the organization, operation, and dissolution of each will be analyzed. May not substitute Business Law I (MGT 231) or Business Law II (MGT 241) for this course. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): LAS100.* **Fall Only.**

LAS120

Legal Aspects of Health Information

A study of basic concepts and principles of law, including legal analysis and terminology, found in the healthcare field and health information sector. Furthermore, the course will focus upon various legal issues regarding confidentiality of health information, such as release of health information, consent forms, liability of health care providers, and other current issues. In addition, the course will also focus on concepts and methods of risk management in the healthcare field. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

LAS150

Legal Research and Writing

The course is designed to provide the students with a working familiarity with the major legal resources. The students will receive practical experience using both primary and secondary sources and will develop the capacity to research legal issues rapidly and accurately. Emphasis will be placed on effective communication through the written word. The ability to research and communicate information will be incorporated into the correct writing of letters, legal memoranda, briefs, and other legal documents. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and LAS100.* **Spring Only.**

LAS160

Civil Practice and Procedures

This course provides the opportunity for paralegal students to study the rules of procedure that are followed in a civil suit, from the commencement of the action through the trial and the appeal. The student will learn to research a point of law and will learn the process of drafting pleading, interrogatories, depositions, and motions. Emphasis will be placed on the role of the paralegal in this process, with special emphasis on the discovery process. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100. Corequisite(s): LAS150.* **Spring Only.**

LAS170

Real Property Law

This course provides the student with the basic concepts of the law of real property and a working knowledge of the procedures and documents involved in real estate transactions. Rules affecting ownership and transferability of real estate will be covered. The paralegal's duties, from accumulating data and information needed to complete the various instruments of conveyance, such as deeds or mortgages, to monitoring mortgage foreclosures, real estate closings, examining title reports, preparing and plotting legal descriptions of land, and preparing leases will be discussed. Real Estate Law is not an approved substitution for this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100. Corequisite(s): LAS150.* **Spring Only.**

LAS210

Civil Litigation

The student is introduced to civil litigation, the process whereby one person sues another in a court of law to enforce a right or to seek a remedy. The paralegal's role in gathering and organizing factual information will be discussed, with emphasis placed on the discovery process. Documents that paralegals would be expected to draft will be reviewed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150 and LAS160.* **Fall Only.**

LAS220

Family Law

This course examines the basic principles of family law and practice. It includes a study of antenuptial agreements, marriage, adoption, annulment, dissolution of marriage and legal separation, alimony, property settlement, child custody and support, and paternity actions. The students will review statutes and case law governing these proceedings as well as various legal documents used in family law matters, such as preparing typical pleadings, affidavits, and separation agreements. The practical aspects of the paralegal role in the field of family law will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150.* **Fall Only.**

LAS230

Estate and Trust Administration

The intent of the course is to provide the student with the general theory and procedures employed in the preparation and handling of wills, trusts, and estates. It will cover the responsibilities and duties in the field of estate administration that can be performed by a paralegal under the supervision of an attorney. Sample forms for the preparation of wills, the creation of trusts, and the administration of a decedent's estate, as well as tax forms, will be reviewed. Restricted to LA and BLA programs. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150.* **Fall Only.**

LAS240

The American Civil War: Law, Politics and Technology

This course will examine legal, political, and technological implications of the American Civil War era, including factors leading to the war and the Reconstruction period. Students will examine issues raised by secession, states rights, the suspension of habeas corpus, slavery and emancipation, the Dred Scott decision and later civil rights cases, and military rule of the occupied South during and after the war. Students will analyze the contributions of various minority group members and the interactions of these groups with the larger society. The course will also examine the impact of technology on the war and its aftermath, including advances in weaponry, battle tactics, medicine, photography, journalism, transportation, surveillance, and means of communication. The relevancy of the Civil War to modern society will be addressed. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity, Science, Technology and Society) **Spring Only.**

LAS250

Criminal Law and Procedures

This course will familiarize the student with the various facets of criminal law. Crimes against the person and property will be studied. Procedures necessary from arrest through trial, sentencing, and punishment will be examined. The paralegal's role in these procedures and in the preparation of documents will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150.* **Spring Only.**

LAS260

Bankruptcy

This course covers the Federal Bankruptcy Code and the laws regulating bankruptcy and creditors' rights. Students will examine the various types of petitions that can be filed by individuals and business entities. Procedures for the paralegal to follow in preparing and filing these petitions will be reviewed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150.* **Spring Only.**

LAS270

Administrative Law

Students will learn to assist attorneys in the public sector of law. Human relations, social security, unemployment, occupational safety, workman's compensation, minority and handicapped rights, and environmental protection are some of the topics that will be covered. The role of the paralegal in dealing with the client and the local, state, and/or federal agencies involved will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 and LAS150.* **Spring Only.**

LAS280

Legal Assistant Internship

The student will be placed for a semester in a paralegal position with a private law firm, government agency, court office, corporation, insurance company, bank, real estate company, community service agency, health care facility, or other appropriate office. Here he/she will learn the practical daily operation of such an office. Supervised by a licensed, practicing attorney, the student will be both an observer and a participant in the operation of the assigned office. The student receives no salary or remuneration for his/her services. Because this is a capstone course, it will normally be scheduled as one of the final courses in the degree program. 4 Credits (0 Lecture -20 Lab) *Prerequisite(s): LAS100 and LAS110 and LAS150 and LAS160 and LAS170 and LAS210 and LAS220 and LAS230.*

LAS290

Risk Management and Insurance

This course is designed to enable students, particularly those enrolled in the Nurse/Health Care Paralegal Program, to identify and analyze risk and to introduce techniques for managing risk, such as insurance products and alternative tools. Techniques such as loss control, risk retention and risk transfer are presented within the business and healthcare law contexts. The course emphasizes preventative measures (risk management) and remedial measures (insurance and its alternatives) essential to understanding risk and, ideally, minimizing social and economic costs result from loss. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

LAS300

Interviewing, Counseling, Negotiation and Alternative Dispute Resolution

This course is designed to familiarize the student with various facets of interviewing and attorney counseling. It will also focus upon negotiation strategies and tactics used by attorneys. The course will place an emphasis on various forms of Alternative Dispute Resolution (ADR), such as mediation, ADR's practical aspects, and the paralegal's role in ADR. The student will develop certain skills for interviewing witnesses and parties to litigation, and develop certain skills in mediation techniques. The course will review the paralegal's role in assisting attorney counseling and effective negotiation. Restricted to LA and BLA programs. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

LAS320

International Law

An introduction to the general principles and theories of the law of nations. Emphasis will be on nations as participants in the decision making process and how this process impacts upon private individuals. Students will study the processes of how the United States enters into international agreements and will explore the role and impact of international agreements in our domestic law and business practices. Student must have completed 60 credits or have permission of instructor to schedule this course. (Formerly LAS 470) 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **As needed.**

LAS360

Advanced Legal Writing and Analysis

This course will enable the skilled legal researcher to improve his/her methods of legal research and legal writing. The student will develop his/her capacity to research more intricate issues of law in a more accurate and precise method. The course will place an emphasis on the student's ability to prepare complex legal documents such as the appellate brief. Restricted to LA and BLA programs. 3 Credits (3 Lecture -0 Lab) (Writing Enriched) **Spring Only.**

LAS371

Legal Ethics

This course will explore the many ethical and malpractice pitfalls that paralegals and lawyers face in providing legal services. The course will involve discussion of the ABA and Pennsylvania guidelines and appellate court decisions involving substantive ethical issues. Emphasis will be on how to identify ethical issues and, once identified, on how to proceed. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

LAS400

Constitutional Law

A survey of the major provisions of the U.S. Constitution and the amendments that have been adopted. Through case studies, the student will analyze the role of the courts in interpreting the constitution. The student will explore the meaning of federalism, how the doctrine of separation of powers functions, the growth and development of the national powers of the federal government, and the role of the courts in serving as the guardian of the constitutional rights and liberties of the individual citizen. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

LAS410

Law Office Administration and Management

This course is designed to provide a general perspective of law office administration and management by identifying the responsibilities of various positions and roles in the typical law office setting. The course will assist the student to master various skills in administrative areas such as personnel organization, telecommunications, financial tasks and public contact. The course will place a special emphasis on docket control systems and client confidences. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

LAS430

Consumer Protection and Employee Benefits

This course explores federal and state statutes and regulations designed to protect the interests of consumers and employees, such as the Federal Trade Commission Act and regulations, the Consumer Credit Protection Act, the Fair Debt Collection Practices Act, OSHA, wage statutes and laws governing product warranties, false/misleading advertising, deceptive trade practices, employment discrimination, and deferred compensation. 3 Credits (3 Lecture -0 Lab) **As needed.**

LAS460

UCC and Intellectual Property Law

Uniform Commercial Code will introduce students to the framework and coverage of the Code, with particular emphasis on Articles 2 (Sale of Goods), 3 (Negotiable instruments), and 9 (Secured Transactions). Intellectual property introduces the basic legal principles applicable to federal trademark, copyright,

and patent protection, emphasizing the rights granted by each, procedures for procurement, and protection through litigation. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS100 or MGT231. Spring Only.*

LAS495

Senior Project: Legal Assistant Studies

This is the capstone course to be taken by all legal assistant students. The course will generally be taken during the final semester of study. This course will fulfill the senior project criteria. The student will apply the knowledge and competencies gained in previous coursework to an approved major professional endeavor of his or her choosing. By midterm of the semester prior to a student's enrolling in the course, the student will submit a detailed outline to a committee of legal assistant faculty for review and approval. Upon approval of the project, a legal assistant faculty member will be assigned to guide the student through the completion of the project. Successful completion of the project will consist of a written report with all necessary documentation and supporting materials and an oral presentation in a colloquium environment to peers, faculty and members of the College community. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): LAS300 and LAS360 and LAS370 and LAS400 or LAS410. Spring Only.*

BROADCAST/MASS COMMUNICATIONS (MCM)

MCM111

Introduction to Mass Communications

Basic survey that examines the many different mass media, including newspaper, magazine, radio, television, motion picture, book publishing, and the recording industries. Examines such areas as advertising in commercial media, photography and photojournalism, mass media, networks, syndicates, cable, satellite communications, legal issues in the working press, regulatory control of the mass media, the audience and the effects of mass communication. Includes a glossary of media terms. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MCM120

News Writing

Techniques of basic news writing for print and broadcast media. Emphasizes gathering and organizing information, rewriting and editing copy, and critiquing published as well as peer writing. Introduces on-line word processing and other forms of electronic networking to deliver copy. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. Spring Only.*

MCM121

Principles of Advertising

Survey of the history of American advertising and advertising in relation to the economy. Organization and management of advertising; its place in total marketing as well as retail and national advertising; sociological aspects; creative production. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM111 or ART230 or ART225. Spring Only.*

MCM122

Media and Law

Surveys mass media and its relationship to the law. Includes examination of libel, slander, right to privacy, privilege, and provisions of the First Amendment. Considers precedent-setting court rulings and case histories. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM111. Spring Only.*

MCM130

Audio in Media

Introduction to audio equipment in mass media. Emphasizes the entire audio chain as it applies to broadcast transmission and production. Includes demonstrations in the use and maintenance of audio equipment found in typical stations and studios. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MCM131

Announcing Techniques

Develops skills necessary for various jobs in the broadcast industry and its allied fields. Emphasizes voice training in phonation, articulation, and performance. Includes learning techniques related to creating personas and to using technical equipment specific to the various broadcasting formats and media. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MCM132

Radio Station Operation and Production

Working as part of the College radio station, students investigate various aspects of radio station operation and execute radio productions. Students

assume different radio station positions and recognize the interdependence of the positions for a successful station operation. Students work with audio equipment and regularly produce material for broadcast on the College station. Workshops allow for critique and discussion of students' work. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MCM130 and MCM131. Spring Only.*

MCM135

Introduction to Video

Theory and practice of video production with emphasis on understanding the visual media and their functions as means of communication. Emphasizes basic production elements, camera operation, lighting, audio and video recording, electronic editing, special effects, and electronic graphic generation 3 Credits (2 Lecture -3 Lab) *Corequisite(s): PHO101. Fall Only.*

MCM152

Introduction to Cinema

Studies film as mass media. Includes the international development of cinema as well as the historical significance of various films. Stresses an understanding of the social, cultural, political and aesthetic values communicated by film. Introduces basic elements of movie making and discusses film criticism. 3 Credits (3 Lecture -0 Lab) (ART) **Spring Only.**

MCM220

Broadcast Journalism

Practical experience in news gathering, news writing, reporting and interviewing for the broadcast media. Focuses on covering local stories from the small-station perspective, rewriting national news copy, and conducting interviews. Students regularly write and produce newscasts and public affairs programs for the College's radio station, WPTC-FM. Students also examine ethical and legal issues related to broadcast journalism. Frequent workshops allow for critique and discussion of students' work. Continued work with on-line word processing and other forms of electronic networking. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM120. Spring Only.*

MCM225

Reporting Public Affairs

Develops refined writing skills through class assignments and news beat coverage. Emphasizes meeting deadlines and creating tight, thorough writing. Focuses on reporting public events through practicum and field experience. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM120. As needed.*

MCM232

Radio Programming and Management

Radio programming and successful management of radio stations. Discusses sources of programming, programming development and implementation and current trends in programming. Exposes students to various aspects of effective radio management. Develops individual skills in radio management as students work as executive staff members of the College's radio station. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MCM132. Corequisite(s): MGT115. Fall Only.*

MCM243

Public Relations

Surveys the practice of Public Relations as a management function that enhances communication between an organization and its publics. Includes specialized writing and techniques used in a range of print and electronic media for disseminating information to particular publics, including in-house groups. Includes critiques of news releases, house organs, and other public relations vehicles. Students apply principles and techniques in simulated and actual projects. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM111 or ENL111. Spring Only.*

MCM244

Advanced Media Writing

Covers refined techniques for specialized and specific writing for a range of mass media, such as in-depth reports, scripts, corporate and annual reports, analytical reports and instructional presentations. Emphasizes writing with practical end result—a printed booklet or a videotape, for example. Included is a unit on information retrieval systems. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM120. Fall Only.*

MCM250

Internship

Practical work experience in mass communications through placement in an advertising, public relations, radio or newspaper firm, or in other related organizations. Permission of program faculty required. 3 Credits (3 Lecture -0 Lab)

MCM253

Feature Writing

Surveys news features including bites, color stories, sidebars, and personality sketches. Introduces related writing for pamphlets, brochures, in-depth reports, and magazine fillers. Includes techniques of interviewing, researching and of writing with the goal of publication for pay. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MCM120. As needed.*

MASONRY (MCT)

MCT115

Concrete Block Construction

This course identifies terms and definitions related to concrete block masonry. Methods and applications of block construction, appropriate mortar mixes, and overall uses for light construction practices are stressed. 5 Credits (2 Lecture -9 Lab) *Corequisite(s): BCT100 or BCT102 and BCT103. Fall Only.*

MCT129

Brick Masonry

This course stresses masonry construction where brick is the primary building product. Techniques and procedures of brick construction including, types of brick, bonds, reinforcing, clean-up will be included in this course. 5 Credits (2 Lecture -9 Lab) *Corequisite(s): BCT100. Spring Only.*

MCT230

Advanced Masonry Principles

This course is a continuation of Masonry Principles, the introductory course in masonry construction. It focuses on advanced methods and applications of concrete block and brick construction. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): BCT234.*

MCT233

Stone Masonry

This course gives to the student a working knowledge of stone construction as related to the masonry industry. Types of stone, application, reinforcing and joint finishes will be discussed and practiced. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): MCT115 and MCT129. Fall Only.*

MCT239

Fireplace Construction

This course stresses the fundamentals of fireplace construction. Types and kinds of fireplaces will be discussed. Included are the technologies of fire box ratio, steel inserts, chimney construction and various finishes which make up a completed project. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): MCT115 and MCT129. Corequisite(s): MCT233. Fall Only.*

MCT262

Structural Masonry Systems

This course deals with the topic of masonry construction for structural purposes in building construction. Applications include composite masonry, cavity walls, and various commercial applications, and the overall factors which influence the use of masonry products for structural purposes. 5 Credits (2 Lecture -9 Lab) *Prerequisite(s): MCT115 and MCT129. Spring Only.*

ENGINEERING TECHNOLOGY (MET)

MET311

Computer Solutions of Engineering Problems

Analyze and structure engineering problems to use computational hardware and software to derive solutions. High level languages, applied artificial intelligence software, and specific engineering applications software will be used to solve problems. A special emphasis will be to develop competency in choosing effective computational resources and computing strategies for engineering technology problems. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CSC108 or CSC110. Fall Only.*

MET315

Engineering Economics

Economic justification of engineering projects, replacement analysis of existing projects or capital assets, and economic comparison of alternative projects. Based on the Cash Flow Approach. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): ECO111 and MTH180 or ECO111 and MTH240. Spring Only.*

MET318**Manufacturing Process and Organization**

After participating in the design of a new product, the manufacturing technologist applies technical knowledge and techniques to develop processes that effectively produce the product or service. The focus will be on modern production and assembly techniques to decide appropriate production methods. Emphasis will be on organizing the integrating manufacturing technologies; such as robotics, CAD/CAM, N/C Tools, Group Technology, Manufacturing Resources Planning (MRP), Quality and other automated methods into a viable manufacturing process. The communication and impact of the new process on other functions in a manufacturing organization will be examined. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MET321**Engineering Ethics and Legal Issues**

Engineering ethics, licensure, legal and ethical issues, moral and ethical debates, and role of engineer. Identify the tensions between the need for profit, engineering and technical constraints, and long-term impacts. Explore the nature and limits of product and professional liability. Explore the impact of multicultural variables and diversity on institutions. Interpret the role of government agencies and regulations. Define degrees, licensure, profession accreditation, and accrediting bodies. 3 Credits (3 Lecture -0 Lab) (Science, Technology and Society, Writing Enriched) **Spring Only.**

MET340**Mining Technology and Society**

This course presents an historical perspective of society's discovery, extraction and use of mineral commodities and the technological developments that have aided in their extraction and use. The relationship between the development of a modern technological society, the impact of mining activities on the environment in the past and present, and the future of mining activities in the world will be discussed. Both metallic and nonmetallic minerals will be discussed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* (Science, Technology and Society)

MET425**Advanced Manufacturing Systems**

The technologies used in producing goods and services are continually evolving and improving. The manufacturing technologist has to understand how to evaluate advanced manufacturing systems and then how to apply those that can improve his/her production processes. The focus will be on modern production and assembly systems and how to select the one most appropriate. Emphasis will be on: manufacturing planning, control, quality, expert, and maintenance systems; simulation, modeling production processes; cell design including control of industrial automation; system integration, data collection and distribution, bar codes, LANs, MAP/TOP. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): MET318.* **Fall Only.**

MET495**Senior Seminar-Lecture**

Theory and practice of defining, planning, and cost estimating engineering problems. Emphasis will be placed on solving problems using the tools, techniques, and practices common to industry and the engineering profession. Special emphasis will be on working with engineers, achieving tasks, testing applications, and completing projects such as feasibility studies, engineering design, or simulations. Each student will complete an approved project for the senior seminar lab. 1 Credit (1 Lecture -0 Lab) (Writing Enriched) **Fall Only.**

MET496**Senior Seminar - Lab**

Student will be responsible for working under a faculty mentor to develop and deliver the finished project as outlined during the lecture, planning portion of the senior seminar experience (MET 495). Successful completion of the project will require a finished project including executive summary, an evaluation process, and a verbal presentation. 3 Credits (0 Lecture -9 Lab) *Prerequisite(s): MET495.* **Spring Only.**

MANAGEMENT (MGT)**MGT110****Principles of Business**

An introduction to the elements of characteristics of the business enterprise as practiced within a capitalistic economic system. Emphasis is given to the various functional areas of business including finance, management, human resources, marketing, and information systems as well as the changes in the business environment resulting from globalization and changes in technology affecting the interrelationship of the internal and external environments of

business. Evolving contemporary issues such as ethics, women in business, cultural diversity, minority-owned businesses, managing change in the organization, the growing role of small business and entrepreneurship are also addressed relative to their impact on American business today. 3 Credits (3 Lecture -0 Lab)

MGT115**Principles of Management**

This course introduces students to the topic of management, which is defined as the creative problem solving process of setting and achieving goals, through the use and coordination of human, technical, and financial resources, within the context of environments. The four functions of management - planning, organizing, leading, and controlling - provide a framework for the course and are examined in considerable detail. Special attention is given to the contemporary management issues such as Total Quality Management (TQM); its emphasis on quality and the customer; Diversity and its recognition of the changing face of the American work force; Ethics and Social Responsibility and their increasingly important role for business; and the growing significance of International Business. 3 Credits (3 Lecture -0 Lab)

MGT210**Electronic Commerce for Business**

Electronic commerce is one of the most common business terms in use as we embark on the 21st century. This course defines e-commerce as: The use of electronic transmission mediums (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location. Electronic business also includes the exchange of information not directly related to the actual buying and selling of goods. Increasingly, businesses are using electronic mechanisms to distribute information and provide customer support. These activities are not "commerce" activities: they are business activities. Thus this course will cover the broader perspective of business commerce done via electronic measures. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and ENL111.*

MGT216**International Business**

This course is about how firms become and remain international in scope. It introduces students to the salient elements involved in international business and deals with the experiences of firms of all sizes, from many countries, as they come to grips with an increasingly competitive global environment. It is concerned with the practice of management when a home market perspective will no longer enough. In this course, economics, social and political factors will be explored to demonstrate how managers use these factors to bridge both the internationalization process and multinational management. (Formerly MGT116) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ACC112 and ECO111 and MKT240 or ACC113 and ECO111 and MKT240.*

MGT230**Business Communications**

This course provides a comprehensive program to help the student develop the proficiency in writing, listening, speaking and reading that will be needed for career success. Along with receiving an extensive grammar review, the student will be trained to write many types of communications that are part of today's business environment. In addition, the student should acquire techniques of personal and interpersonal relationships that will enable him or her to perform well and to advance in a career in business, industry, or government. 3 Credits (3 Lecture -0 Lab)

MGT231**Business Law I**

This course serves as an introduction to the judicial process, the social and ethical implications of law, and the rules of those who formulate and interpret the law. It provides an examination of the steps involved in a civil lawsuit and alternative ways available to settle disputes. An overview of tort law is included, and an in-depth study of the function, nature and elements of contract law is provided. 3 Credits (3 Lecture -0 Lab)

MGT241**Business Law II**

This course continues the examination of contract law with a study of selected sections of the Uniform Commercial Code. Provided in detail are the concepts dealing with the requirements of sales contracts and how they are formed; sales warranties and product liability; rights and liabilities of parties to commercial paper; and the forming of, transfer of, and discharge of negotiable instruments. The treatment of personal property as distinctive from real property and the temporary transfer of personal property to another are additional subject areas to be examined. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT231.*

MGT248**Supervision and Human Relations**

This course introduces students to the role of a first-line supervisor; to the only level of management whose subordinates are nonmanagement employees or workers. The first-line supervisor is the person in the middle, caught between employees, and the higher-level managers in an organization. This position requires dealing with attitudes, values, priorities, and demands from various groups. The supervisor must work to maintain a balance between two levels, providing job satisfaction while also maintaining the production goals of the organization. Success in this position is key to any organizational success or failure in the marketplace. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 or MGT115.*

MGT249**Small Business Management**

Students enrolled in this course are provided an overview of small business operations with emphasis on current issues and trends. The dynamic role of small business in the United States economy is examined along with a definitive explanation of small business. Opportunities for the would-be entrepreneur are explored by developing the ability to assess the business potential for various types of business operations. Legal forms of ownership, financing procedures, marketing techniques, location selection, human resource management, purchasing, budgeting, taxation, risk management, and planning are all carefully examined in this course. (Formerly MGT 247) 3 Credits (3 Lecture -0 Lab)

MGT250**Managerial Co-Op**

By means of a professional co-op program, each student is given the opportunity to experience management situations. The student is assigned work equivalent to the number of credits assigned to the co-op. Every effort is made to place students in management situations relevant to their major area of study and interests. The students may or may not receive a salary or remuneration for their services (negotiable with the employer/organization). For a three-credit course, students are required to work 240 hours during the semester in their assigned positions, and to complete a narrative report and maintain a log. Since this is a culmination of their education, it does not occur before a student's second year. It may occur in either semester; this decision is made by mutual agreement and consent of the student, the advisor, and the professor supervising the internship program. Student must successfully complete two semesters of coursework before enrolling. 3 Credits (0 Lecture -15 Lab) **As needed.**

MGT315**Business Ethics**

This course is an introduction to ethical decision making in business. It examines moral principles and standards that are available to guide behavior in the world of business. It helps students develop a better understanding of their own value systems and those espoused by others. It investigates and develops both normative and descriptive ethical decision making frameworks. It analyzes ethical issues that business managers face in formulating policies about employees, customers, products, society, technology, and the environment. It describes how organizations can influence the ethical behavior of their members. This course also examines the interaction between science, technology, and society; and analyzes the impact of technology on the employment experiences of members of society, on industry and the economy, and on international business. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 and MGT231 and MKT240 or MGT115 and MGT231 and MKT240 or MGT110 and MGT360 and MKT240 or MGT115 and MGT360 and MKT240.* (Science, Technology and Society)

MGT320**Purchasing Management**

This course provides the student with an understanding of the principles of purchasing, materials, and supply management. Emphasis is placed on the importance of these principles in the development of quality products and services and to profitable relations with suppliers, employees, and customers. Areas of study include quality, price, supplier selection, outsourcing, purchasing services, information flows, legal aspects, purchasing procedures and strategies, and international purchasing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT115 and MGT116 and MGT231 or MGT115 and MGT116 and MGT360 or MGT115 and MGT216 and MGT231 or MGT115 and MGT216 and MGT360.* **As needed.**

MGT325**Leadership**

This course introduces students to the topic of leadership, which we define as the process of influencing others to achieve organizational goals. Leadership is the ability to inspire confidence in and support among the people who are needed to achieve what the organization wants to achieve. Topics to be covered include the history of leadership research; current approaches/theories to the study of leadership to include charismatic, transformational, leadership styles, contingency, and situational; the roles of power and influence, and teamwork; an understanding of motivation, coaching, problem solving, creativity, communications, and conflict resolution skills; and the role of strategic leadership, leadership development, and the international and culturally diverse aspects of leadership. Students will complete a variety of experiential and feedback exercises to gain a better understanding of their leadership skills and any areas of needed improvement. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT115.* **Spring Only.**

MGT330**Managerial Decision Making**

This course is designed to prepare students to be active and effective participants in the critical managerial task of decision-making. To plan, organize, direct and control, managers must make decisions. Those decisions will be based upon the quality, timeliness, accuracy, thoroughness, means and mode of presentation, and the impact of information and data. Students will learn to use the classic managerial decision-making model, and develop a sense of human factors which impact decision making. They will research, develop, present and defend a managerial decision-making tool through a written and oral presentation as they seek to influence the managerial decision-making process. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 or MGT115.*

MGT340**Human Resource Management**

This course introduces students to the study of Human Resource Management (HRM), those activities related to the performance of people at work. Emphasis will be placed on those HRM responsibilities that managers must consider: strategic planning and analysis, equal employment opportunity and compliance, recruiting and selecting, development and training, performance appraisal, compensation and employee benefits, health and safety and employee labor/management relations. Evolving contemporary issues such as management of diversity in a multicultural environment, changes in the demographic and geographic composition of the workforce, individual-centered career planning, and the changing nature of organization-individual relationship are also addressed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 or MGT115 or HSR240.*

MGT344**Employment Law and Business**

This course explores federal and state statutes and regulations that impact the employer/employee relationship. Students will understand, analyze and apply employment related laws, including those relating to civil rights, occupational safety and health, disabilities, and conditions of employment. Students will learn about the importance and impact of employment legislation on organizations, how to comply with employment laws to avoid unnecessary litigation, and the importance of employment laws in helping to maintain a productive and satisfied workforce. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 or MGT115 or LAS110.*

MGT351**Principles of Production and Inventory Management**

An introduction to Production and Inventory Management, principles, techniques, and systems. Focus on statistical methods for forecasting, quality and process control, economic models for the interplay of marketing, manufacturing and suppliers in supply chain management and management science models for understanding the effectiveness of total quality management and business process reengineering. (Formerly MGT350) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 and MTH160 or MGT115 and MTH160.* **As needed.**

MGT355**Quantitative Methods for Business**

This course is designed to provide students with a sound conceptual understanding of the role that quantitative methods play in the decision making process. The course will emphasize the many quantitative methods that have been deployed over the years, explain how they work, and show how they can be applied and interpreted by the decision maker. The course is applications-oriented and keeps the needs of the non-mathematician in mind. Computer simulations and projects along with traditional learning processes will be used. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT115 and MTH160 and MTH180.*

MGT360**The Legal Environment of Business**

This course is designed to provide a thorough introduction to the nature and functions of our legal system and its importance to manager-citizens. It will examine the nature of law and the United States legal system and will include such topics as ethics and social responsibility, the court system, litigation and administrative agencies. The regulation of private business conduct will be studied as it is applied in contracts, torts, product liability and business crimes. The law and employment will be examined in the areas of labor relations, labor standards, employment discrimination and environmental law. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT110 or MGT115.*

MGT370**Managerial Economics**

An analysis of the interaction between organizational operations and economics. Along with evaluating traditional economics topics, this course incorporates economics into the common areas of management such as motivation, organization, decision making, resource allocation, and business strategy. Stresses the dual role of management and economics in the areas of quality, technology, global competition, efficiency and the flexibility of organizations. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ECO112.*

MGT410**Management of Organizational Behavior**

This course is designed to develop personal and managerial skills in order to improve the effectiveness of management of organizational behavior. A major emphasis is to increase student knowledge and understanding of self and others in order to facilitate productive interaction within a work environment. The course will also emphasize culturally enhanced issues particularly as they relate to management of workforce diversity. Also emphasized is developing an understanding of motivational theories and leadership models. The learning process focuses on group interaction via experiential exercises, group activities and application of self-assessment tools. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT115 and MGT330 or MGT115 and MGT370. (Cultural Diversity, Writing Enriched)*

MGT447**Entrepreneurship**

This course provides students a detailed and in depth analysis of Entrepreneurship, including the assessment of opportunities and the development of a complex business plan. It is designed as the integrative course for the Small Business and Entrepreneurship Concentration. It will bring together the various skills the student has developed in marketing, finance, management, planning, law, and evaluation. A realistic business plan will be developed that will have the structure and components necessary to apply for funding from financial institutions; whether for a new business establishment, the expansion of existing operations, or the purchase of an existing business or franchise. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT247 and MKT320 or MGT249 and MKT320. Spring Only.*

MGT497**Business Policy and Strategy**

This course is designed as the capstone course taken by all Business Administration and Technology Management students during their final year of study. Emphasizes the ability to create, implement, and evaluate strategies into various organizations. Entails evaluating past and current organizational strategies in order to understand the impact effective strategic planning has on such entities. Created as a comprehensive analysis of all areas of business activity which must be joined together to create efficient operations. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT410.*

MANAGEMENT INFORMATION SYSTEMS (MIS)**MIS110****Introduction to Management Information Systems**

This course is an introduction to the elements of information processing accomplished by businesses in the global business arena. It will examine the foundations for the information age, the role of information technology and management information systems, and the use of technology to gain a strategic and competitive business advantage. The student will be introduced to the concepts of data versus information, ethical concerns, transaction processing systems, artificial intelligence, interorganizational systems, total quality management, information partnerships, virtual organizations, learning organizations, and business process reengineering. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110. Spring Only.*

MIS150**Business Programming I**

This course provides an understanding of algorithm development, programming, computer concepts and the design and application of data and file structures in the business environment. It includes an understanding of the logical and physical structures of both programs and data. Formal problem solving strategies will be presented. Capabilities of several programming languages will be presented but only one will be emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and ENL111. Fall Only.*

MIS210**Computer Systems Management**

This course is designed for students seeking entry-level MIS administration positions. This course will concentrate on the day-to-day administrative operations of a MIS facility and how to manage a mid-range operations center. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and ENL111 and MIS110. As needed.*

MIS230**Management of Telecommunications**

An overview of the telecommunications industry and an introduction to the regulation of the industry are provided. The basics of telephony and networks are introduced. Telecommunications management, economic issues, and ethical issues will be studied. Current features of telephone systems and networks will be introduced. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and MIS110. Fall Only.*

MIS235**Local Area Network Concepts**

This course is designed to present the theory behind various network operating systems and architectures. It provides a survey of the major LANs currently on the market, their compatibility and interoperability. Network electronic mail and messaging and the theory behind the mail standards will be considered. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and MIS110. As needed.*

MIS250**Business Programming II**

This is a second of two courses covering the development of application software in the business environment. This course stresses the selection of appropriate language for the development process, as well as the planning and development of application business solutions. A comparative analysis of current languages, and a methodology for the Systems Development Life Cycle (SDLC) is presented. Sample business applications are developed in the appropriate language. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MIS110 and MIS150. Spring Only.*

MIS303**Analysis and Logical Design**

This course provides an understanding of the system development and modification process. It enables students to evaluate and choose a system development methodology. It emphasizes the factors for effective communication and integration with users and user systems. It encourages interpersonal skill development with clients, users, team members and others associated with development, operation and maintenance of the system. Object-oriented analysis and design will be introduced and data modeling will also be included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL121 and MIS250 or ENL201 and MIS250. Spring Only.*

MIS310**Business Transaction Systems**

This course will discuss the Business Transaction System (BTS) applications, and the role they play in business solutions. Various current BTS systems will be presented, and the concepts and facilities of each system will be examined. The course will also stress data integrity and security issues as well as data conversion and transmission in such systems. Working BTS applications will be demonstrated. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC221 and MGT210 and MIS250. Fall Only.*

MIS320**Physical Design and Implementation with DBMS**

This course covers information systems design and implementation within a database management system environment. Students will demonstrate their mastery of the design process acquired in earlier courses by designing and constructing a physical system using database software to implement the logical design. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT210 and MIS303. As needed.*

MIS325

Systems Programming in Control Language

This course is designed to introduce system command language programming as a means to introduce basic system computer programming concepts. This course will allow students to develop basic computer management skills, such as disk and memory management, file handling, system security, and customizing of the user interface, and web interfacing using a selected application called RDML. Programs will be implemented in a selected operating system's command language. 3 Credits (3 Lecture -0 Lab)
Prerequisite(s): MIS110 and MIS150. As needed.

MARKETING (MKT)

MKT240

Principles of Marketing

This course provides an introduction and overview to marketing and the marketing environment. Emphasis is placed on the marketing environment, global marketing, marketing mix, and the interrelationship of the marketing mix and the marketing environment. The course analyzes distribution channels and the internet. Interlaced as part of the materials is international marketing as well as marketing for non-profit entities. Central to the course is the notion of marketing management and its tenets as interrelated with the core concepts. 3 Credits (3 Lecture -0 Lab)

MKT243

Sales

This course includes a study of the principles of selling and its role in the marketing process. Emphasis is placed on the development of the skills needed to succeed as a field (outside) sales representative. The steps in the selling process before, during, and after a sales call are analyzed in detail. Central to the course is the video-taping of completed sales presentations. Careers in sales, characteristics of a successful salesperson, prospecting, qualifying, buyer behavior and the communication process are also discussed. 3 Credits (3 Lecture -0 Lab)

MKT248

Retail Management

An in-depth analysis of the skills and knowledge needed to operate an independent or corporate-based retail establishment. While many functions are discussed, consideration is given to all areas of operations. Topics include marketing, pricing, buying, selling, purchase, inventory control, store design, space utilization, and location. Additional insight is given to the e-commerce component of retail business. (Formerly MKT 247) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MKT240. Spring Only.*

MKT253

Advertising

This course is designed to provide information needed for developing, evaluating, and managing a complete advertising program. Emphasis is placed on analyzing media strategies, building comprehensive plans, evaluating the effectiveness of agencies, considering various sources (including internet-based), and understanding the legal and ethical parameters of the advertising system. While designed to take a detailed look at specific components of advertising, consideration is given to all levels of the advertising process. (Formerly MKT 251) 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MKT260

Customer Relations

This course is designed to develop long-term customer relationships through the application of appropriate customer service principles. The specifics of managing a profitable customer service department will be explored from organizing workspace and service functions to training personnel and monitoring their performance. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MKT240. Fall Only.*

MKT310

International Marketing

This course prepares students for information needed to work in the international arena by providing tools of analysis to aid them in thinking beyond domestic economies. Strategic and environmental approaches are utilized by outlining the major dimensions of the economic, social, geopolitical, legal, ethical and financial environments. The course provides a set of conceptual and analytical tools that will prepare students and practitioners to successfully apply the marketing mix elements to international and global marketing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ECO111 and MGT216 and MKT240.*

MKT320

Marketing Research

This course analyzes methods that can be used to help satisfy marketing and business issues, such as planning, strategy, problem-solving, pricing, or control. Students will be exposed to various marketing research techniques that are generally accepted in the industry today. Emphasis will be placed on understanding what issues can be addressed by marketing research, how to perform marketing research, and how to interpret and utilize the outcomes obtained through market research. In general, marketing research delineates the information required to address an issue, designs the method of collecting information, manages and implements the data gathering process, analyzes and interprets the results, and communicates the findings and their implementation. Each student shall complete several small projects, as well as one project that utilizes a PC based statistical package (the statistical package can be taken with the student after he/she completes the course). 3 Credits (3 Lecture -0 Lab)
Prerequisite(s): MKT240 and MTH160 or MKT240 and MTH158.

MILITARY SCIENCE-ROTC (MLS)

MLS101

Introduction to ROTC

Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team study and activities in basic drill, physical fitness, rappelling, leadership reaction course, first aid, making presentations and basic marksmanship. Learn fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. One hour and a required leadership lab, plus optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged. **As needed.**

MLS102

Introduction to Leadership

Learn/apply principles of effective leading. Reinforce self-confidence through participation in physically and mentally challenging exercises with upper division ROTC students. Develop communication skills to improve individual performance and group interaction. Relate organizational ethical values to the effectiveness of a leader. One hour and a required leadership lab, plus optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged. **As needed.**

MLS201

Self/Team Development

Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, advanced first aid, land navigation and basic military tactics. Learn fundamentals of ROTC's Leadership Assessment Program. Two hours and a required leadership lab plus required participation in two one-hour sessions for physical fitness. Participation in a weekend exercise is optional, but highly encouraged. **As needed.**

MLS202

Individual/Team Military Tactics

Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security and methods of pre-execution checks. Practical exercises with upper division ROTC students. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab, plus required participation in two one-hour sessions for physical fitness. Participation in a weekend exercise is optional, but highly encouraged. **As needed.**

MLS301

Leading Small Organizations I

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small unit defensive tactics and opportunities to plan and conduct training for lower division students both to develop such skills and as vehicles for practicing leading. Three hours and a required leadership lab plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required and one or two more weekend exercises may be offered for optional participation.

MLS302**Leading Small Organizations II**

Continues methodology of MLS301. Analyze tasks; prepare written or oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership case studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is required; two other weekend exercises optional. **As needed.**

MLS401**Leadership Challenges and Goal Setting**

Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals, put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs in this effort. Three hours and a required leadership lab plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required and one or two more weekend exercises may be offered for optional participation. **As needed.**

MLS402**Transition to Lieutenant**

Continues the methodology of MLS 401. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as relate to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Three hours and a required leadership lab plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required and one or two more weekend exercises may be offered for optional participation. **As needed.**

METALLURGY (MSC)**MSC106****Introduction to Metallurgy**

This course is an introduction to science of physical metallurgy. Topics covered include a number in process metallurgy (geological location and presentation of ores, recovery, smelting, and refining, including chemical reactions), and physical metallurgy (metal properties, atomic and crystal structure, phase and isothermal transformation, testing material selection, and manufacturing processes). The course instructs in "why" metals exhibit their specific physical properties by employing the core methods of science: observation and measurement, conceptual models, problem solving, and critical evaluation of results of experiments. Particular emphasis is placed on the application of these scientific principles to modern manufacturing, selection of metals and service characteristics. 4 Credits (3 Lecture -3 Lab)

MATHEMATICS (MTH)**MTH004****Pre-Algebra**

This course is designed to provide the student with the requisite mathematical foundation skills in preparation for Career Math or Elementary Algebra. Utilizing a graphing calculator, students complete an extensive review of fundamental arithmetic concepts and skills, with a focus on problem solving and an introduction to algebraic representation. Topics include arithmetic operations with whole numbers, fractions, decimals, percents, ratios and proportions, and the English System of measurement. Also included are topics from basic geometry and an introduction to linear algebraic equations as well as formulas and other selected topics.

The general format includes whole-class instruction (lecturing, questioning, and discussion), collaborative group work and individual activities. Students use a graphing calculator to enhance their thinking and understanding, to solve problems, and to judge the reasonableness of their results. Credits earned in this course may not be used to satisfy any course requirement or be used as electives required in a given program. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): Placement by Examination.*

MTH005**Elementary Algebra I**

Designed for students with little or no background in algebra, this course prepares students for entry into Elementary Algebra II and into introductory college-level mathematics courses below college algebra and trigonometry. The topics of MTH005 include real numbers, variable expressions, linear

equations in one and two variables, inequalities, exponents and scientific notation, polynomial operations, and application problems. Math study skills will be taught, emphasized, and reinforced throughout the course. The instructional approach will be a combination of lectures and labs and will involve active student participation in learning about, discovering, and communicating mathematical concepts. The general format will center on direct whole-class instruction. Other delivery strategies will include appropriate, collaborative group activities and individual practice to promote understanding. Multiple approaches and representations are used: verbal, numerical, graphical and symbolic, with sufficient opportunities for students to revisit and extend concepts and applications. Students will use technology to enhance their thinking and understanding, to solve problems and to judge the reasonableness of their results. Credits earned in this course may not be used to satisfy any course requirement or be used as electives required in a given program. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH001 or MTH004 or MTH009 or Placement by Examination.*

MTH006**Elementary Algebra II**

Designed for students with a limited background in algebra, this course prepares students for success in College Algebra and Trigonometry I. The topics in MTH006 will include systems of linear equations, polynomial division and special products, factoring, rational expressions, radical expressions, quadratic equations, functions, and application problems. Math study skills will be emphasized and reinforced throughout the course. The instructional approach will be a combination of lectures and labs and will involve active student participation in learning about, discovering, and communicating mathematical concepts. The general format will center on direct whole-class instruction. Other delivery strategies will include appropriate, collaborative group activities and individual practice to promote understanding. Multiple approaches and representations will be used: verbal, numerical, graphical and symbolic, with sufficient opportunities for students to revisit and extend concepts and applications. Students will use technology to enhance their thinking and understanding, to solve problems, and to judge the reasonableness of their results. Credits earned in this course may not be used to satisfy any course requirement or be used as electives required in a given program. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH005 or MTH009A or Placement by Examination.*

MTH011**Career Mathematics**

This course, a survey of practical mathematics, is designed for students enrolled in certificate programs in technical areas that need mathematics at the pre-algebra level and only minimal skills in basic algebra. This course prepares students to use their math skills to compare and analyze mathematical applications. Topics include a basic math review; use of technology; systems of measurement; solutions of simple algebraic equations including ratio and proportion; algebraic graphs; practical plane geometry; solid geometry; right angle geometry; interpretation of data including formulas, graphs and tables; descriptive statistics; personal financial calculations; and vectors. Weekly laboratory experiences enhance classroom lecture to provide a more thorough understanding of concepts and topics through readings, group activities, discussions, demonstrations, projects, activities involving technology, hands-on construction, and models. 3 Credits (2.50 Lecture -1.50 Lab) *Prerequisite(s): MTH009 or MTH004 or MTH001 or Placement by Examination.*

MTH113**Business Mathematics**

This course is designed for programs where knowledge of business concepts is appropriate. Topics to be covered include linear and quadratic functions, systems of linear equations and inequalities, proportions, graphing, metric system, cash and trade discounts, markup and markdown, payroll, interest, descriptive statistics, interpretation of data presented in graphs and tables, depreciation, breakeven analysis, valuation of inventory and business applications of all the above topics. Students will use technology to enhance their thinking and understanding, to solve problems, and to judge the reasonableness of their results. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH009A or MTH002 or MTH005 or Placement by Examination.*

MTH124**Technical Algebra and Trigonometry I**

The first of a two-course sequence designed for students in technical programs, this course prepares students for course work in their major by giving them a background in intermediate algebra and trigonometry. Topics include problem solving, algebraic expressions, linear equations, systems of equations, right triangle trigonometry, functions, graphs, geometry, ratio and proportion, and variation. There is a strong emphasis on problem solving and applications

relating to technical fields as well as on the use of technology to solve those problems. This course and MTH125, Technical Algebra and Trigonometry II, are not designed to prepare students for calculus. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH009A or MTH005 or MTH002 or Placement by Examination.*

MTH125

Technical Algebra and Trigonometry II

The second of a two-course sequence designed for students in technical programs, this course prepares students for course work in their major by giving them a background in algebra and trigonometry. Topics include factoring, algebraic fractions and equations, quadratic equations, trigonometric functions and graphs, radicals, complex numbers, exponential and logarithmic functions and graphs, nonlinear systems, and inequalities. There is a strong emphasis on problem solving and applications relating to technical fields as well as on the use of technology to solve those problems. This course and MTH124, Technical Algebra and Trigonometry I, are not designed to prepare students for calculus. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH124.*

MTH151

Structures of Mathematics

This course is intended as a general education course for non-mathematics and non-science majors. Topics will include set theory, logic, introduction to the real number system (whole numbers, integers, rational numbers, decimals and real numbers), elementary algebra (solutions of first and second degree equations, graphs of relations and functions) and problem solving. The emphasis is on the interconnections of mathematical concepts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH005 or MTH009A or Placement by Examination.*

MTH153

Topics in Mathematics

This course is intended as a general education course for non-mathematics and non-science majors. Topics will include geometry (points, lines, polygons, area, volume, and surface area), matrices, probability (sample spaces, counting techniques, conditional probability, odds), and statistics (measures of central tendency and dispersion, normal distribution, scatter plots). The emphasis is on the interconnections of mathematical concepts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH005 or MTH009A or MTH150 or Placement by Examination.*

MTH158

Elementary Statistics I

An introduction to frequently applied statistical methods: descriptive statistics, frequency distributions, elementary probability, binomial and normal distributions. Central Limit Theorem, statistical inference, estimation, tests of hypotheses, and correlation. (NOTE: Students will not receive credit for both MTH 158 and MTH 160.) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH002 or MTH120 or MTH150 or MTH009A or MTH005 or Placement by Examination.*

MTH160

Elementary Statistics with Computer Applications

This course is designed to introduce frequently applied statistical methods. Topics include descriptive statistics, frequency distributions, elementary probability, binomial and normal distributions, Central Limit Theorem, statistical inference, estimation, tests of hypotheses, Chi-square, analysis of variance, regression and correlation, and nonparametric statistics. Computer applications include the creative use of plots, application of standard methods to real data, in-depth exploration of data, simulation as a learning tool, screening data for errors, manipulating data, transformations, and regression models. (Note: Students will not receive credit for both MTH 158 and MTH 160.) 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CSC110 and MTH005 or CSC110 and MTH120 or CSC110 and MTH002 or CSC110 and MTH150 or CSC110 and Placement by Examination.*

MTH164

Elementary Statistics II

Continuation of MTH 158. Emphasizes applied statistical techniques and design of experiment; Student T, Chi-square, F-tests, linear regression, correlation, and models; analysis on enumerative data; analysis of variance; non-parametric statistics. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH160 or MTH158. As needed.*

MTH170

Matrix Algebra

Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence, vector spaces, linear transformations, characteristic equations of matrix, bilinear, quadratic, and Hermitian forms. Recommended for computer science, science, and technology students. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH180 or MTH190. As needed.*

MTH172

Introduction to Geometry

This course is a survey of classical and modern geometry. No prior exposure to geometry is assumed. Emphasis is placed on conceptual development (thinking, comparing, analyzing, and understanding) and applications requiring knowledge of elementary algebra. Weekly laboratory experiences enhance classroom lecture to provide a more complete and better understanding of geometric concepts and topics through readings, discussions, demonstrations, projects, calculator/computer generations, hands-on construction, and models. Classical geometry topics include systems of measurement, planar and spatial figures, right triangles, area and volume, congruent/similar figures, geometric constructions, pattern recognition, symmetry, coordinate geometric and conic sections, and the geometry of growth. Topics from modern geometry will be selected from chaos and fractals, Euclidean and non-Euclidean geometry, projective geometry, map making, topology and graph theory. Recommended for technology and General Studies students interested in a basic geometry course. Required for students in the Graphic Design baccalaureate program. 3 Credits (2.50 Lecture -1.50 Lab) *Prerequisite(s): MTH150 or MTH120 or MTH005 or MTH009A or MTH002 or Placement by Examination. Fall Only.*

MTH180

College Algebra and Trigonometry I

This course stresses conceptual understanding and contemporary problem solving primarily using the language, symbols and algorithms of algebra. Designed for all students needing a thorough pre-calculus algebra background with an introduction to trigonometry, this course emphasizes linear, quadratic, and polynomial functions; algebraic models and their graphs. Graphing technology is integrated throughout all course content. Additional topics include equations, inequalities, complex numbers, right triangle trigonometry, trigonometric functions, sine and cosine laws and other selected topics (higher degree polynomials, Fundamental Theorem of Algebra, rational polynomials) as time permits. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH006 or MTH125 or MTH002 or MTH122 or MTH009B or Placement by Examination.*

MTH182

College Algebra and Trigonometry II

This course builds upon the concepts and applications of MTH180 and focuses upon conceptual understanding and problem solving using the language, symbols and algorithms of algebra, trigonometry, matrices and determinants. Designed for students needing a comprehensive pre-calculus algebra, trigonometry and introductory matrix background, this course emphasizes inverse, exponential, logarithmic, circular and trigonometric functions, models and their graphs. Graphing technology is integrated throughout the algebraic and trigonometric course content. Additional topics include analytic trigonometry, solution to trigonometric equations, vectors in the plane, trigonometric form of complex numbers, multivariable linear systems, systems of inequalities, matrices and determinants (with emphasis on technology solutions to linear systems) and other selected topics (polar coordinates, conics) as time permits. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH180.*

MTH190

Pre-Calculus

A one-semester course designed for mathematics, science, engineering, technology students preparing for the study of calculus or related quantitative science and technology. Emphasis will be given to the meaningful development of concepts, to the interrelationships or connections among topics, and to the application of mathematics to the solutions of realistic problems. Topics include algebra, functions and graphs (including polynomial, rational, exponential, logarithmic and trigonometric functions), analytic trigonometry, trigonometric applications and systems of equations. This course may be taken by students whose mathematical preparation enables them to study an accelerated one-semester course instead of the College's two-semester sequence MTH 180 & MTH 182, College Algebra and Trigonometry I and II. This course may not be taken for credit by students who have successfully completed MTH 180 and MTH 182. 4 Credits (4 Lecture -0 Lab) *Prerequisite(s): Placement by Examination.*

MTH230

Applied Calculus

Relations and functions, conics, limits, derivatives and integration of algebraic, trigonometric and transcendental functions, methods of integration and applied problem solving. Excellent preparation for students who intend to sit for the Engineer in Training Examination. 3 Credits (3 Lecture -0 Lab)

Prerequisite(s): MTH182 or MTH190 or Placement by Examination.

MTH240

Calculus I

Algebra review. Functions, limits, continuity, derivatives, velocity, rates of change, chain rule, curve sketching, related rates, maximum-minimum theorems, differentials, applications, antiderivatives. 4 Credits (4 Lecture -0 Lab)

Prerequisite(s): MTH182 or MTH190 or Placement by Examination.

MTH242

Calculus II

Continuation of MTH 240. Emphasizes the definite integral, applications of integration, transcendental functions, techniques of integration, and other selected topics. 4 Credits (4 Lecture -0 Lab)

Prerequisite(s): MTH240.

MTH250

Discrete Mathematics

Introduction to discrete structures. Topics include logic and proof, sets, combinatorics, graphs, modeling, homomorphisms, Boolean algebra, logic networks, coding theory, finite state machines and computability, formal languages and general algebraic structures emphasizing semigroups, monoids and groups. 3 Credits (3 Lecture -0 Lab)

Prerequisite(s): MTH240. As needed.

MTH255

Linear Algebra

The study of vector spaces. Topics include linear independence, bases and dimension, linear transformation matrices, and systems of linear equations. 3 Credits (3 Lecture -0 Lab)

Prerequisite(s): MTH240. As needed.

MTH340

Calculus III

Continuation of MTH 242. Topics and applications include vectors and their properties in n-space, vector valued functions of several variables, partial derivatives, double and triple integrals, scalar and vector fields, line integrals, and an introduction to differential equations. 4 Credits (4 Lecture -0 Lab)

Prerequisite(s): MTH242. Fall Only.

MTH346

Ordinary Differential Equations

A one-semester course designed for mathematics, science, engineering technology, and technology students. Emphasis will be given to the meaningful development of concepts, to the interrelationships or connections among topics, and to the application of mathematics to the solutions of realistic problems. Topics include techniques for solving first order separable and nonseparable differential equations, homogeneous and nonhomogeneous higher order linear differential equations, linear systems of differential equations, laplace transformations, series solutions of second order linear equations, applications and existence theorems. Students may be admitted by placement exam or by permission of instructor. 4 Credits (4 Lecture -0 Lab)

Prerequisite(s): MTH242. Spring Only.

MTH360

Quantitative Statistical Methods with Applications

This course is designed to build on basic statistical concepts from previous statistics courses, such as MTH160, Elementary Statistics with Computer Applications, or MTH158, Elementary Statistics I. This course develops widely used multivariable statistical methods. Topics include a review of basic inferential statistical concepts, an introduction to regression analysis, simple linear regression, multiple regression and correlation, univariate and multivariate analysis of variance, model building, regression pitfalls, residual analysis, logistic regression and time series modeling. Optional topics include principles of experimental design and analysis of variance for designed experiments. Statistical software and a graphing calculator are used extensively for computations. A student project is an integral part of this course. Numerous applications will be examined from a variety of fields including health, science and engineering, among others. Prior computer experience is assumed. Students who have not successfully completed MTH160 should see the instructor prior to scheduling this course. 4 Credits (3 Lecture -3 Lab)

Prerequisite(s): CSC104 and MTH158 or CSC110 and MTH158 or CSC104 and MTH160 or CSC110 and MTH160. As needed.

MEDICAL TERMINOLOGY (MTR)

MTR100

Medical Terminology Survey

Develops the student's ability to read, to understand, and to write the medical language. An introduction to the basic structures and rules of interpreting medical terminology. 1 Credit (1 Lecture -0 Lab) **As needed.**

MTR101

Medical Terminology I

Introduction to medical terminology. Emphasizes etiology, symptomatology, pathology, and diagnostic procedures. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

MTR102

Medical Terminology II

Continuation of MTR 101. Students learn to read and understand the language of medicine. Emphasizes the meanings of root words and their combining forms. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTR101.* **Spring Only.**

MTR104

Basics of Medical Terminology

This course provides the foundation for the use of the language of medicine and emphasize correct pronunciation and spelling, various word parts, abbreviations and symbols, and terms pertaining to body systems. Etiology, symptomatology, pathology, and diagnostic procedures for identifying various disease processes provide students with an increased understanding of medically related conditions and procedures. 3 Credits (3 Lecture -0 Lab) **As needed.**

MACHINIST GENERAL AND TOOLMAKING TECHNOLOGY (MTT)

MTT105

Manufacturing Processes and Toolmaking Survey

This course will include theory and demonstrations involving manufacturing processes, machining (lathe, milling, drilling, boring, and grinding), and heat treating. Computer-controlled manufacturing equipment will be covered through theory and demonstrations involving CNC (turning); CAD/CAM and CNC/NC programming; electric discharge machining; metrology (CMM); and an introduction to robotics. 4 Credits (2 Lecture -6 Lab)

MTT106

Manufacturing Processes Survey

This course will include theory and demonstrations involving processes, machining (lathe, milling, drilling, boring and grinding), and heat treating. Students who have taken MTT108 are not eligible to take this course. 2 Credits (1 Lecture -3 Lab)

MTT113

Basic Metalworking I

Introduction to the theory and practical applications of basic metalworking will be presented. This course will emphasize industrial shop safety, material selection, job planning, bench-work, quality control and inspection. Hand tools, drill presses, pedestal grinders, band saws, milling machines and precision-measuring equipment will be used to complete required projects. The student will study, interpret and draw basic industrial blueprints. Also included are techniques in preventative and general maintenance of metalworking machinery. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): MTT114.*

MTT114

Basic Metalworking II

The theory and practical applications of basic metalworking introduced in MTT 113 will be continued in this laboratory course. Students will develop skills in layout, blueprint reading, quality control, inspection and machine setup and operation. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): MTT113.*

MTT116

Lathe Applications I

Introduction to the theory and practical applications used to safely setup and operate the metal turning engine lathe. Operations such as turning, facing, boring, grooving, drilling, tapers, threading and cut-off procedures will be implemented. Three and four-jaw chucking techniques and turning between centers will be used to complete required projects. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): MTT117.*

MTT117

Lathe Applications II

The theory and practical applications introduced in MTT116 will be continued in this laboratory course. Students will develop skills in lathe operations such as turning, facing, boring, grooving, drilling, tapers, threading and cut-off procedures. Required projects will be completed using three and four-jaw chucking techniques and turning between centers. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): MTT116.*

MTT123

Machining Processes

Fundamental concepts of metal removal using multi-tooling machining. Use and care of carbide tooling and automatic screw machines will be covered. 4 Credits (1 Lecture -9 Lab) *Prerequisite(s): MTT116 and MTT117.*

MTT126

Metrology/Quality Control

The concepts and the practices of precision measurement needed in the modern machine shop. Direct and indirect measurement, contact and non-contact gauging, angular measurement and hardness testing are covered. The fundamentals of geometric dimensioning and tolerancing and blueprint reading as related to inspection will also be emphasized. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): MTT116 and MTT117.*

MTT210

Tool Technology

Theory and practice in machining, cutting, and assembly of dies, molds, jigs and fixtures. Layout, boring and indexing to close tolerances using threading and gearing applications. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): MTT110 and MTT115 and MTT120 and QAL125 or MTT123 and MTT126.*

MTT211

Manufacturing Materials and Processes

This course is an introduction to the materials and processes of manufacturing. Emphasis is placed on the conversion of materials into finished goods. Classroom activities and demonstrations include material selection, process specification, casting, molding, extruding, forming, machining, welding, fabricating and finishing. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

MTT215

Abrasive Machining and Heat Treatment

Precision abrasive applications of lapping and honing as well as surface, cylindrical, electromechanical, jib, form cutter and internal grinding. Various types of abrasive materials are used, including cubic boron nitride and diamond. Theory and practice in hardening and tempering tool and carbon steels. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): MTT210.*

MUSIC (MUS)

MUS111

Introduction to Music

Develops listening skills that add to the enjoyment of music—particularly the art music of western civilization, often referred to as “classical” music; questions the myths that have prevented many people from discovering the enjoyment of such music. Students explore the basic terms related to describing music, learn how to listen to music critically, review important trends in the history of music and discover how to express themselves more clearly when conversing and writing about music. 3 Credits (3 Lecture -0 Lab) (ART)

NURSING AND PRACTICAL NURSING (NUR)

NUR117

Credentials Proven By Licensure (LPN)

This course exists for the purpose of verifying transfer of nursing credits only. Eligible candidates who submit a notarized copy of the display portion of their current, valid LPN license to the Admission Office at Penn College, will be credited with thirteen (13) nursing credits after the successful completion of NUR223, Transition into Registered Nursing. The total nursing credits earned by successful completion of NUR 223 (3 credits) and presentation of licensure will award 16 credits. This is the same total nursing credits earned in the first year of the ADN program. 13 Credits (13 Lecture -0 Lab) **Scheduled by Special Arrangement.**

NUR153

Development of the Caregiver Role

Development of basic nursing knowledge. Emphasis is placed on legal and ethical issues, therapeutic communication techniques, and nursing skills necessary for meeting the basic needs of adult clients including personal care and hygiene, comfort, safety, mobility, rest, nutrition, and asepsis. At the completion of this course, the student will be eligible to sit for the Nurse Aide Exam and obtain related employment in a variety of health care settings. In addition, this course prepares the student for further study at the Practical Nurse level. (Formerly NUR 151) 7 Credits (4 Lecture -9 Lab) *Corequisite(s): BIO115 and ENL111. Fall-First 8 Weeks.*

NUR154

Introduction to Practical Nursing Concepts

An orientation to the Practical Nursing Program including its philosophy and objectives. The role and responsibilities of the student Practical Nurse are introduced. Physical, social, emotional and psychological needs, and developmental characteristics are studied across the age span from birth to death. Client needs, health concepts, and early foundational knowledge of the body systems are explored. The process of developing, implementing, and evaluating care plans is introduced. In addition, math for pharmacology is introduced, along with the study of drug preparation and administration. (Formerly NUR 152) 7 Credits (4 Lecture -9 Lab) *Prerequisite(s): NUR153. Corequisite(s): BIO115 and ENL111. Fall-Second 8 Weeks.*

NUR163

Nursing Care of the Adult I

Utilizing a systems approach, a focus is on the chronic problems associated with common, non-emergent disorders. The acute aspects of these diseases are also discussed. Nursing interventions appropriate to the adult client with these problems are introduced. Effective interpersonal communication skills with clients, families, and members of the healthcare team are expected. Pharmacology principles and rationale are applied during supervised medication administration. Individualization of client care is developed through the formation and implementation of client-centered care plans. The student is expected to function progressively as a contributing member of the nursing team while caring for assigned clients with needs of varying complexity in an acute care setting. (Formerly NUR 161) 8 Credits (4 Lecture -12 Lab) *Prerequisite(s): NUR154. Corequisite(s): BIO125. Spring-First 8 Weeks.*

NUR164

Nursing Care of the Adult II

Utilizing a systems approach, the focus is on the more acute problems with associated emergent disorders, and their effect on the adult client. Chronic, long-term impact associated with these disorders is also addressed. The use of effective interpersonal communication skills with clients, their families, and members of the health care team is expected. Pharmacology principles and rationale continue to be applied during supervised medication administration. Students will develop and implement client-centered care plans. The student is expected to function progressively as a contributing member of the nursing team while caring for assigned clients with needs of moderate complexity in the acute setting. (Formerly NUR162) 8 Credits (4 Lecture -12 Lab) *Prerequisite(s): NUR154. Corequisite(s): BIO125. Spring-Second 8 Weeks.*

NUR173

Nursing Care of the Adult III

This course is a continuation of the systems approach, with discussion of the more complex medical surgical disorders and their effect on adult clients. Mental health concepts and issues and trends in nursing are addressed. Clinical rotations are planned to support these specialties. Greater independence in initiating all phases of the nursing process, incorporating health teaching, and identifying referral resources will be evaluated during clinical rotations. The ability to build on and transfer theoretical knowledge from the classroom to the clinical area is paramount as the student progresses through this course. (Formerly NUR171) 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): NUR163 and NUR164. Corequisite(s): PSY111. Summer-First 6 Weeks.*

NUR174**Maternal Child Health Nursing**

Family centered maternity nursing and the nursing care of children are the primary areas of focus during this course. Students will be scheduled for observational experiences in labor and delivery while nursing care of the newborn and postpartum clients will be assigned on the postpartum units in the acute care setting. Prenatal and postnatal clients may be seen during observational rotations in clinics and physician's offices. Understanding of growth and development is necessary when caring for children during the pediatric rotations, which are assigned in various settings including acute care, physician's offices, and day care centers. Students are expected to apply all related theoretical concepts as they administer safe, effective nursing care to all assigned clients, and as they prepare to graduate. (Formerly NUR 172) 6 Credits (4 Lecture -6 Lab) *Prerequisite(s): NUR163 and NUR164. Corequisite(s): PSY111. Summer-Second 6 Weeks.*

NUR180**Foundations of Nursing**

Introduces the student to basic principles of nursing practice through utilization of the nursing process and the concept of adaptation. Review of basic physiological and psychosocial responses to illness and care of the patient utilizing basic analytical thought processes and the nursing process are conducted throughout the lecture/discussion component of the course. Restricted to NR students. (Formerly NUR 115) 8 Credits (5 Lecture -9 Lab) *Corequisite(s): BIO115 and PSY111.*

NUR181**Adult Medical-Surgical Nursing I**

Nursing care of adult clients exhibiting simple health care problems is explored. Students continue developing skill in use of the nursing process to identify client problems. Assessment of the client is continued. Beginning level critical thinking skills utilized in planning, implementing and evaluating care are developed. Restricted to NR students. (Formerly NUR 126) 8 Credits (4 Lecture -12 Lab) *Prerequisite(s): BIO115 and NUR180. Corequisite(s): BIO125 and PSY203.*

NUR219**Adult Medical-Surgical Nursing II**

Nursing care of adult clients exhibiting more complex health needs is explored through lecture, discussion and clinical experiences. This course enables the student to further develop critical thinking skills while assessing, planning, implementing and evaluating care of the adult client. Restricted to NR students. (Formerly NUR 217) 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): BIO125 and NUR181 and PSY203 or BIO125 and NUR117 and NUR223 and PSY203. Corequisite(s): NUR226 and NUR284.*

NUR223**Transition into Registered Nursing**

This course is designed to facilitate the entry of the Practical Nurse into the second year of the Pennsylvania College of Technology Nursing program. The focus of the course is directed toward assisting the practical nurse in making the transition to the registered nurse student role. The nursing process forms the foundations for the development of skills basic to practice as a registered nurse student. Throughout this course, the role of the associate degree nurse as provider of care, communicator, client advocate and educator are emphasized. Successful completion of NUR 223 with a grade of "C" or better is required for acceptance into Advanced Credit Status in the Nursing Program. Eligibility for licensure as a Practical Nurse in the Commonwealth of Pennsylvania required before enrolling in this course. 3 Credits (2 Lecture -3 Lab)

NUR226**Adult Medical-Surgical Nursing III**

A continuation of Adult Medical-Surgical Nursing II, this course explores nursing care of the adult client with emphasis on the most complex health needs. Students continue to develop critical thinking skills while assessing, planning, implementing and evaluating care of the adult client at an accomplished level. Restricted to NR students. (Formerly NUR 224) 5 Credits (3 Lecture -6 Lab) *Corequisite(s): NUR219 and NUR285.*

NUR280**Childbearing Nursing**

Nursing care of clients experiencing a normal pregnancy or a pregnancy at risk are explored. Common obstetrical problems of increasing complexity are studied. Students assess, plan, implement, and evaluate care of the childbearing client. Students care for the mother, fetus, and neonate during normal pregnancies. Social and environmental influences are addressed, as

well as pharmacological and nutritional factors. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO125 and NUR181 and PSY203 or BIO125 and NUR117 and NUR223 and PSY203. Corequisite(s): NUR281 and NUR282 and NUR283.*

NUR281**Nursing Care of Children**

Nursing care of healthy children and those exhibiting common health problems are explored. This course helps the student develop skill in assessing, planning, implementing and evaluating the care of children. Students will apply age appropriate communication skills and nursing strategies as they interact with children of different ages in a variety of clinical settings. Normal growth and development principles and their application are included in the course content. Restricted to NR students. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO125 and NUR181 and PSY203 or BIO125 and NUR117 and NUR223 and PSY203. Corequisite(s): NUR280 and NUR282 and NUR283.*

NUR282**Psychosocial Nursing**

This course is designed to offer students the opportunity to give care to clients exhibiting psychosocial health problems. Students will develop skills in assessing, planning, implementing and evaluating care of the client with psychosocial needs. Communication skills will be applied to establish a therapeutic nurse-client relationship. Emphasis will be placed on identifying the client's coping responses and maximizing strengths to promote adaptation. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO125 and NUR181 and PSY203 or BIO125 and NUR117 and NUR223 and PSY203. Corequisite(s): NUR280 and NUR281 and NUR283.*

NUR283**Topics for Nursing Practice**

Select current nursing issues are introduced in this discussion-oriented course. Special consideration is given to topics of concern for students entering the nursing profession. Ethical, legal and cultural considerations; special practice issues; socialization into nursing; career planning; lifelong learning and caregiver concerns are highlighted. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO125 and NUR181 and PSY203 or BIO125 and NUR117 and NUR223 and PSY203. Corequisite(s): NUR280 and NUR281 and NUR282.*

NUR284**Essentials of Pharmacology I**

This is the first of two pharmacology courses which will provide an overview of various drug classifications through examination of prototypes for specific drug categories. This study will include discussion of the pharmacodynamics, pharmacokinetics, therapeutic efforts, untoward reactions and nursing implications related to the administration of selected medications. Students will be expected to write a pharmacological profile based on a client's medication regimen. Restricted to NR students. .50 Credit (.50 Lecture -0 Lab) *Prerequisite(s): NUR181. Corequisite(s): NUR219.*

NUR285**Essentials of Pharmacology II**

This is the second of two pharmacology courses which will provide an overview of various drug classifications through examination of prototypes for specific drug categories not covered in NUR 284. This study will include discussion of the pharmacodynamics, pharmacokinetics, therapeutic efforts, untoward reactions and nursing implications related to the administration of selected medications. Students will be expected to write a pharmacological profile based on a client's medication regimen. Restricted to NR students. .50 Credit (.50 Lecture -0 Lab) *Prerequisite(s): NUR181. Corequisite(s): NUR226 and NUR284.*

NUR302**Credentials Proven By License**

This course exists for the purpose of verifying transfer of nursing credits only. Eligible candidates who submit a notarized copy of the display portion of their current, valid R.N. license to the Admissions Office at Penn College, will be credited with 33 nursing credits. NUR 302 credits will be held in escrow until successful completion of NUR 326 or NUR 412. These 33 nursing credits reflect the candidate's ability to meet the A.D. level nursing course requirements by virtue of his/her license. Candidates must meet all Penn College baccalaureate program admission requirements prior to acceptance into the B.S.N. program. 33 Credits (33 Lecture -0 Lab)

NUR305

Holistic Perspectives of Health and Wellness

This course offers health career students the opportunity to explore the concepts of caring, healing and wellness from a holistic perspective. The application of alternatives from traditional models will be examined. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR307

Women's Health Issues

This course provides students with an opportunity to examine current health issues and health care services as they affect women. Unique perspectives on women's lifestyles and health are examined as they interrelate with family, the environment and society. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR310

Philosophy of Professional Nursing

This RN/BSN transition course is designed to assist the registered nurse student in developing and achieving professional perspective. A collaborative approach to learning with inter-group dialogue is utilized. Emphasis is on the current health care delivery system, concepts of professionalism, theories of role transition and an introduction to nursing theory and research. Admission to the BSN major or permission of the Director of Nursing is required to take this course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and ENL121 or CSC110 and ENL201. Corequisite(s): HTH310 and SPC101 or HTH310 and SPC201. Scheduled by Special Arrangement.*

NUR326

Community Health Nursing

Students will examine the theoretical bases of community nursing, community health issues and the role of nursing in providing care to individuals, families and groups in the community. The role of preventive and promotive health teaching for individuals, families and the community is addressed. Several community based projects and the opportunity for students to design portions of the clinical experience, under the direction of the instructor, highlight the application component of this course. Course assignments will focus on development of environmental awareness and its relationship to health, group perspective and associated nursing interventions. Issues related to epidemiology, health policy, community resources, the nursing process as related to community health issues including program planning, family health, public health, and home care will be addressed in classroom and/or clinical learning experiences. Clinical observations and preceptor guided clinical experiences are required. This course has been designated as a writing enriched (WRT) course. A WRT specification means that written and oral communication skills receive intensive emphasis throughout the course. Course consists of a classroom and clinical component. (Formerly NUR325) 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): NUR310 and NUR374 and NUR383. Corequisite(s): NUR352. (Writing Enriched) Scheduled by Special Arrangement.*

NUR351

Case Management in Nursing

This course introduces students to the topics of case management in nursing. Nursing case management is an approach which focuses on the coordination, integration, and direct delivery of patient services and places internal controls on the resources used for care. Case management balances the cost and quality components of nursing service and patient care outcomes in the acute care hospital setting as well as outpatient and community-based environments including Health Maintenance Organization (HMO) arrangements. Topics that will be examined include the historical perspective of health care delivery, the evolution of case management and contemporary models of case management. Special emphasis will be placed on the roles of the case manager, collaboration between disciplines, and evaluative methods in case management. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR352

Teaching and Learning Concepts and Strategies

This course will introduce the nursing student to a variety of teaching and learning concepts that apply to all learners. Special focus will be placed on the issues of teaching and learning in the patient centered environment. Techniques and strategies that will enhance the learning process for pediatric, obstetric, adult, and geriatric clients will be explored. Emphasis will be placed on using critical thinking skills to identify problems and develop practical solutions within the client-centered environment. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR360

The Role of the Health Care Provider Related to Death and Dying

The course explores the role of the nurse and other health care professionals in the provision of care for the dying patient. The student will be provided an opportunity to explore personal feelings, as well as the professional, spiritual and ethical issues surrounding the care of the dying patient and his/her family. Palliative care choices will be analyzed from a multidisciplinary perspective. The course will also give the student insight into the implications for nursing and health care practice of how different cultures view and experience death and dying. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR361

Informatics in Health Care Delivery

This course will provide an introduction to various computerized information systems, such as: HIS (hospital information systems), NIS (nursing information systems), medical information databases, and bedside computing systems. The emphasis will be the application of these information systems to professional health care. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): CSC110 and NUR310. Scheduled by Special Arrangement.*

NUR370

Focus on Gerontology

This course will offer an exploration of issues that arise when rendering nursing care to elderly clients. Areas of focus include: biological, psychological, social, legal and ethical issues. The health care delivery systems of acute care, long-term care, and home nursing/community care all face many changes which will affect the elderly. Nursing issues for each area will be explored. Emphasis will be placed on prevention, stabilization and restorative nursing concepts. Nursing management issues will also be explored. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR373

Collaborative Health Care

This course explores the roles of the members of the health care team in various health care delivery settings. Several issues will be addressed including team building, collaborative health care, leadership and group dynamics. (Formerly NUR371) 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310 and SPC101 or NUR310 and SPC201. Scheduled by Special Arrangement.*

NUR374

Critical Thinking for Nursing

This course provides students with an opportunity to analyze their individual personal thinking styles. Critical thinking is defined and dimensions of the skills necessary to achieve a quality of decision making and problem solving are addressed. Group work facilitates the development of standards and provision of feedback for particular clinical situational issues and problems. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR380

Pharmacology in Health Care

This course will provide a major review of all drug classifications as well as an in-depth study of prototypes specific to each drug category. This in-depth study will include discussion of the pharmacokinetics, pharmacodynamics, therapeutic effects, untoward reactions, and food/drug interactions of these medications, as well as pertinent legal and ethical aspects of medication administration. Students will be expected to write a pharmacological profile based on a client's medication regime or on a predesignated group of drugs. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR381

Health Promotion in Health Care

This course introduces students to concepts related to the encouragement of positive health changes among individuals and groups. Health promotion is defined by Pender (1987) as "increasing the level of well being and self actualization of a given individual or group." Health promotion addresses the current health care issues of cost, increased life expectancy, and maintaining and/or improving one's quality of life. Topics to be explored include the changing populations and health; health policy and the health care delivery system; relevant ethical issues; individual, family, and community health assessment; and health education strategies. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310. Scheduled by Special Arrangement.*

NUR383

Advanced Physical Assessment

This course will provide the student with the knowledge and beginning skills to perform an advanced physical examination on clients. This knowledge will be incorporated with related pathophysiological processes to common abnormalities. Interviewing techniques and basic head-to-toe physical assessment will be reviewed. The course will then concentrate on the focused systems assessments necessary for providing care to clients across the lifespan. Students will be expected to perform an advanced physical assessment upon a designated client and effectively communicate such findings. The integration of laboratory findings, pathophysiology, and physical exam findings will also be addressed. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): NUR310.*

Scheduled by Special Arrangement.

NUR391

Independent Study in Current Nursing Issues and Trends

The Independent Study in Nursing is designed to provide the RN student an opportunity to investigate further a current nursing related issue or trend. Under the direction of a nursing faculty member, the student contracts for learning experiences based upon collaboratively developed learning objectives. Learning goals and objectives for the course must be approved prior to commencement of the semester in which the independent study is undertaken. Admission to the BSN major or permission of the Director of Nursing is required to take this course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310.* **Scheduled by Special Arrangement.**

NUR412

Explorations in Clinical Practice

Clinically based experience with options for either new or advanced clinical practice areas of focus, include (but not limited to) Geriatrics, Home Health, Public Health, Families with Children, ICU/CCU, Industrial Health, School Nursing, Medical-Surgical Nursing, Emergency Nursing, Oncology, Renal Disease, and Mental Health. Students will provide interventions for health promotion and facilitate adaptive responses to acute and chronic health problems at various stages across the life span. Clinical practicum will be arranged through a student-initiated preceptor. Advanced clinical options will be discussed. (Formerly NUR411) 4 Credits (2 Lecture -6 Lab)

Prerequisite(s): NUR326 and NUR352. **Scheduled by Special Arrangement.**

NUR460

Philosophy, Ethics, and Integrity in Health Care

This course will be a discussion-oriented seminar allowing the student to explore and articulate their own values and beliefs surrounding current health care issues. Ethical decision-making and analysis of potential conflicts between personal and professional obligations will be discussed. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): NUR310 and SPC101 or NUR310 and SPC201.* **Scheduled by Special Arrangement.**

NUR461

Leadership and Management in Nursing

This course introduces students to the topic of Leadership and Management within the discipline of nursing. Leading and managing are two essential expectations of all professional nurses. To lead and to manage successfully, nurses must possess not only knowledge and skills, but also a caring and compassionate attitude. This course will merge nursing theory, research and practical application in key leadership and management areas. The topics to be explored include strategies in planning, goal setting and marketing, problem solving and decision making, managing time, leading and organizing groups of people, team building, care delivery systems and learning how to utilize empowerment in nursing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR412.* **Scheduled by Special Arrangement.**

NUR463

Transcultural Nursing

This course is designed to offer students an introduction to basic transcultural nursing concepts. Areas of focus include: self assessment of cultural biases, differentiation between the terms, culture, ethnicity, cultural diversity, minority, and race; and specific transcultural concepts with regard to nursing practice. Components of a thorough cultural assessment will also be discussed. Several different cultures will be explored regarding differences in communication, use of personal space, social organization, time, environmental control, and biological variations. Special nursing issues will include a comparison in pain response, gender differences, childbearing and child-rearing practices between certain cultures. Nursing interventions will be examined to enhance the nurse's ability to provide culturally sensitive and appropriate individualized nursing care. This course has been designated as writing enriched (WRT) and as a

cultural diversity (CUL) course. These specifications mean that written and oral communication skills and cultural issues receive intensive emphasis throughout the course. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310.* (Cultural Diversity, Writing Enriched) **Scheduled by Special Arrangement.**

NUR491

Independent Study in Professional Nursing

The Independent Study in Nursing provides an individualized opportunity to investigate further an area of interest in nursing practice, research, theory or education based on the student's particular interests. Under the direction of a nursing faculty member, the student demonstrates creativity and initiative to contract for learning experiences based upon learning objectives. Scholarly papers, professional projects, and practice-based interventions are possible. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): NUR310.* **Scheduled by Special Arrangement.**

NUR495

Research and Theory in Clinical Practice

This end-of-program course focuses on completion of a scholarly project that offers students the opportunity to synthesize knowledge for evidence-based nursing practice. Concepts related to nursing research are utilized to facilitate students' analysis and integration of educational and professional knowledge and experiences. Recognition of the interrelationship of practice, theory and research is emphasized. The process of accessing and critiquing scholarly literature is emphasized to enable the student to become an informed consumer of nursing research. This course has been designated as a writing-enriched (WRT) course. A WRT specification means that written and oral communication skills receive intensive emphasis throughout the course. 4 Credits (4 Lecture -0 Lab) *Prerequisite(s): MTH160 and NUR412.* *Corequisite(s): NUR461.* (Writing Enriched)

OCCUPATIONAL THERAPY ASSISTANT (OCT)

OCT100

Foundations of Occupational Therapy

Health care services will be defined with emphasis on the role of occupational therapy. The course will explore the history of the profession with the development and practice of its philosophy and principles. The role of the Registered Occupational Therapist and Certified Occupational Therapy Assistant will be reviewed. Students will tour a variety of community services. Student must be enrolled in OC program. 4 Credits (3 Lecture -3 Lab) **Transportation will be the responsibility of the student. Fall Only.**

OCT101

Human Occupations

The course will focus on the observations, analysis, and performance of human occupations in work, self-care and play/leisure throughout the lifespan. The teaching-learning process will be incorporated. Student must be enrolled in OC program. 2 Credits (1 Lecture -3 Lab) **Fall Only.**

OCT120

Developmental Habilitation

A review of lifespan human development with an emphasis on those conditions which threaten occupational performance and need satisfaction. Specific techniques of occupational therapy intervention and related terminology will be integrated. Laboratory experience and Level I Fieldwork in selected settings are required. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): BIO115 and OCT100 and OCT101 and PSY111.* *Corequisite(s): OCT121.* **Transportation will be the responsibility of the student. Spring Only.**

OCT121

Analysis of Movement

The organization of the brain, spinal cord, peripheral nerves, and joints of the trunk, upper extremity, and lower extremity of the human body. The interrelationships between the central nervous system, peripheral nervous system, and musculoskeletal system will be analyzed in terms of functional movement required for work, self-care and play. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): BIO115 and MTR100 and OCT100 and OCT101.* *Corequisite(s): OCT120.*

OCT201

Physical/Social Rehabilitation Methods

Through activity analysis and simulation, the student will gain insight and skill in observation, assessment, documentation, and teaching of adapted self-care, work and play/leisure activities for the physically impaired person. The

dynamics of group and individual participation in activities are explored as they relate to assessment and therapeutic intervention. 2 Credits (1 Lecture -3 Lab)
Prerequisite(s): BIO125 and OCT120 and OCT121. Corequisite(s): OCT202 and OCT203 and OCT204. Fall Only.

OCT202

Physical Dysfunction Rehabilitation

The occupational therapy process in relation to the physically disabled population is examined beginning with a historical and theoretical overview. The inclusion of Level I Fieldwork allows for exposure to a clinical setting. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): BIO125 and OCT120 and OCT121. Corequisite(s): OCT201 and OCT203 and OCT204. Transportation will be the responsibility of the student. Fall Only.*

OCT203

Clinical Conditions

The etiology and symptoms of clinical conditions which are commonly referred to as occupational therapy services are examined. The effects of trauma and disease on the biological, psychological, and social domains of occupational behavior are introduced. Procedures and precautions ensuring safety for patients and caregivers are reviewed. 3 Credits (3 Lecture -0 Lab)
Prerequisite(s): BIO125 and OCT120 and OCT121. Corequisite(s): OCT201 and OCT202 and OCT204. Fall Only.

OCT204

Occupational Therapy Practice Skills

An intensive review of practice skills required in physical dysfunction settings. Through simulated patient treatment, students will demonstrate service competency for selected skills necessary for clinical practice. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): BIO125 and OCT120 and OCT121. Corequisite(s): OCT201 and OCT202 and OCT203. Fall Only.*

OCT220

Psychosocial Rehabilitation

The occupational therapy process in relation to the psychosocially disabled person is examined beginning with a historical and theoretical overview. The inclusion of Level I Fieldwork allows for exposure to a clinical setting. Transportation will be the responsibility of the student. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): OCT201 and OCT202 and OCT203 and OCT204 and PSY201. Corequisite(s): OCT221. Spring Only.*

OCT221

Psychosocial Rehabilitation Methods

Through activity analysis, simulation, and varied writing assignments, the student will gain insight and skill in observation, assessment, documentation, and teaching of adapted self-care, work, and play/leisure activities for the psychosocially impaired person. The dynamics of group and individual participation in activities are explored as they relate to assessment and therapeutic intervention. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): OCT201 and OCT202 and OCT203 and OCT204. Corequisite(s): OCT220. (Writing Enriched) Spring Only.*

OCT224

Clinical Reasoning in Occupational Therapy

The application and integration of clinical reasoning, ethical principles, and role delineation in the OT process is explored. Through research, role plays, and case study, the student will recognize the multifaceted dimensions for decision making in OT practice. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OCT201 and OCT202 and OCT203 and OCT204. Corequisite(s): OCT222 or OCT225. Spring Only.*

OCT225

Occupational Therapy Management Issues

Basic management and support tasks encountered in occupational therapy and activity programs will be experienced. The student will explore topics associated with regulatory agencies and health care delivery systems. The student will incorporate ethical and professional principles while exploring employment opportunities and environments and employment acquisition. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): OCT201 and OCT202 and OCT203 and OCT204. Corequisite(s): OCT224. Spring Only.*

OCT251

Level II-A Fieldwork

A minimum of six weeks or 220 hours of supervised experience developing and practicing the skills of an entry level OTA. Students are assigned to a

setting where they will apply knowledge and skills to consumers of a variety of ages and conditions. NOTE: Students will be responsible for transportation, room, and board. Before enrolling in this course, student must successfully complete all required coursework of the OC curriculum together with approval of the department, and current CPR certification. 3 Credits (0 Lecture -15 Lab) **Fall, Summer.**

OCT252

Level II-B Fieldwork

A minimum of six weeks or 220 hours of supervised experience developing and practicing the skills of an entry level OTA. Students are assigned to a setting where they will apply knowledge and skills to a client population which offers a diversity of clinical experience from that offered in OCT 251. Students must have current CPR certification. NOTE: Student will be responsible for transportation, room, and board. Before enrolling in this course, student must successfully complete all required coursework of the OC curriculum together with approval of the department, and current CPR certification. 3 Credits (0 Lecture -15 Lab) **Fall, Summer.**

OFFICE TECHNOLOGY (OFT)

OFT101

Keyboarding and Its Applications

This course develops a firm foundation in the skill of keyboarding. The keyboard is the essential tool to be used in this development process. This course includes familiarization of the keyboard; development of touch keyboarding and emphasis on correct technique and mastery of the keyboard; improvement of speed and accuracy; and basic skill in keying business letters, reports, and tabulations. 1 Credit (0 Lecture -3 Lab)

OFT111

Keyboarding and Formatting

This course develops a firm foundation in the skill of keyboarding. The keyboard is the essential tool to be used in this development process. Familiarization of the keyboard; development of touch keyboarding, with emphasis on correct technique and mastery of the keyboard; improvement of speed and accuracy; development of proper work attitudes; and skill in typing business letters, memos, reports, and tabulations are included. 3 Credits (3 Lecture -0 Lab)

OFT121

Document Preparation I

This course is designed to further the student's ability in keyboarding and document preparation. Advanced document formatting and skill building are emphasized. Students will use decision-making skills to evaluate document formats and mailability. Applying written communication skills and demonstrating quality and efficiency in document production are emphasized. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OFT111. Spring Only.*

OFT125

Office Procedures and Applications

This course is designed to provide the student with knowledge of a wide range of office procedures and applications. Emphasis will be placed on decision-making activities, time and stress management, prioritizing, processing written communications, and human relations skills and activities. Instruction is given on concepts relating to the office professional's role and a perspective on the effect of electronic technology on office organization and activities. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OFT111. Spring Only.*

OFT128

Machine Transcription

This course develops skill in producing mailable copy from machine-recorded information. Included are equipment usage, transcription techniques and procedures, proofreading skills, language mechanics, and effective dictation. Office assignments and situations are incorporated in the class work. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OFT111.*

OFT210

Records Management

This course provides an overview of records management, including its importance and application in today's world, employment opportunities, legal and ethical concerns, and the latest developments in the field. The course analyzes the creation/acquisition, maintenance, and disposition of information in all types of media. Instruction in the administration and control of records systems is emphasized. The course is designed to provide information/records knowledge as well as office applications and practical experience in utilizing the functions known to records management. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

OFT215

Medical Office Practice

This course provides a foundation in the skills needed to perform adequately in a medical office environment. Students will study medical coverage systems and apply acquired skills to medical insurance processing, medical coding, billing procedures, ordering medical office supplies, completing various medical forms, and other skills needed to function effectively and efficiently in a variety of medical offices. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OFT111.* **Fall Only.**

OFT216

Executive Office Practice

This culminating course is designed to provide the student with knowledge, skills, and abilities needed to be productive in an executive office setting. Diversified activities dealing with information processing, research, composing, organizing, editing, human relations, and assisting will develop the skills needed to perform administrative support functions. As a further refinement of the student's professional abilities, he/she will develop decision-making skills related to interrelated tasks, job activities, and associated activities. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT230 and OFT121. Corequisite(s): OFT225.* **Fall Only.**

OFT220

Medical Transcription

This course introduces students to the skill of medical transcription. The application of medical transcription skill—auditory, proofreading, editing, accuracy, punctuation, grammar—are introduced. Simulated medical transcription assignments and situations are incorporated. Special attention is given to a practical knowledge of medical terminology, anatomy, physiology, disease process, and the internal organization of medical reports; standards and requirements that apply to the medical record; and legal significance of medical transcripts. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and MTR101 and MTR102 and OFT111 and OFT128.* **Fall Only.**

OFT225

Office Computer Applications

This course will prepare the office technology student to use the computer in advanced office applications concentrating on advanced problem-solving skill utilizing various application software. The course will emphasize the creation, manipulation, and presentation of data as it relates to the office environment. Decision-making skills will be emphasized in selecting and integrating the appropriate software for particular office procedures. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and OFT111.* **Fall Only.**

OFT250

Professional Internship

By means of a professional internship program, each student is given the opportunity to experience live office situations. The student is assigned to work in an office for one semester. Every effort is made to place each student in an office relevant to her/his major area of study. The student may or may not receive remuneration for her/his services. (If a student is paid, the course becomes OFT 250C.) Students are required to work 15 hours per week in her/his assigned office (240 hours total). Since this is a culmination of a student's training, it occurs in her/his second year, preferably in her/his final semester. It may occur in either semester; this decision is made by mutual agreement and consent of the student, the student's advisor, and the Experiential Learning Coordinator professor supervising the internship program. The entire Internship plan must be approved by the Dean and/or Assistant Dean of the School and the Director of Experiential Learning/Cooperative Education. 3 Credits (0 Lecture -15 Lab)

OFT260

Office Management

This course will provide a background in the most acceptable methods and practices of office administration. Designed to develop an understanding of leadership and human relations in the office, this course will also stress the controlling of operations and the processing of information. Special emphasis will be on the organization, planning, implementation, and evaluation of office systems as related to the electronic office. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

OFT265

Office Systems and Design

This course provides an overview of office systems—people, technology, and procedures—and of designs utilized to assist them in functioning interdependently within an organization. Students will learn to analyze organizational needs, plan a strategy for satisfying those needs, recommend an appropriate office system, and design an ergonomically correct environment through which employee productivity will be enhanced. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): CSC110 and OFT111 and OFT125 or CSC121 and OFT111 and OFT125 and OFT127.* **Fall Only.**

OFFICE INFORMATION SYSTEMS (OIS)

OIS111

Word Processing I

This course is designed to train entry-level word processing operators on different types of stand-alone equipment and computer systems utilizing various word processing packages and system software. Basic text editing and file design are covered as well as various methods of merging for repetitive letters and file reports. The graphics features on several systems are introduced. Operation of inkjet, daisywheel, dot matrix, laser, and color graphics printers is included. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): OFT111.* **Fall Only.**

OIS122

Word Processing II

This course is designed to enhance the skills and knowledge acquired in Word Processing I. After a review of competencies included in OIS 111, emphasis is on advanced machine features, including communication, file manipulation and interfacing various devices and systems. Training is also provided using the mathematical functions, logical and relational operators, and graphics capabilities of various software systems and packages. Terminate and stay resident software features are also included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OIS111.* **Spring Only.**

OIS214

OIS Desktop Publishing

This course trains students in the procedures for creating professional-looking office publications using selected desktop publishing packages on microcomputers and system software on a mainframe. Primarily IBM equipment will be used. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OIS111 or CSC110 or OFT127.*

OIS216

Office Network Productivity

This course is designed to train office personnel to become more productive by using office computer networks in both personal computer and mainframe environments. Program editors, electronic mail, file managers, calendaring, notebooks, and schedulers will be covered. 1 Credit (.75 Lecture - .75 Lab) *Prerequisite(s): OIS111 or OFT127 or CSC110.*

OIS325

OIS Advanced Applications

The goal is to refine operational and decision-making skills to employable levels. Class exercises and individual projects which require analytical and conceptual abilities are emphasized. Advanced concepts in text and file design using math, variable field information, relational operators, unique index fields, parallel files, three level group definitions, graphics utilities, and color output are also covered. Also exploration and evaluation of currently available software are included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): OIS122 and OIS214.* **Spring Only.**

ORIENTATION (ORN)

ORN001

Orientation

The content of this course includes working in student teams; adjusting to college expectations; learning about careers and Penn College programs; and using basic communication skills including computer skills, library skills, and reading, speaking, listening, and writing skills. Restricted to Developmental Semester students. 3 Credits (3 Lecture -0 Lab)

PHYSICAL FITNESS SPECIALIST (PFS)

PFS170

Specialist Resistance Training

This course is geared for students who are in the Physical Fitness Specialist Program, and it will provide a background that is needed by students who will be involved in the prescription and direction of resistance training programs. The class will focus on resistance training systems, basic principles of resistance training and benefit of resistance training. Students will have one hour of lecture per week, one hour of personal resistance workout lab per week and go into weight training classes two hours a week to apply this knowledge base. This class is open to Physical Fitness Specialist majors, or by permission of instructor or department head. 2 Credits (1 Lecture -3 Lab)

PFS172

Specialist Aerobic Training

This Physical Fitness Specialist course uses an integrated instructional approach including cognitive, affective, and psychomotor objectives. Contents include an introduction to personal fitness, use of fitness equipment, cardiovascular-respiratory assessment, cardiovascular-respiratory exercise prescription, body composition assessment, body composition intervention strategies, applying aerobic cross-training strategies, active participation in a progressive program design to increase personal fitness, monitoring personal workouts, and prescribing and directing aerobic group and individual activities. Students will have one hour of lecture per week, one hour of personal aerobic workout lab per week, and go into FIT aerobic classes two hours a week to apply this knowledge base. This course is open to Physical Fitness Specialist majors, or permission of instructor or department head. 2 Credits (1 Lecture -3 Lab)

PFS210

Fitness and Wellness: Behavior Self Management

This course will help students see how lives can be enhanced by a Fitness and Wellness Lifestyle. Accurate, up-to-date information about nutrition, weight management, stress, cardiovascular health, cancer, sexually transmitted diseases, substance-use abuse, and aging/death/dying will be studied. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): BIO103.*

PFS216

Physical Fitness Tests and Measurements

This course will cover methods of assessing five components of fitness including respiratory endurance, body composition, muscular strength, muscular endurance, and flexibility. Development of sound and effective exercise/nutrition prescription, initial screening and assessment skills takes place. Students will learn to choose appropriate tests while considering multiple factors. People differ in age, fitness level and known health problems and students will study the impact of these conditions on fitness tests and measurements. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and PFS210.*

PFS220

Organization and Leadership of Fitness Programs

This course identifies the general principles of an exercise prescription. The essential components of a systematic, individualized exercise prescription include the appropriate modes of intensity, duration, frequency, progression, and safety. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and PFS210 or BIO103 and PFS216.*

PFS225

Fundamentals of Human Performance

An analysis of the skeletal, muscular and nervous systems will provide the basis for understanding human movement as it relates to locomotion, basic skills, and athletic performance. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and PFS210. Corequisite(s): PFS216.*

PFS230

Management and Operation of Facilities and Equipment

This course covers a variety of topics related to managing and operating a health/physical fitness facility. Internal, in-house management, including but not necessarily limited to employees, insurance, compensation, database will be covered. External management factors, including but not necessarily limited to, customer service, amenities, programs will be studied also. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): BIO103 and CSC110 and PFS210 and PFS216 and PFS220 and PFS225.*

PFS250

Professional Fieldwork

By means of a professional fieldwork program, each student is given the opportunity to experience a health/fitness center environment. The student will be assigned to an approved site for a minimum of 150 hours of actual hands-on participation in the industry. In addition, the student is required to complete a detailed report on the experience and participate in seminar meetings. Since this is a culmination of the education and training process, it must occur in the last semester or with department approval once appropriate course work has been completed. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): PFS210 and PFS216 and PFS220 and PFS225.*

PHYSICIAN ASSISTANT (PHA)

PHA305

Clinical Laboratory Medicine

Laboratory procedures used to identify pathophysiologic processes commonly encountered in both ambulatory and hospital settings are introduced throughout this course. Students learn the appropriate technique for performing these tests as well as the appropriate rationale for ordering them. Interpretation of laboratory results is emphasized and possible treatment options discussed. Communication of laboratory results to other health care providers and indications for patient referral are stressed. Laboratory sessions are spent practicing the various techniques and applications discussed in lecture. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHA315. Spring Only.*

PHA310

History Taking and Interviewing Techniques

This course is designed to educate the student on the techniques of patient interviewing and medical history taking. The components of a complete medical history will be introduced in the classroom setting and then reinforced as the students practice developing these skills in a laboratory environment. Throughout the course, history taking and interviewing techniques will be approached as they apply to pediatric, adult, and geriatric patients in a variety of settings. An attitude of respect for others, adherence to the concepts of privilege and confidentiality in communicating with patients, and a commitment to the patient's welfare will be reinforced. 3 Credits (2 Lecture -3 Lab) *Corequisite(s): PHA322 and PHA327 and PHA328 and PHA346. Fall Only.*

PHA315

Pathophysiology

The focus for this course is on disease processes encountered in primary care clinical practice and specifically on the functional changes that occur as a result of disease. This material is divided into two segments. The first segment covers general principles and mechanisms of disease such as cellular damage and repair, immune response, neoplasia, effects of changes in fluid balance, etc. The second segment places its emphasis on individual diseases of various organs and systems of the body. Disorders with similar causes and those affecting similar systems are grouped and addressed together. The clinical course of each illness is emphasized to orient the student to the impact that each disease has on the whole person. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): PHA346. Fall Only.*

PHA322

Pharmacology I

Principles of clinical pharmacology and pharmacotherapeutics appropriate for common medical problems encountered in clinical practice are taught. A component of the course includes instructing and counseling patients regarding compliance with prescribed therapeutic regimens. Students learn the proper technique for writing prescriptions and discuss rules and regulations that govern Physician Assistant prescriptive privileges. Cost of medications and generic alternatives are also addressed. The pharmacological principles taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series. 2 Credits (2 Lecture -0 Lab) *Corequisite(s): PHA310 and PHA315 and PHA327 and PHA328 and PHA346. Fall Only.*

PHA327

Clinical Procedures I

The focus of this three-part course is on the diagnostic and therapeutic procedures that are routinely performed by Physician Assistants in clinical practice. Procedures likely to be performed in both inpatient and outpatient settings will be covered, with emphasis placed on those used in primary care and emergency medicine. Therapeutic procedures used in response to life threatening situations are also addressed. The skills taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine courses and will examine the impact of technological advances on the health of a society's people as well as the influence of society on healthcare practices. 2 Credits (1 Lecture -3 Lab) *Corequisite(s): HTH333 and PHA322 and PHA328 and PHA346.* (Science, Technology and Society) **Fall Only.**

PHA328

Physical Assessment I

The focus of this three-part course is on the development of the complete physical examination skills, recognition of normal and abnormal findings, documentation of the entire exam in a systematic fashion, and a discussion of the oral presentation of the physical exam data. Laboratory sessions are designed to give the student opportunity for supervised "hands-on" practice of the material covered in lecture. This course is divided into components organized by body systems. These physical examination techniques that are taught in this course are integrated with material that is concurrently presented in the Clinical Medicine series. 2 Credits (1 Lecture -3 Lab) *Corequisite(s): PHA310 and PHA322 and PHA327 and PHA346.* **Fall Only.**

PHA337

Clinical Procedures II

The focus of this three-part course is on the diagnostic and therapeutic procedures that are routinely performed by Physician Assistants in clinical practice. Procedures likely to be performed in both inpatient and outpatient settings will be covered, with emphasis placed on those used in primary care and emergency medicine. Therapeutic procedures used in response to life threatening situations are also addressed. The skills taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine I course, PHA 346. Lectures will concentrate on a description of the procedure, its indications, its contra indications, and possible complications. Laboratory time involves supervised practice of the procedures on models and/or classmates. Documentation, including progress and procedure notes in the Subjective, Objective, Assessment, Plan (SOAP) format, is incorporated and critiqued. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): PHA327.* *Corequisite(s): PHA338 and PHA342 and PHA366.* **Spring Only.**

PHA338

Physical Assessment II

The focus of this three-part course is on the development of the complete physical examination skills, recognition of normal and abnormal findings, documentation of the entire exam in a systematic fashion, and a discussion of the oral presentation of physical exam data. Laboratory sessions are designed to give the student opportunity for supervised "hands-on" practice of the material covered in lecture. This course is divided into components organized by body systems. Special emphasis will include the assessment of the pediatric patient. These physical exam techniques that are taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHA328.* *Corequisite(s): PHA337 and PHA342 and PHA350 and PHA366.* **Spring Only.**

PHA342

Pharmacology II

Principles of clinical pharmacology and pharmacotherapeutics appropriate for common medical problems encountered in clinical practice are taught. A component of the course includes instruction and counseling to patients regarding compliance with prescribed therapeutic regimens. Students learn the proper technique for writing prescriptions and discuss rules and regulations that govern Physician Assistant prescriptive privileges. Cost of medications and generic alternatives are also addressed. These pharmacological principles taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): PHA322.* *Corequisite(s): PHA337 and PHA338 and PHA366.* **Spring Only.**

PHA346

Principles of Clinical Medicine I

The first in a series of three courses that uses a systems approach to teach students about the disease entities commonly encountered in ambulatory and hospitalized patients. The course focus is on understanding illness, with emphasis on the criteria for making a diagnosis (including an understanding of

signs and symptoms), and developing and implementing the appropriate patient management plan. Normal and abnormal laboratory findings are incorporated, when appropriate. Exercises involving review and interpretation of current medical literature will challenge the students to extend their knowledge base and develop skills for lifelong learning. Issues related to the appropriate referral of patients are also addressed. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

PHA348

Psychopathology

This course provides the student with a functional understanding of the psychological manifestations of illness. A wide variety of topics including the behavioral patterns related to the maintenance and restoration of health, normal responses to stress, and responses to death and dying are addressed. Those psychiatric illnesses most common to primary care practice, including guidelines for diagnosis and treatment, are also reviewed. Counseling skills used to help patients cope with illness and injury, follow treatment regimens, and modify behavior are introduced throughout the course. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): PHA310 and PHA315.* *Corequisite(s): PHA352 and PHA370.* **Summer Only.**

PHA350

Topics in Pediatrics

This course is designed to orient students to issues and illnesses encountered in general pediatric practice. It has a broad focus from infancy through early and late childhood, and addresses normal growth and development and diagnosis and treatment of acute disease. Emphasis in the course is placed on well child care, as well as common clinical presentations such as infections, skin disorders, GI complaints, etc. This course is integrated with material concurrently covered in the Physical Assessment II course, PHA 338. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): PHA310 and PHA315.* *Corequisite(s): PHA338.* **Spring Only.**

PHA352

Community and Public Health

This course uses a combination of lecture, guest speakers and site visits (based on availability) to help orient the student to issues in public health and to the social service agencies available as referral sites for patients. Services and facilities that address issues such as the maintenance of health, disease prevention, emotional problems of daily living, substance abuse and family planning are covered. Designated as diversity enhanced, special emphasis is placed on issues related to the provision of health care to a culturally diverse population. The cultural backgrounds of patients and their community and public health needs are explored. As a culturally enhanced course, students will participate in activities and/or assignments that emphasize the impact of ethnicity, gender, and sexual orientation on the community and health care. This course has been designated as a writing enriched (WRT) course. A WRT specification means that written and oral communication skills receive intensive emphasis throughout the course. Students will be required to submit a minimum of 12 pages of formal documentation throughout the course; informal writing will also be required. This documentation will help students develop their understanding of the material and their counseling and referral skills. 2 Credits (2 Lecture -0 Lab) (Cultural Diversity, Writing Enriched) **Summer Only.**

PHA354

Physician Assistant Issues in Practice

This course reviews the history of the Physician Assistant profession and identifies the role that Physician Assistants perform in the current healthcare delivery system. The range of responsibilities and functions of Physician Assistants will be explored, as well as the nature of their relationship to physicians and other healthcare providers. Current legal regulations affecting the PA practice will be reviewed. Classroom discussions will focus on intraprofessional and political factors currently impacting the profession and on the promotion of the PA profession itself. 2 Credits (2 Lecture -0 Lab) **Spring Only.**

PHA357

Clinical Procedures III

A continuation of PHA 327 and 337, this course proceeds in the same lecture and lab format. The focus continues to be on diagnostic and therapeutic procedures performed by Physician Assistants in clinical practice. Documentation of procedure notes and counseling of patients regarding the procedures will be incorporated and critiqued. The skills taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series and will examine the impact of technological advances on the health of a society's people as well as the influence of society on healthcare practices. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): PHA327 and PHA337.* *Corequisite(s): PHA362 and PHA367 and PHA368.* (Science, Technology and Society) **Summer Only.**

PHA362**Pharmacology III**

Principles of clinical pharmacology and pharmacotherapeutics appropriate for common medical problems encountered in clinical practice are taught. A component of the course includes instruction and counseling to patients regarding compliance with prescribed therapeutic regimens. Students learn the proper technique for writing prescriptions and discuss rules and regulations that govern Physician Assistant prescriptive privileges. Cost of medications and generic alternatives are also addressed. These pharmacological principles taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series. 1 Credit (1 Lecture -0 Lab)
Prerequisite(s): PHA322 and PHA342. Corequisite(s): PHA357 and PHA367 and PHA368. Summer Only.

PHA366**Principles of Clinical Medicine II**

A continuation of PHA 346, this course proceeds in the same lecture and lab format and addresses diseases affecting the respiratory, cardiovascular, and renal systems. Also addressed are diseases affecting the eyes, ears, nose and throat. Normal and abnormal laboratory and cardiographic findings are incorporated, when appropriate. Development of patient management plans and interpretation of medical literature are highlighted throughout the course. A portion of the laboratory sessions are devoted to identification, diagnosis and treatment of dermatologic conditions. 4 Credits (3 Lecture -3 Lab)
Prerequisite(s): PHA346. Spring Only.

PHA367**Principles of Clinical Medicine III**

A continuation of PHA 366, this course proceeds in the same lecture and lab format and addresses diseases affecting the gastrointestinal, reproductive, musculoskeletal and neurologic systems. Development of patient management plans and interpretation of medical literature continue to be incorporated throughout the course. Normal and abnormal laboratory and radiographic findings are also incorporated, when appropriate. Special topics in clinical medicine such as alcoholism, human sexuality, HIV infection, diseases of aging and sports injuries are addressed. 4 Credits (3 Lecture -3 Lab)
Prerequisite(s): PHA366. Summer Only.

PHA368**Physical Assessment III**

The focus of this three-part course is on the development of the complete physical examination skills, recognition of normal and abnormal findings, documentation of the entire exam in a systematic fashion, and a discussion of the oral presentation of physical exam data. Laboratory sessions are designed to give the student opportunity for supervised "hands-on" practice of the material covered in lecture. This course is divided into components organized by body systems. Special emphasis will include the assessment of the geriatric patient. These physical examination techniques that are taught in this course are integrated with the material that is concurrently presented in the Clinical Medicine series. 3 Credits (2 Lecture -3 Lab)
Prerequisite(s): PHA328 and PHA338. Corequisite(s): PHA357 and PHA362 and PHA367 and PHA370. Summer Only.

PHA370**Clinical Decision Making**

This course gives the student the opportunity to make clinical decisions in a controlled laboratory environment. Principles and guidelines for organizing and developing a structured approach to thinking about patient care are addressed during lecture, with lab sessions devoted to the practice of these skills in a simulated patient scenario format. Data including X-rays, CT/MRI, laboratory reports, EKGs, etc., are incorporated into the course in a computer format, whenever possible, to create the most realistic approach. The scenarios are complete and require thorough decision making at all levels, from patient presentation to treatment or referral when appropriate. New medical evidence is researched by literature searches and presented by the student as it applies to the scenarios discussed. 3 Credits (1 Lecture -6 Lab)
Prerequisite(s): HTH330 and PHA305 and PHA337 and PHA338 and PHA342 and PHA350 and PHA366. Summer Only.

PHA410**Internship Seminar I**

This series of two courses takes place in conjunction with Clinical Internships I-VIII and occurs on designated dates on which the students return to campus. The seminars allow the students an opportunity to review their process, become encouraged by their successes, and identify areas of weakness that require additional work. The review process includes: analysis of preceptor evaluation,

feedback on submitted documentation, written testing, and presentations on related material. Guest lectures are also incorporated, when appropriate. 1 Credit (1 Lecture -0 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA366 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370. Fall Only.

PHA411**Family Practice Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This six-week internship (minimum 40 hours/week), allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 4 Credits (0 Lecture -20 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA412**Internal Medicine Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This six-week internship (minimum 40 hours/week) allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 4 Credits (0 Lecture -20 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA413**OB/GYN Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This four-week internship (minimum 40 hours/week) allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 3 Credits (0 Lecture -15 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA414**Pediatrics Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This six-week internship (minimum 40 hours/week) allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 4 Credits (0 Lecture -20 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA415**Emergency Medicine Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This six-week internship (minimum 40 hours/week) allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 4 Credits (0 Lecture -20 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA416**Psychiatry Internship**

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This four-week internship (minimum 40 hours/week) allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 3 Credits (0 Lecture -15 Lab)
Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.

PHA417

Surgery Internship

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This six-week internship (minimum 40 hours/week), allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 4 Credits (0 Lecture -20 Lab) *Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.*

PHA418

Elective Internship

This course will take place in clinical education sites in which a physician or physician/PA team renders patient care. Placement options will be determined by the program. This four-week internship (minimum 40 hours/week), allows the student direct patient contact and an opportunity to evaluate, diagnose, monitor, treat and educate patients under the direct supervision of a licensed physician. 3 Credits (0 Lecture -15 Lab) *Prerequisite(s): PHA355 and PHA360 and PHA367 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370.*

PHA420

Internship Seminar II

This series of two courses takes place in conjunction with Clinical Internships I-VIII and occurs on designated dates on which the students return to campus. The seminars allow the students an opportunity to review their process, become encouraged by their successes, and identify areas of weakness that require additional work. The review process includes: analysis of preceptor evaluation, feedback on submitted documentation, written testing, and presentations on related material. Guest lectures are also incorporated, when appropriate. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): PHA355 and PHA360 and PHA366 and PHA370 or PHA357 and PHA362 and PHA367 and PHA368 and PHA370. Spring Only.*

PHA490

Clinical Preceptorship

This final clinical experience is an eight-week internship (minimum 40hours/week), in which the student is placed in one of the primary care medical disciplines. The student accepts a level of responsibility at the clinical site similar to that of a practicing Physician Assistant, but always works under the direct supervision of a licensed physician. Responsibilities include: detailed and accurate history taking and physical examination skills, independent recording of progress notes and development of patient management plans, performance and interpretation of common diagnostic tests, instituting treatment plans for the management of minor and complex illness/injury and other responsibilities as directed by the physician preceptor. 4 Credits (0 Lecture -20 Lab) *Prerequisite(s): PHA370 and PHA410 and PHA420. Summer Only.*

PHA495

Senior Capstone (Physician Assistant)

Designed to build on Internship Seminar I and II, the Senior Capstone continues the review process emphasizing integration of knowledge from the entire clinical year. The student is required to complete a written project based on patient(s) worked with during the clinical preceptorship. The project involves complete assessment including evaluation, monitoring, diagnostics, therapeutics, counseling and referral. Also required is a component where the student explores current medical literature and discusses evidence of new knowledge related to their patients disease process. As a culturally enhanced course, students will participate in activities/assignments that emphasize the impact of ethnicity, gender and sexual orientation on the community and health care. As a writing enriched (WRT) course, students will be required to submit a minimum of 12 pages of formal documentation throughout the course; informal writing will also be required. A classroom portion of the Senior Capstone provides an opportunity to review and practice the complete and problem-oriented physical examination in a time restricted format and complete a mock certification exam. Topics on medicine in a multicultural society will be addressed. This subject matter will draw on coursework already completed in PHA 352. Classroom discussion will focus on sharing of specific student experiences in this area during the previous clinical internships. Emphasis placed on cultural sensitivity, conflict identification and resolution. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): PHA410 and PHA420. (Cultural Diversity, Writing Enriched) Summer Only.*

PHILOSOPHY (PHL)

PHL111

Introduction to Philosophy Analysis

Introduces the student to fundamental philosophic questions and methods of reasoning to their solutions. Examines key ideas in areas such as the nature of knowledge, reality, and society. Emphasizes developing the student's ability to evaluate ideas of others and the student. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

PHL210

Ethics

Examines theories and issues relating to moral philosophy. Reviews various theories including objectivism, relativism, and utilitarianism. Confronts applied problems relating to areas such as economy, society, the state, and technology. 3 Credits (3 Lecture -0 Lab)

PHL220

Social and Political Philosophy

Philosophical inquiry into the bases of social and political authority and practices and the proper relationship between individual and society and government. The nature of society, the state, rights, law and justice are considered with reference to contemporary social and political issues. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

PHL230

Logic

This course is an introduction to the art and science of good reasoning. It examines the concepts of truth, validity, consequence and proof in the context of informal reasoning and in the formal languages of propositional and predicate logic. The primary focus of the course will be on constructing and evaluating arguments and proofs using formal and informal methods. An integral component of this course is the weekly laboratory sessions which will give students hands on experience with constructing and evaluating formal arguments, building truth tables and counter models using logic learning software. Applications of logic in both everyday and scientific reasoning will also be addressed. Emphasis throughout the course will be on developing problem solving skills and good reasoning techniques. 3 Credits (2.50 Lecture -1.50 Lab) *Prerequisite(s): CSC110 and ENL111 and MTH005.*

PHL240

Minds, Brains and Computers

This course is an in-depth philosophical examination of the relation between the mind, the mysterious source of human intelligence; the brain, reputed to be the most complex object in the known universe; and the computer, the first machine ever created that seems truly capable of intelligent behavior. The course will cover topics in the philosophy of mind, artificial intelligence, artificial life, robotics and social issues related to computing. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. (Science, Technology and Society)*

PHL250

Philosophy, Sports, Games, Physical Exertion

Considerations of the nature of humans and the world through the study of the interplay of mind and matter in sports, games and physical exertion. Special emphasis on stress in physical exertion and its effects on consciousness. Applications to morality, psychology, religion, social organization. Latitude given to the pursuit of individual and group interests. Involvement by those able in physically exerting activity, such as running, swimming, cross-country skiing, weight-lifting, etc. 3 Credits (3 Lecture -0 Lab) **As needed.**

PHOTOGRAPHY (PHO)

PHO101

Black-and-White Photography

Follows a logical sequence of steps to move the student through camera operation, film development, and print making to film editing and presentation. Introduces students to the history and aesthetics of photography, creating a context for critiquing student work and the work of contemporary photographic artists. Encourages artistic expression and experimentation with picture content and design. Course assumes that the student has had little or no prior experience with the photographic medium. Each student must have access to a 35mm camera with a light meter, preferably a camera with manual controls for shutter and aperture. 3 Credits (2 Lecture -3 Lab) (ART)

PHO210

Fine-Art Photography

Designed to promote artistic development and visual literacy as well as help the student identify, articulate and define a personal vision. Technical emphasis on refining the craft of print making and advancing the knowledge of photographic equipment and darkroom techniques. Further emphasizes the history, aesthetics, and contemporary issues as they relate to photography. All students must have access to a 35mm camera with a light meter. Cameras with manual controls for the shutter and aperture are preferred. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHO101. (ART) Spring Only.*

PHO220

Photojournalism

Provides instruction in the techniques and methods of photographing people, places and events for publication and public display. Explores the use of the photographic image in narrative, documentary and editorial forms; emphasizes the intuitive photographic response to current events on and off campus. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHO101. As needed.*

PHO230

Commercial Photography

Designed to give students a broad experience in applied photography. Emphasis on the use of large-format view camera and on studio lighting techniques. Further emphasis on visual communication and creative problem solving. Covers studio portrait, small-product rendering and concept illustration. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHO101. As needed.*

PHO250

Introduction to Digital Photography

This course provides instruction in the basic concepts and applications of electronic imaging hardware and software. It will emphasize the importing and digital editing of photographic images in both black-and-white and color. Artistic expression and experimentation with image form, content and design will be encouraged. (Formerly PHO 350) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHO101. Spring Only.*

PHO300

Color Photography

Provides an introduction to the history, theory, and techniques of color imaging. Emphasizes the development of a conceptual and theoretical base that will allow for experimentation in both the applied and fine-art aspects of color photography. Enhances visual literacy through creative problem solving in the studio and on location using both color negative and positive films. Students learn how to balance film originals to the color temperature of different light sources for accurate color reproduction. In color darkrooms, students learn the basics of color printing and color correction using the subtractive and reversal printing processes. Students may enroll in the course without having satisfied prerequisite if portfolio review leads to permission of instructor. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): PHO101. As needed, Fall.*

PHYSICS (PHS)

PHS103

Physics Survey

Covers most of the following topics selected to meet the needs of the majority of students in any particular section-matter and measurement; behavior of solids, liquids, and gases; mechanics, including forces, motion, energy, power and machines; heat; sound; light; optics; magnetism; electricity; atomic phenomena. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MTH120 or MTH180 or MTH111 or MTH124.*

PHS112

Introductory Physics

Fundamental course emphasizing health science applications of the principles of mechanics, heat, light, sound, and the macroscopic properties of matter. Includes an introduction to electricity and magnetism. An appropriate lab science course for non-science majors intending to transfer to a baccalaureate degree program. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH180. Spring Only.*

PHS114

Physics with Technological Applications

The course focus is on the fundamental principles of physics as they apply to technology. Topics may include Newton's laws of motion; forces; torques; work; energy; power; physical and thermal properties of solids, liquids, and gases; energy transformations by mechanical, thermal or electromagnetic

means; theory of simple and compound machines; the various means of acquiring and validating measurements; the modern theory of the atom and its impact on computers, technology, and the acquisition and storage of information. The instructor will be able to modify the list of topics to include those that are most appropriate for the students enrolled. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH180.*

PHS115

College Physics I

Lecture, demonstration and laboratory course involving some theoretical work but with emphasis on problem solving in elementary mechanics and thermal physics. Topics include metric system, vectors, motion, Newton's Laws, energy, momentum, properties of matter, heat, the Laws of Thermodynamics and waves. Calculus will not be used. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH180.*

PHS125

College Physics II

Lecture, demonstration and laboratory course involving some theoretical work but with emphasis on problem solving in electricity, magnetism and light. Topics include electric and magnetic fields, induction, direct and alternating current, electrical instruments, electromagnetic waves, optics and (time permitting) the basics of modern physics. Calculus will not be used. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH182 and PHS115.*

PHS201

General Physics I

Principles of mechanics, including kinematics, dynamics, work and energy, impulse and momentum, gravitation, rotational kinematics and dynamics, oscillations, and an introduction to the statics and dynamics of fluids. For science and engineering majors. Calculus will be used. 4 Credits (3 Lecture -3 Lab) *Corequisite(s): MTH240.*

PHS202

General Physics II

A continuation of PHS 201. Includes electric charge, electric field and potential theory, capacitance, current and resistance, electromotive force and D.C. circuits, magnetic field theory, electromagnetic induction and oscillations, A.C. circuits, Maxwell's equations. For science and engineering majors. Calculus will be used. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PHS201. Corequisite(s): MTH242.*

PHS203

Physics III

Waves, geometrical and physical optics, kinetic theory, thermodynamics and an introduction to relativity, quantum mechanics, and nuclear physics. Course is identical to PHS 204 but has no lab component. For science and engineering majors. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PHS201. Corequisite(s): MTH242. As needed.*

PHS204

General Physics III

Waves, geometrical and physical optics, kinetic theory, thermodynamics, and an introduction to relativity, quantum mechanics, and nuclear physics. For science and engineering majors. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PHS201. Corequisite(s): MTH242. As needed.*

PHS222

Imaging Physics

Emphasizes health science application of the principles of nuclear physics and radiation. Topics include atomic and nuclear structure, biophysical effects of radiation, radiation metrology, X-ray generators and associated circuitry, and principles of ultrasound and nuclear magnetic resonance imaging. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PHS112. Fall Only.*

PHS236

Modern Physics

Atomic and nuclear physics. Includes structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PHS204. Corequisite(s): MTH242. As needed.*

PHS251

Mechanics

Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH242 and PHS201. As needed.*

PLUMBING (PLH)

PLH111

Plumbing Skills-Residential

This course covers the basic principles and skills used in hand and machine operations of plumbing trade. A study of materials and joining methods of various pipes used in the plumbing systems. Provides working knowledge of drain-waste-vent systems recognized by the National Standard Plumbing Code. 5 Credits (2 Lecture -9 Lab)

PLH121

Plumbing Skills-Commercial

This course covers basic principles and skills to install and maintain commercial and specialty plumbing features and fittings. A study of regulations and governing proper code installations. 5 Credits (3 Lecture -6 Lab) *Prerequisite(s): PLH111.*

PLH123

Practical Plumbing Experience

This course continues the study of blueprints, estimating, costing, and construction of plumbing projects. Construction projects on and off campus as jobs become available. Field trips to industries and businesses. Campus plumbing maintenance inspections. 3 Credits (0 Lecture -9 Lab)

PLH226

Fundamentals of Heating Systems

The primary focus of this course is to develop a common knowledge and understanding of the basics and functions of applied commercial building and industrial facility heating systems. Students from various technical skill area backgrounds will merge common and gain exposure to the specifics of identity, application, and operation of steam and hydronic boilers, pumps, warm-air furnace units, and fans/blowers. Students will be introduced through both classroom instruction and practical experiences to the following topics: the importance of heating systems for comfort and process, types of systems, how each system works, identification of heating system components, the principles of water and air transfer, an overview of applicable ASME and NFPA codes/standards, equipment and operating safety controls and introductory control point strategies. 3 Credits (2 Lecture -3 Lab)

PLH239

Basic Heating Systems and Design

Basic entry level skills required to calculate heat loss, design and layout various residential hot water central heat systems. Includes identification of boilers, systems, heat distribution units and trim. System installation, repair and operation are covered as well as natural gas piping, boilers, flue gas analysis and combustion efficiency testing. 5 Credits (3 Lecture -6 Lab)

PLH244

Hydronic Heating Systems

Basic entry level skills required to identify, install and operate residential and commercial steam heat systems, boilers and trim. Emphasizes combustion efficiency testing, and oil and natural gas burner service, installation and repair, and pipefitting skills. 4 Credits (2 Lecture -6 Lab)

PLH255

Plumbing, Heating and Air Conditioning for the Trades

Includes the theory and laboratory projects on basic residential plumbing. The fundamental principles of potable water distribution, drainage, waste and vent systems. Common plumbing materials, fixtures, tools, shop equipment and job safety are included. Methods and techniques of applying plumbing skills in the trade area. 3 Credits (2 Lecture -3 Lab) **Spring Only.**

PARAMEDIC TECHNOLOGY (PMP)

PMP100

Emergency Training Assessment

Emergency Medical Technicians at the Basic level (valid EMT-B certification recognized by Pennsylvania, or having Pennsylvania reciprocity, or NREMT-B) desiring advance placement in the Paramedic program will take this course to become familiar with and integrated into the protocols of the Pennsylvania College of Technology EMT-P program. This course must be passed successfully before the advanced placement student can proceed in the program. Classroom, laboratory, clinical, and evaluation sessions are likely in this course, but the actual course requirements and designs will vary depending

on the individual student background and demonstrated capabilities. This course requires permission of the Program Director to enter. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): BIO115. Corequisite(s): BIO125. Scheduled by Special Arrangement.*

PMP101

Emergency Clinical Practice

Emergency Medical Technicians at the Basic level (EMT-B) desiring advanced placement in the Paramedic program will take this course if additional clinical practice is needed to integrate the student into the protocols of the Pennsylvania College of Technology EMT-P program. The students will present documentation describing their EMT clinical experience in terms of types, dates, locations, job title, job description, responsibilities, and supervising personnel. The documentation will be evaluated by the Program Director, and clinical experiences will be designed to meet the needs of the student as deemed to be appropriate. While the student will be required to be in clinical rotation for at least 45 clock hours, actual requirements can vary depending on the individual student background. Didactic material will include hazardous materials awareness and operations and other topics as determined necessary by the Program Director. Entrance into this course requires permission of the Program Director. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): BIO115. Corequisite(s): BIO125. Scheduled by Special Arrangement.*

PMP121

Introduction to Emergency Medical Care

This course prepares the student to the Emergency Medical Technician-Basic (EMT-B) level of certification and to move into studies for Emergency Medical Technician-Paramedic level of skills. Students will learn about Emergency Medical Services (EMS) in terms of roles and responsibilities. Scope of practice and specific statutes, regulations, and laws regarding the EMT-B and EMS will be presented. Well-being for the EMT-B will be studied, as will baselines, histories, and exams. Activities involving lifting and moving, establishing airways, providing basic life support, surveying the scene and assessments and accesses will be studied. Detailed physical exams, documentation needs and skills, communications, emergency treatments for adults and children, ambulance and hazardous materials operations from the EMT-B perspective will be presented. Classroom and laboratory activities take place throughout the semester. In the second half of the course students will be assigned clinical duty for at least 64 hours. 9 Credits (6 Lecture -3 Lab) *Prerequisite(s): BIO115 and CSC110 and ENL111 and PSY111 and SPC101 or BIO115 and CSC110 and ENL111 and PSY111 and SPC201 or BIO115 and CSC110 and ENL111 and SOC111 and SOC111 and SPC101 or BIO115 and CSC110 and ENL111 and SOC111 and SPC201. Corequisite(s): BIO125 and MTH124 or BIO125 and MTH150. Spring Only.*

PMP132

Pre-Hospital Environment and Patient Assessment

The Emergency Medical Technician-Paramedic (EMT-P) must complete prescribed studies of specific areas to be eligible for graduation and certification. This course provides introductory and advanced study related to the pre-hospital environment and paramedic level patient assessment. Students will focus on the importance of wellness, role modeling, roles and responsibilities, injury prevention, legalities, ethics decision-making, pre-hospital communications and documentation. The course explores incident management, basic and advanced rescue situations and scene awareness, rescue operations, and crime scene awareness, medical incident command as well as specialty rescues. This course provides instruction in patient assessment related to trauma and medical emergencies and therapeutic communications, life span development, history taking, physical examination, scene assessment, and appropriate ongoing reassessments. Students will participate in clinic rotation for at least 160 hours beyond the instructional lab time while in this course. (Formerly PMP131) 8 Credits (7 Lecture -5 Lab) *Prerequisite(s): BIO115 and BIO125 and CSC110 and ENL111 and MTH124 and PSY111 and SPC101 or BIO115 and BIO125 and CSC110 and ENL111 and MTH124 and PSY111 and SPC201 or BIO115 and BIO125 and CSC110 and ENL111 and MTH124 and SOC111 and SOC111 and SPC101 or BIO115 and BIO125 and CSC110 and ENL111 and MTH124 and SOC111 and SPC201 or BIO115 and BIO125 and CSC110 and ENL111 and MTH150 and PSY111 and SPC101 or BIO115 and BIO125 and CSC110 and ENL111 and MTH150 and PSY111 and SPC201 or BIO115 and BIO125 and CSC110 and ENL111 and MTH150 and SOC111 and SPC101 or BIO115 and BIO125 and CSC110 and ENL111 and MTH150 and SOC111 and SPC201. Corequisite(s): FIT111. Summer Only.*

PMP242**Pharmacology and Shock**

The Emergency Medical Technician-Paramedic (EMT-P) must complete prescribed studies of specific areas to be eligible for graduation and certification. This course provides instruction in pathological principles, shock in terms of the cellular effect, blood and components, immune and inflammatory responses, fluids and electrolytes, acid-base balance, and hemorrhage and pharmacology from the EMT-P perspective. Phlebotomy, and venous access, and medication administration principles and techniques will be presented and practiced. (Formerly PMP241) 6 Credits (6 Lecture - .50 Lab) *Prerequisite(s): PMP132. Corequisite(s): PMP246 and PMP249. Fall Only.*

PMP246**Cardiopulmonary Emergencies**

This course provides instruction in cardiac and pulmonary areas, specifically, respiratory and cardiac and cardiovascular emergencies, anatomy, physiology, pathology, assessments, treatment plans, and treatments. Included are respiratory and cardiac pharmacology and medication administration, advanced airway management, chronic obstructive pulmonary disease, pulmonary embolism, use of respiratory adjuncts, chest trauma, and chest needle decompression. In addition, cardiovascular diseases, the cardiovascular system, managing cardiac arrest, and Advanced Cardiac Life Support (ACLS) are presented. (Formerly PMP245) 10 Credits (9 Lecture -5 Lab) *Prerequisite(s): PMP132. Corequisite(s): PMP242 and PMP249. Fall Only.*

PMP249**Intermediate Clinical Practicum**

This course will provide the student with supervised direct patient contact in hospitals and field settings. The student will have opportunities to apply and integrate the knowledge being presented in co-requisite courses and perform skills learned to date at a paramedic level. Students will have a minimum of 180 clock hours of clinical and field assignment in a variety of Emergency, Surgical, Critical Care and Pre-Hospital settings. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): PMP132. Corequisite(s): PMP242 and PMP246.*

PMP252**General Medical Emergencies**

This course continues the preparation of emergency personnel towards the level of Emergency Medical Technician-Paramedic (EMT-P). Information presented in this course is part of the study required in specific, prescribed areas for EMT-P. Mastery of course material is necessary before the student can move into other areas of EMT-P education, graduate, and become certified. General Medical Emergencies addresses specifically environmental, marine/diving, geriatric, gastroenterologic, and urologic emergencies. In addition, the student will learn how to work with patients who face physical, mental, social and financial challenges, and the home care patient in regards to EMT-P responsibilities. Additional topics include fluids, electrolytes, acid-base balance, and shock in regards to emergencies, endocrine pathophysiology and emergencies, hematology, infectious and communicable diseases, toxicology, substance abuse, and allergies and anaphylaxis from the EMT-P perspective and responsibilities. (Formerly PMP251) 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): PMP242 and PMP246 and PMP249. Corequisite(s): PMP255 and PMP258 and PMP259. Spring Only.*

PMP255**Obstetric and Pediatric Emergencies**

To become a certified Emergency Medical Technician-Paramedic (EMT-P), the areas of obstetrics, pediatrics and gynecology as related to potential emergency situations must be studied. Pediatric Advanced Life Support (PALS) will be presented. This course will address these areas from the EMT-P perspective. 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): PMP242 and PMP246 and PMP249. Corequisite(s): PMP252 and PMP258 and PMP259. Spring Only.*

PMP258**Trauma and Behavioral Emergencies**

This course provides part of the knowledge base needed by the Emergency Medical Technician-Paramedic to graduate and become certified. Students will complete pathophysiology and management of trauma emergencies and the American College of Emergency Physicians (ACEP) Basic Trauma Life Support (BTLS) for the advanced provider. This course also presents information and provides practice situations from the EMT-P perspective related to the emotional aspects of illness and injury, emergencies of behavioral origin, drug maintenance related to behavioral emergencies, management techniques for suicidal situations and rape crisis, and patient interviewing. (Formerly PMP257) 5 Credits (4 Lecture -3 Lab) *Prerequisite(s): PMP242 and PMP246 and PMP249. Corequisite(s): PMP252 and PMP255 and PMP259. Spring Only.*

PMP259**Advanced Clinical Practicum**

Clinical and fieldwork experiences are key to the development of the Emergency Medical Technician-Paramedic candidate, and are needed by the student to be able to fully integrate classroom, laboratory and clinical lessons into the reality of EMT-P performance expectations. This course helps the student to further develop skills and understand and value medical accountability within the emergency medical system. Students will have a minimum of 200 clock hours of clinical/field assignment. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): PMP242 and PMP246 and PMP249. Corequisite(s): PMP252 and PMP255 and PMP258. Spring Only.*

PMP269**Summative Clinical Practicum**

Additional opportunities for development of clinical skills, for valuing of the role, responsibilities and scope of practice for the Emergency Medical Technician-Paramedic, and for valuing of medical accountability within the emergency medical system are available in this course. Clinical and fieldwork experiences are key to the development of the EMT-P, and are required to advance to EMT-P status. Students will take, and are expected to pass, a program-comprehensive written examination to assess the student's integration and retention of materials and experiences into the roles and expectations of the EMT-P as part of the requirements for this course. Students will have a minimum of 520 hours of clinical practicum assignment. 2 Credits (.50 Lecture -10 Lab) *Prerequisite(s): PMP252 and PMP255 and PMP258 and PMP259. Summer Only.*

PLASTICS AND POLYMER TECHNOLOGY (PPT)**PPT115****The Plastics Industry**

This course provides an overview of the plastics processing industry. Comparisons will be made to the polymer production industry, non-plastic manufacturing industries, and to other related industries such as textile industry. This course will also help the student discover the nature of plastic processors including size, work environment, and typical employment possibilities. 2 Credits (2 Lecture -0 Lab) **Fall Only.**

PPT120**Polymer Processing Survey**

An introduction of polymer processing techniques, injection molding, extrusion techniques, injection and extrusion blow molding, and vacuum forming will be covered. 4 Credits (3 Lecture -3 Lab) *Corequisite(s): CHM100. Fall Only.*

PPT130**Plastics and Elastomers**

Survey of types and basic chemistry of organic polymers including thermoplastics, thermoset plastics, thermoset elastomers and thermoplastics elastomers. Laboratories will introduce students to the physical and rheological properties of polymers. Students with credit for PPT110 are not eligible to take this course. (Formerly PPT 110) 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): CHM100 and PPT120.*

PPT235**Injection Molding**

An in-depth study of the flow characteristics and physical state properties of polymers as they relate to injection molding of plastics. Laboratories will allow extensive experimentation in physical properties and melt processing. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): PPT120. Fall Only.*

PPT240**Advanced Polymer Processing**

Advanced setup, start-up, and troubleshooting of polymer processing equipment, including a treatment of hydraulics. The emphasis of this course will be hands-on work and practical problem solving. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): PPT235 and PPT248. Spring Only.*

PPT245**Mold Design/Maintenance**

An extensive review of good mold design principles. Laboratories will cover assembly, cleaning, and repair of injection molds. 4 Credits (3 Lecture -3 Lab) *Corequisite(s): PPT235. Fall Only.*

PPT248

Extrusion

This course provides a detailed study of plastics extrusion processing. Different extrusion types such as profile, blown film, co-extrusion, twin-screw, and reaction extrusion will be covered. Additional study will include barrel design, screw geometry and design, and die design. Off-line equipment for take-off, conversion, and material handling will also be topics of study. The student will spend laboratory time working with extrusion equipment. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PPT120. Spring Only.*

PPT249

Industrial Project Management

Each student will develop management plans for a number of projects relating to either the processing or composition of plastics. A formal paper will be written at the conclusion of each project. 3 Credits (1 Lecture -6 Lab) *Prerequisite(s): PPT245. Spring Only.*

PPT250

Industrial Blow Molding

This course provides a detailed study of the plastics blow molding process. Different blow molding methods such as extrusion, stretch blow, injection and co-extrusion will be detailed. Additional hands-on study will include process and parison control, mold design, automation controls, and auxiliary equipment. The majority of laboratory time will be used to make quality plastic parts with an extrusion blow molder. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PPT120. Corequisite(s): PPT248.*

PPT315

Polymer Testing

This course provides an overview of the testing and characterization of polymeric materials. Students will learn preparation and conditioning of specimens, sampling theory, and standard methods for a series of property tests used in plastics industry and polymer research. These tests include tensile and flexural stress/strain, thermal analyses, rheometry, and impact toughness. Additionally, characterization of polymers by chemical composition and molecular morphology will be studied. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PPT110 or PPT130. Spring Only.*

PPT347

Moldflow

This course provides the student with a thorough understanding of injection molding design and filling processes. An overview of polymer rheology flow and thermal properties serves as an introduction to concepts associated with filling an injection mold with plastic materials. A majority of the course is devoted to application of mold filling simulation software, primarily Moldflow™. Moldflow™ is used in the course to perform detailed flow analysis and design. Students with credit for PPT247 are not eligible to take this course. (Formerly PPT 247) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CAD116 and PPT245.*

PPT415

Polymer Synthesis

This course provides an overview of the synthesis of polymeric materials. Students will study the monomers, prepolymers, and reaction types employed to produce many different polymers used in the plastics industry. These polymers include polyethylene, polypropylene, nylon, polyurethane, epoxy, and polyvinyl chloride, among others. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): PPT110. Fall Only.*

PPT425

Product Design

This course provides a comprehensive approach to product design. This specific area of study includes the design process from conceptualization, to design for manufacturability, through development of engineering drawings, to development of prototype models, to production of prototype tooling for limited process trials. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): CAD116 and EDT110 or CAD105 and EDT110 or CAD116 and EDT101 or CAD105 and EDT101. Spring Only.*

POLITICAL SCIENCE (PSC)

PSC210

International Relations

An examination of global politics through an analysis of the distinctions among modern nation-states and the influences governing their international relations. Topics include foreign policy, nationalism, ideology, international law, the nature of power, international trade and exchange and The Future World Order. Special emphasis is given to changing political alignments and the present economic shift of forces from the industrialized Northern Hemisphere to the resource-rich Southern Hemisphere. 3 Credits (3 Lecture -0 Lab) **As needed.**

PSC231

American Government-National

Federal government, its power and organization. Functions of legislative, executive and judicial branches. Students examine the historical development of our federal system and analyze the relationships between social forces, government and political action. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

PSC241

State and Local Government

State and local government institutions, their functions and responsibilities; intergovernmental relations. 3 Credits (3 Lecture -0 Lab)

PSYCHOLOGY (PSY)

PSY100

Applied Psychology

This course examines selected principles of psychology as applied to everyday modern living. The science of psychology will be distinguished from “pop psychology”. Other topics will be drawn from a variety of applications of psychology, including learning and memory, stress and coping strategies, behavioral modification, interpersonal relationships, social influence, human development, psychological disorders, and psychotherapy. The course may be taken as a social science elective or as preparation for PSY 111. It cannot be substituted for PSY 111 as a prerequisite for other psychology classes. 3 Credits (3 Lecture -0 Lab) **As needed.**

PSY111

General Psychology

Introduction to the science of human behavior and mental processes. Students examine the relation between the nervous system and behavior, learning, perception, language, personality, intelligence and psychopathology. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): RDG001 or Placement by Examination.*

PSY201

Abnormal Psychology

Principal forms of mental and emotional disorders with emphasis on their causes, symptoms, and courses of treatment. By examining distorted or exaggerated behavior, students develop a clearer sense of normal behavior. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111.*

PSY203

Developmental Psychology

Psychological development and change throughout the life span. Examines principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. Adult issues of individual integrity, career pursuit, and intimacy are emphasized. Senescence and adjustment to aging are examined. Additional attention is devoted to the family lifecycle concept. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111.*

PSY210

Child Psychology

Child psychology will study the phenomena of and interactions among physical, psychomotor, behavioral, cognitive, emotional, social, moral, and personality development from the prenatal period to the middle school years. By examining the data and theories of child development, the student will gain an understanding of normal and abnormal development useful in interactive settings with children. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111.*

PSY231

Educational Psychology

Psychological principles and concepts applied to learning. Students explore intelligence and intelligence testing, cognitive development, learning and memory, creativity, language and other relevant topics. These are applied to practical educational problems. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111. Spring Only.*

PSY241

Social Psychology

Interaction of individuals in groups. Harmony and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111 or SOC111. As needed.*

PSY260

Psychology of Human Sexuality

This course will examine the psychological, biological and social factors that contribute to human sexuality. Based upon the belief that human beings wish to explore and to experience their sexuality in a holistic and responsible manner, the course will cover such topics as human sexual development across the lifespan; the physiology and anatomy of reproduction; cross-cultural and historical perspectives about human sexuality; contemporary perspectives about human sexuality; sexual dysfunctions and therapeutic approaches to treatment of those dysfunctions; gender identity; gender roles and gender stratification as they relate to human sexuality; values clarification (including legal and ethical issues) related to human sexuality; and sexuality within the context of human intimate relationships. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111 or SOC111. As needed.*

PSY266

Gerontology and Aging

This course examines the biological, social, and psychological aspects of aging as they affect the adaptation of the individual to the environment. The economic, political, and legal issues which affect the administration of human service organizations will be studied. Emphasis will be placed on human service intervention with the elderly client. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111 or SOC111 or HSR111 or HSR115. As needed.*

PSY320

Behavior Modification

An introduction to the basic principles of behavior change and their application in a variety of settings. The principles examined draw upon the areas of operant and classical conditioning, modeling, cognitive theory, and single-subject experimental methodology. Techniques based on these principles will be discussed, including shaping, contingency management, stimulus control, desensitization, modeling, self-destruction, and outcome evaluation. Various settings where these techniques have been applied will be considered, including home, school, industry, clinic, prison, and community. Ethical issues will also be explored. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111. As needed.*

PSY366

Advanced Gerontology

The course will explore the psychological, social, and biological factors that affect aging in America today. Aging in earlier times, the demographics of aging in the future, and aging in other societies will also be examined to provide a broader perspective. The course will focus on practical information and provide an outlet for hands-on experiences. The Pennsylvania Department of Aging Options Assessment Form will be used as a guide to explore the various areas of functioning which would impact independent or institutional living. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): HSR266 and PSY111 or PSY111 and PSY266. As needed.*

QUALITY ASSURANCE (QAL)

QAL101

Introduction to Quality Assurance

This course provides a fundamental, yet comprehensive coverage of quality assurance functions and activities. Participants will explore the knowledge and skills needed to make organizations more cost and time-efficient and more responsive to customer needs and to challenges in the world market. The focus is on gaining insight into the problems encountered in achieving quality and understanding important techniques used to solve quality problems. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

QAL121

Advanced Quality Assurance

This course will build on concepts introduced in the Introduction to Quality Assurance (QAL 101) and their application in a variety of industries, both manufacturing and service. Approaches and technical tools in designing for quality; process analysis, improvement and control; quality system audits; data gathering and analysis; and human resource optimization will be explored. Examples and case studies will demonstrate measures to develop a competitive edge while reducing cost and waste. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): QAL101. As needed.*

QAL125

Metrology/Quality Control

The use of precision instruments for measurement and inspection of machined parts—includes the use of comparators, projection comparators, coordinate measuring machine, surface plate, toolmakers microscope, hardness testing and quality control techniques. 5 Credits (2.50 Lecture -7.50 Lab) *Prerequisite(s): MTT110 and MTT115.*

QAL215

Design of Tests and Experiments

This course will develop skills and knowledge in structuring and conducting experiments to test quality parameters. Justification, procedure, and cost benefit will be tied to process, procedure and techniques to encounter a wide range of quality issues and problems encountered in manufacturing business and service industries. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): QAL101. Corequisite(s): MTH160. As needed.*

QAL220

Statistical Methods for Semiconductor Processing

This course will develop skills and knowledge in basic statistical methods as applied in the semiconductor processing industry. This course provides a basic introduction to the concepts of continual process improvement, the Deming management philosophy, statistical process control (SPC), and other process improvement philosophies. Also, issues of yield, reliability, and design of experiments to test quality parameters will focus on problem solving skills. Justification and cost benefit will be tied to process, procedure and techniques to encounter a wide range of quality issues and problems encountered in the semiconductor processing industry. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): MTH182. Corequisite(s): CSC110.*

QAL230

Process Improvement (SPC)

This course provides a basic introduction to the concepts of continual process improvement, the Deming management philosophy, statistical process control (SPC), and other process improvement philosophies. Focus will be placed on the practical aspects of management philosophies and use of SPC as problem solving tool. 4 Credits (3 Lecture -3 Lab) *Corequisite(s): MTH180. Fall Only.*

QAL237

Non-Destructive Testing I

The course introduces the principles and applications of non-destructive testing. Student will learn the theories and practices in liquid penetrant, magnetic particle, ultrasonic, and radiographic testing methods. 3 Credits (2 Lecture -3 Lab)

QAL240

Quality and Reliability in Communication Systems

Quality and reliability is essential for understanding customer needs, product development, supplier relations, manufacturing operations, service operations, inspection, field performance and customer service. The subject matter provides a readable and not overly technical treatment of performance, quality and reliability in communication systems applications and the problems associated with these systems. The theory is supplemented with a hands-on laboratory. Admittance to this course is by satisfactory completion of prerequisites or permission of the instructor. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): EET154. Corequisite(s): MTH182.*

QAL247

Non-Destructive Testing II

The course introduces advanced theories and practices in liquid penetrant, magnetic particle, ultrasonic and radiographic testing methods. Emphasis is placed on development of non-destructive procedures, and the interpretation of code specifications, standards, and of test results. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): QAL237.*

RADIOGRAPHY (RAD)

RAD101

Radiographic Anatomy and Positioning I

This course introduces the student to basic terminology used in radiographic positioning. The curriculum provides a comprehensive study of the basic positions of the human body for radiographic examination. In addition to classroom instruction, each student will be required to demonstrate his/her competence in the laboratory setting on a weekly basis. Further practice will come in the clinical setting, where each student will be assigned to a clinical supervisor and/or a supervising staff radiographer, under the direction of the clinical supervisor, to practice those procedures learned during classroom and laboratory settings. 2.50 Credits (2 Lecture -1.50 Lab) *Corequisite(s): BIO115.* **Fall Only.**

RAD102

Principles of Radiographic Exposure I

This course is an introduction to the fundamental concepts and techniques relating to the production of x-radiation and its application to radiography. Topics include: atomic structure, radiation exposure factors, x-ray tube construction, basic radiation protection, controlling and influencing factors which affect radiographic quality, x-ray interaction with matter, and clinical applications. 3 Credits (3 Lecture -0 Lab) *Corequisite(s): MTH180.* **Fall Only.**

RAD103

Radiography Ethics and Orientation

This course introduces the student to the radiography profession and the basic and elementary problems a first-year radiography student will encounter in his/her daily studies and work. Major emphasis is placed on patient care and education. The student will learn how to deal with patients of all ages, races, religions, social standings, and with varied types of injuries/illnesses. Students will also learn the importance of medicolegal considerations and their impact on the healthcare professional. Most importantly, the student will learn that the patients, their comfort, and their welfare are his/her prime concern. 1.50 Credits (1.50 Lecture -0 Lab) **Fall Only.**

RAD104

Radiographic Darkroom and Processing

Emphasizes the design and function of a radiographic darkroom. The course focuses on the following: relationships of the chemical aspects of processing a radiographic film, film and screen interaction and relationships, sensitometric film analysis and interpretation, and efficient darkroom (processing) procedures. 1.50 Credits (1.50 Lecture -0 Lab) **Fall Only.**

RAD105

Radiography Practicum I

Clinical radiography experience applies radiographic theory and provides learning experiences to help the student acquire expertise and proficiency in a variety of diagnostic radiographic procedures at specified levels of competency. Students will work with darkroom applications, know basic radiation protection standards, be familiar with various radiographic equipment, and show competency in anatomy and physiology and radiographic positioning. Additionally, students will integrate knowledge of patient care and management and medical ethics into daily radiographic practice. Students will spend a minimum of 15 hours in the clinical environment per week. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Corequisite(s): RAD101 and RAD102 and RAD103 and RAD104.* **Transportation will be the responsibility of the student. Fall Only.**

RAD113

Radiographic Anatomy and Positioning II

This course is a continuation of Radiographic Anatomy and Positioning I. During this course, the student will cover additional radiographic positions, trauma and pediatric positioning, and radiographic film evaluation. In addition to classroom instruction, each student will be required to demonstrate his/her competence in the laboratory setting on a weekly basis. Further practice will come in the clinical setting, where each student will be assigned to a clinical supervisor and/or a supervising staff radiographer, under the direction of the clinical supervisor, to practice those procedures learned during classroom and laboratory settings. 2.50 Credits (2 Lecture -1.50 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* *Corequisite(s): BIO125.* **Spring Only.**

RAD114

Principles of Radiographic Exposure II

Continuation of RAD 102, this course is designed to acquaint the student with the comprehensive analysis of the factors affecting image quality requiring integration of all exposure technical factors previously learned. Topics will

focus on principles of low dosage radiography, geometry of the image formation, an analysis of radiographic quality, tube rating charts, radiation interaction, and practical application with regard to radiographic technique and equipment. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* *Corequisite(s): PHS112.* **Spring Only.**

RAD115

Radiographic Equipment and Maintenance

This course will help the student to understand the various parts of radiographic equipment, what these individual parts are responsible for, how these parts work together to produce an operational radiographic room, and how to test the equipment to insure that it is operating properly. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* **Spring Only.**

RAD116

Radiographic Nursing Procedures

This course introduces the student to the theory and application of the clinical concepts of patient care and medical techniques in the radiology department. 1.50 Credits (1.50 Lecture -0 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* **Spring Only.**

RAD117

Contrast Media and Operating Room Procedures

Emphasizes the use of contrast media in imaging procedures. Topics include: patient information gathering, pharmacology, adverse reactions, and imaging techniques. Also covered will be an introduction to electricity and operating room imaging procedures and protocols. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* **Spring Only.**

RAD118

Radiography Practicum II

Clinical radiography experience applies radiographic theory and provides clinical learning experiences in a variety of diagnostic radiographic procedures and an introduction to radiographic equipment manipulation, continued patient care and management, contrast media, operating room radiographic imaging techniques, tomography, and nursing applications. An understanding of anatomy and physiology and radiographic positioning will be required at specified levels of competency. The student will spend a minimum of 15 hours in the clinic environment per week. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): RAD101 and RAD102 and RAD103 and RAD104 and RAD105.* *Corequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117.* **Transportation will be the responsibility of the student. Spring Only.**

RAD201

Practicum I

The first summer internship provides clinical learning experiences so that the student will acquire expertise and proficiency in a variety of diagnostic radiographic procedures by applying classroom theory to the actual practice of technical skills at specified levels of competency. Through research, the student will prepare a written paper that demonstrates knowledge of topics relating to, but not limited to, radiation protection, student/staff/patient communication, or pediatric radiography. The student will spend a minimum of 450 hours in the clinic environment. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118.* **Transportation will be the responsibility of the student. Summer Only.**

RAD202

Practicum II

The second summer internship provides an integration of all clinical learning experiences so students can achieve final competency and proficiency in radiographic procedures including mobile and surgical equipment manipulation and technique application, as well as in a variety of radiographic examination previously encountered in prior semesters. Additionally, students will have the opportunity to apply MRI, CT, and cross-sectional anatomy applications and techniques while undergoing this internship. Students will demonstrate "affective domain competency" by integrating problem solving scenarios and/or actual clinical experiences in areas such as: patient needs, non-traditional patients, stress related patient reactions, and the need to understand criticism as it applies to the employer/employee work relationship. The student will spend a minimum of 450 hours in the clinic environment. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): RAD246 and RAD247 and RAD248 and RAD249 and RAD250 and RAD251.* **Transportation will be the responsibility of the student. Summer Only.**

RAD220**Radiographic Anatomy and Positioning III**

This course is a continuation of Radiographic Anatomy and Positioning I and II. During this course, the student will cover additional radiographic positions, trauma and pediatric positioning and radiographic film evaluation. The majority of the semester will be spent on techniques required to x-ray the human skull properly. In addition to classroom instruction, each student will be required to demonstrate his/her competence in the laboratory setting on a weekly basis. Further practice will come in the clinical setting, where each student will be assigned to a clinical supervisor and/or a supervising staff radiographer, under the direction of the clinical supervisor, to practice those procedures learned during classroom and laboratory settings. 2.50 Credits (2 Lecture -1.50 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118 and RAD201. Fall Only.*

RAD221**Principles of Radiographic Exposure III**

This course provides the student with a thorough understanding of radiographic image quality. Building on information received in prerequisite exposure courses, the student will utilize concepts such as: radiographic density, contrast, definition and distortion and their controlling factors of mA, kVp, and S (time) to prepare radiographic images of optimum quality. Additionally, concepts in radiographic quality assurance and control procedures and techniques will be explored. 3.50 Credits (3.50 Lecture -0 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118 and RAD201. Fall Only.*

RAD222**Radiation Protection**

This course will provide the student with an overview of the principles of radiation protection for the patient, personnel, and the public is presented. The concepts of As Low As Reasonably Achievable (ALARA), Negligible Individual Risk Level (NIRL), and stochastic and nonstochastic effects will be discussed and compared with the concept of Maximum Permissible Dose (MPD). Regulatory agencies will be identified and agency involvement in radiation protection will be discussed. 2 Credits (2 Lecture -0 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118 and RAD201. Corequisite(s): PHS222. Fall Only.*

RAD223**Interventional Radiography**

This course provides a comprehensive study of all aspects of special procedures and interventional radiography. Emphasis is placed on angiography, ultrasound, myelography, arthrography, and venography. Content areas will include indications for examinations, equipment, examination protocols, and patient care. Upon completion, each student will be aware of special and interventional procedures and the special needs of patients undergoing those procedures. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118 and RAD201. Fall Only.*

RAD224**Introduction to Mammography**

This course provides a comprehensive in-depth study of all aspects of Mammography. Content areas will include breast anatomy, positioning, compression, equipment, exposure, image quality, patient history, and quality assurance. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD113 and RAD114 and RAD115 and RAD116 and RAD117 and RAD118 and RAD201. Fall Only.*

RAD225**Radiography Practicum III**

Clinical radiography experience continues to apply radiographic theory and technical applications and provides clinical learning experiences so that the student will acquire expertise and proficiency in a variety of diagnostic radiographic procedures and techniques including radiation protection applications, quality assurance, interventional and special radiographic examinations. An understanding of anatomy and physiology and radiographic positioning will be required at specified levels of competency. The student will spend a minimum of 15 hours in the clinic environment per week. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): RAD201. Corequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224. Transportation will be the responsibility of the student. Fall Only.*

RAD246**Radiographic Anatomy and Positioning IV**

This course is a continuation of Radiographic Anatomy and Positioning I, II and III. During this course, the student will cover additional radiographic positions, trauma and pediatric positioning and radiographic film evaluation.

The majority of the semester will be spent on techniques required to perform fluoroscopic procedures, such as the upper and lower gastrointestinal tract, urinary system and gallbladder. In addition to classroom instruction, each student will be required to demonstrate his/her competence in the laboratory setting on a weekly basis. Further practice will come in the clinical setting, where each student will be assigned to a clinical supervisor and/or a supervising staff radiographer under the direction of the clinical supervisor to practice those procedures learned during classroom and laboratory settings. 1.50 Credits (1 Lecture -1.50 Lab) *Prerequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Spring Only.*

RAD247**Introduction to CT and MRI Imaging**

This course is designed to prepare the student with a basic understanding of the theory and application of Magnetic Resonance Imaging and Computerized Tomography. Aspects of electronic digital imaging will also be included. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Spring Only.*

RAD248**Pathology**

Emphasizes human pathology on a gross anatomic level. Inflammatory, immunology, infections, traumatic and neoplastic processes will be emphasized. Specific diseases will be studied in further depth from an organ system approach. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Spring Only.*

RAD249**Cross Sectional Anatomy for Radiographers**

This course introduces students to human anatomy in a cross-sectional image format. Students will build on their knowledge of human anatomy and physiology using transverse, coronal, and sagittal MRI and CT imaged sections of the human body. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): BIO115 and BIO125 and RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Spring Only.*

RAD250**Pediatric and Trauma Radiography**

This course provides a comprehensive study of basic concepts regarding Pediatric and Trauma Radiology. Students will be instructed in the classroom and will demonstrate competence in such specific areas as radiographing patients with facial injuries, head injuries, fractures, transporting, radiographing and restraining pediatric patients. Upon completion, each student will be aware of the importance of special care needed when radiographing pediatric patients and patients with trauma. 1 Credit (1 Lecture -0 Lab) *Prerequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Spring Only.*

RAD251**Radiography Practicum IV**

Clinical radiography experience applies radiographic theory and integrates previous clinical experiences. Expertise and proficiency will be gained in fluoroscopic radiographic studies, tomography, urinary radiographic procedures, pediatric and geriatric radiographic applications at specified levels of competency. The student will spend a minimum of 15 hours in the clinic environment per week. Student must have current CPR certification. 1 Credit (0 Lecture -5 Lab) *Prerequisite(s): RAD220 and RAD221 and RAD222 and RAD223 and RAD224 and RAD225. Corequisite(s): RAD246 and RAD247 and RAD248 and RAD249 and RAD250. Transportation will be the responsibility of the student. Spring Only.*

READING (RDG)**RDG001****Reading Improvement**

Basic reading improvement for students with limited success in previous reading performance. Differences in ability and background will determine areas each student will pursue. Emphasis on comprehension, vocabulary, speed and spelling. Students learn to take notes on textbook assignments. Audio tapes and other individualized materials are available to encourage individual learning. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): Placement by Examination.*

RDG111

College Reading, Reasoning and Study Skills

Students acquire or review basic reading and study skills essential for success in college courses. Specific reading skills develop comprehension, vocabulary and speed. Effective study habits and skills include outlining, summarizing, underlining, note-taking, and test-taking techniques. Develops the student's ability to process information in a logical way and to foster the conscious development of cognitive learning skills. 3 Credits (3 Lecture -0 Lab)

Prerequisite(s): RDG001 or Placement by Examination.

REAL ESTATE (RES)

RES214

Real Estate for Contractors and Developers

Basic real estate fundamentals and practices are incorporated into a course which examines how real estate law, financing, appraising, and state and local governments affect the real estate industry. The course is designed to give contractors and developers a background in real estate as it affects their industry. 2 Credits (2 Lecture -0 Lab) **Spring Only.**

SAFETY (SAF)

SAF110

Occupational Health and Safety

A basic investigation into the Occupational Health and Safety Act, OSHA regulations, industrial noise, machine guarding, electrical safety, chemical exposure, Worker's Compensation Law, supervisory legal liability, and applicable safety precautions particular to the workplace environment. 2 Credits (2 Lecture -0 Lab)

SCIENCE (SCI)

SCI100

Environmental Science

A scientific investigation of interactions in the environment, including cause and effect relationships and a focus on the impact of humans on the natural environment. Biological, chemical, physical and geological principles are integrated into the presentations. This course promotes a basic scientific understanding of environmental issues and informed decision making. Appropriate for students in all programs. 3 Credits (3 Lecture -0 Lab)

SCI113

Evolution, Genetics, and Development

A one-semester course for non-science majors that examines the conceptual, philosophical, and historical foundations of the three major biological themes of evolution, genetics, and development. The links between these themes provide the unifying framework for discussing biological science as a process of inquiry. This course may not be taken for credit by students who have successfully completed BIO 113 (General Biology I). 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): RDG111 or Placement by Examination. As needed.*

SCI155

Introduction to Astronomy

A study of scientific methodologies and the theories of the extraterrestrial universe. Included is a treatment of the historical development of astronomy as a science from the ancient civilizations to the modern cosmological theorists, and the social contexts that historically have advanced or retarded progress in this discipline. 3 Credits (3 Lecture -0 Lab) **As needed, Fall.**

SCI156

Astronomy Laboratory

Laboratory investigations in basic astronomy. Studies will include naked-eye and telescopic observations of the sky; lab work in geometrical and physical optics; spectroscopy; and computer simulations of orbital and stellar motions. Optional projects include astrophotography and instrument building. 1 Credit (0 Lecture -3 Lab) *Corequisite(s): SCI155. As needed, Fall.*

SCI160

The Science of Spaceflight

Designed to investigate the history and science of spaceflight, the course will examine social, political, historical, and scientific implications of the space program since President Eisenhower initiated the National Aeronautics and

Space Administration (NASA) in July of 1958. Topics to be covered include the history of spaceflight, political and economic implications of the space program, the basic science of propulsion and trajectories, operational facts about the space shuttle, the basic physical laws that govern spaceflight and planetary motion, living and working in space, spacesuit design, an overview of our solar system, satellites, Hubble Space Telescope, global positioning, robotics, the space station, future ventures into space, and the effect space technology has on society. Emphasis is on conceptual models, although some mathematical analysis and problem solving will be performed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and MTH002 or ENL111 and MTH120 and MTH122 or ENL111 and MTH009A and MTH009B or ENL111 and MTH006 or Placement by Examination. (Science, Technology and Society) Spring Only.*

SCI170

Introduction to Physical Science

A survey of the fundamental laws, theories, and concepts of physics, chemistry, astronomy, meteorology, and geology. Intended primarily for non-science students desiring to fulfill a requirement for a Natural Science course with a laboratory component. (Formerly SCI165) 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): ENL001 and MTH004 and RDG001.*

SCI175

Issues in Nuclear Energy

Introduction to the nature and effects of nuclear reactions. Radiation and radioactivity; fission and fusion; nuclear weapons and reactors; "nuclear winter" and mass extinction; creation of matter in the early universe; creation of elements in stars; medical, industrial and scientific uses of radioisotopes. Intended primarily for non-science students desiring to fulfill a natural science requirement. 3 Credits (3 Lecture -0 Lab) **As needed.**

SCI180

Plants, People and the Environment

A survey of plants and the botanical world. Emphasis is placed on plant evolution and adaptation, biomes, ecology and plant use. The relationships between plants, people, civilizations and the planet Earth will be investigated. 3 Credits (2 Lecture -3 Lab) (Science, Technology and Society) **Spring Only.**

SCI260

Biology and Modern Society

This course provides a basis for rational and informed decision-making on current topics of biological interest. An emphasis will be on integrating human concerns with biological concepts from various subfields ranging from ecology to medicine. Some areas of discussion include the biology of cancer, AIDS, and agribusiness/population problems. Intended for non major. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111. (Science, Technology and Society) As needed.*

SCI280

Natural Disasters and Civilization

Natural disasters are examined first from an objective scientific perspective, then in terms of their effects on the technical and social infrastructures of civilizations. Case studies of historic and recent volcanoes, earthquakes, seismic sea waves, hurricanes, floods, epidemics, droughts, and pestilence will be examined, along with the affected civilization's technological, cultural, and political responses. 3 Credits (3 Lecture -0 Lab) (Science, Technology and Society) **As needed.**

SCI301

Exercise Physiology and Applied Nutrition

This course provides an opportunity for the study of human nutrition and exercise. The course will examine the beneficial effects of exercise and proper nutritional habits on the human body (general well-being, athletic training, cardiovascular fitness, prevention of disease, etc.) by examining popular health and fitness trends along with the corresponding scientific data that either supports or contradicts these popular methods of exercise and nutrition. A broad-based computer analysis of nutritional and metabolic processes will also be used to examine these topics. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO115 and BIO125. (Science, Technology and Society) As needed.*

SOCIOLOGY (SOC)

SOC111

Introduction to Sociology

An introduction to the basic concepts and methods used in studying the group life of human beings. Students analyze forces which shape social practice and norms and explore alternative social practices. 3 Credits (3 Lecture -0 Lab)

SOC112

General Anthropology

Survey of the physical and cultural evolution of humans and society. Emphasizes the relationship of the human physical structure to behavior and comparative descriptions of recent primitive societies. 3 Credits (3 Lecture -0 Lab) **As needed.**

SOC171

Cross-Cultural Perspectives in the Health Professions

The course presents cross-cultural perspectives on the work of health care professionals including dental hygienists, nurses, physician assistants, radiographers, occupational therapists, and others. The perspectives investigated in the course are derived from some of the foundational concepts of anthropology and sociology. This beginning level course does not require previous work in the social sciences. Culture, language use, the construction of meaning, identity, ideas of progress, family relations, and justice are studied. Applications of a holistic, cross-cultural perspective to the solution of problems in the health sciences will be stressed throughout the course. This course is suitable for use as a social science elective for students who wish to develop a multicultural perspective on current problems in the health professions. 3 Credits (3 Lecture -0 Lab) (Cultural Diversity) **As needed.**

SOC210

American Subcultural Groups

This course will introduce students to the concepts of sub and counter-cultures in America, issues of cultural diversity, and the function of such groups as folk cultures. This course utilizes a synchronic, comparative approach to investigate how twentieth-century American secondary cultures have responded to the traditional or dominant culture and how they have, despite radical appearances, drawn upon a host of folkloric tools and processes to create their own communities. The course will investigate the economic, political, social, cultural, and technological events that surrounded the creation of diverse American secondary cultures and will, through a series of case studies, draw a distinction between sub-cultures and counter-cultures, as well as define the manner in which each may function as a folk culture. This course may be used as a social science elective for students interested in understanding their own, as well as others', roles in the creation of cultural and subcultural groups in today's world. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and SOC111 or ENL111 and SOC112.* (Cultural Diversity, Writing Enriched) **As needed.**

SOC231

Marriage and the Family

Examination of traditional and contemporary American marital and family relationships. Students examine expectations, roles, and values in various marriage and family patterns and explore forces promoting change. 3 Credits (3 Lecture -0 Lab)

SOC241

Urban Sociology

The concept of community as it operates and affects individuals and group behavior in rural, suburban, urban settings. Emphasizes characteristic institutions and problems of modern city life as well as the social psychology of urban living. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SOC111.* **As needed, Spring.**

SOC242

Criminology

The examination of the sociological and psychological causes of criminal behavior and discussion of the implications of those causes for effecting a criminal justice system compatible with the needs of society as well as the criminal offender. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SOC111.* **As needed, Fall.**

SOC243

Physical Anthropology and Human Evolution

Physical anthropology is one of the two main divisions of anthropology. This course will explore the evidence of humanity's relationship to non-human primates, the general course of human evolution, the nature and causes of

variation among contemporary populations, and how lessons from the evolutionary past might illuminate humanity's future. The course should offer students an enlarged understanding of the biological basis of human nature and of the relative contributions that heredity, environment, and culture make to contemporary peoples. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.* **As needed.**

SOC260

Drugs and Society

This course examines the relationship between licit and illicit drug usage in society from a variety of sociological paradigms. From a sociological perspective, students will analyze how historical, legal, medical, economic and political forces shape our norms, values, beliefs and social institutions in relation to drug usage. They will also examine why drug usage has become so critical an issue in contemporary society. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111 or SOC111.* **As needed.**

SOC270

Death and Dying

Death and dying is an inter-disciplinary course exploring the phenomenon of death and the experience of dying from sociological, biological, and religious perspectives across ethnic and cultural divides. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): PSY111 or SOC111 or SOC112.* (Cultural Diversity) **Fall Only.**

SOC311

Sociology of Work and Culture

A detailed study of social structure and process in the workplace from the systems, participatory and cultural perspectives. Focal points include social structure, socialization, leadership, goal attainment, cultural diversity, and the impact of culture on the workplace. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SOC111.* (Cultural Diversity)

SOC313

Research Methods

Research methods is an introductory review of social inquiry, research, observation, measurement, and analysis which will provide students with a basic framework with which to conduct social scientific research. This course will address quantitative and qualitative methodologies and will involve several research projects. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and ENL121 and MTH160 and SOC111.* (Writing Enriched) **Fall Only.**

SOC321

Ethnicity, Class, and Status in the United States

Ethnicity, Class, and Status explores the impact that ascribed and achieved status has upon the experience of the individual. In addition, the course examines how United States' culture is influenced by the diverse ethnic backgrounds of its residents and how socioeconomic class shapes cultural values, policies, and the law. In addition to the central focus upon ethnicity, class, and status, the course explores other areas of human differences (such as age, marital status, education level, and disability) and their impact upon United States' society as a whole as well as upon the realities of individual lives. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SOC111.* (Cultural Diversity) **As needed, Fall.**

SOC323

Gender Issues in the United States

This course examines how gender shapes the experiences of all people in the United States. In addition, gender often combines with other categories to which people are assigned, so that an individual may experience the impact of several simultaneously. Therefore, this course explores issues related to gender cross-culturally, and employs a comparative analysis of gender themes. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SOC111.* (Cultural Diversity) **As needed, Fall.**

SONOGRAPHY/ULTRASOUND (SON)

SON301

Introduction to Sonography

Emphasizes the fundamentals in the role sonography plays in rendering a medical diagnosis. Focus will be placed on the techniques and methods of acquiring sonographic images as well as an introduction to recognizing normal anatomical structures in various imaging planes. Classroom and laboratory experiences will be provided. Course admission is by permission of Director of Radiography. 1.11 Credits (1 Lecture - .33 Lab)

SON302

Ultrasound Physics

Covers the fundamental physics related to sound waves in various media required for understanding the behavior of the ultrasound beam. Topics include fundamental physics of sound waves, properties of the ultrasound transducer, beam characteristics and ultrasound range calculations, the Doppler effect to detect motion, and the physical basis of artifacts in imaging. Student must be a registered radiographer, a practitioner of sonography or a senior radiography student to enroll in this course. 3 Credits (3 Lecture -0 Lab)

SON303

Abdominal Sonography

Emphasizes the knowledge required and techniques of diagnostic medical sonography in assessing the abdominal organs and soft tissue structures. Topics include anatomy and physiology and sonographic findings of the abdominal organs and soft tissue structures to include breast, thyroid, and scrotum. A working knowledge of anatomy is assumed. Classroom and laboratory experiences will be provided. Course admission is by permission of Director of Radiography. 2.11 Credits (2 Lecture - .33 Lab) *Prerequisite(s): SON302.*

SON304

Vascular Sonography

Emphasizes the knowledge and techniques required to perform and differentiate normal from abnormal non-invasive vascular sonographic examinations. Non-invasive examinations include the assessment of the extracranial (carotid) vessels, peripheral arteries and veins, and the vessels branching off the abdominal aorta. Topics include: anatomy, cardiovascular hemodynamics, and scanning techniques. A working knowledge of anatomy is assumed. Classroom and laboratory experiences will be provided. Course admission is by permission of Director of Radiography. 3.11 Credits (3 Lecture - .33 Lab) *Prerequisite(s): SON302.*

SON305

Obstetrical and Gynecological Sonography

Emphasizes the application of sonography in the specialty of obstetrical and gynecological structures and potential pathology. Topics include pelvic anatomy and physiology, pelvic pathology, development of the fetus, and potential congenital abnormalities. A working knowledge of anatomy is assumed. Classroom and laboratory experiences will be provided. Course admission is by permission of Director of Radiography. 3.11 Credits (3 Lecture - .33 Lab) *Prerequisite(s): SON302.*

SON306

Neurosonography

Neonatal intracranial anatomy can be imaged utilizing sonographic technology. Diagnostic assessment can be made for intracranial tumors, hemorrhage, hydrocephalus and congenital anomalies. Emphasis is placed on topographical and intracranial anatomy, sonographic appearance of normal structures, scan planes and techniques, and pathological processes. A working knowledge of anatomy is assumed. Classroom and laboratory experiences will be provided. Course admission is by permission of Director of Radiography. 1.11 Credits (1 Lecture - .33 Lab) *Prerequisite(s): SON302.*

SPANISH (SPA)

SPA111

Beginning Spanish I

A course for students who want to learn the fundamentals of Spanish conversation. An emphasis on oral communication is given importance over the intricacies of grammar. Only fundamental grammar that is necessary for conversing about everyday situations is stressed. General topics that are given preference are those relating to telling time; weather; introducing and describing self, family, and friends; days and dates; expressing creature comfort (hunger/thirst/etc.); and vocabulary and verbs that are used in telling location, emotions and destination. The two basic present tenses are studied. This course is intended for students with no language experience or students who have had up to two years of Spanish instruction more than two years ago. 3 Credits (3 Lecture -0 Lab)

SPA121

Beginning Spanish II

A course for students who want to broaden and/or enhance their oral and written Spanish language skills. In this course students are given the opportunity to further develop their knowledge and their ability to use the

language by studying topical units. Extensive vocabulary and essential conversation patterns are presented and practiced in the areas of sports, food and dining, clothing and shopping, travel and leisure, parts of the body and medical expressions. The two basic present tenses are reviewed and the two most commonly used past tenses are studied. It is recommended that a student taking SPA 121 has had two or more recent years of Spanish instruction or SPA 111. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): SPA111.*

SPEECH (SPC)

SPC101

Fundamentals of Speech

Includes public speaking methods and evaluation and the development of persuasive speech. The study of modern rhetorical theory in interpersonal and group dynamics and in mass persuasion and non-verbal behavior. The student will participate as speaker in a variety of situations and roles, including public speaking, small groups and interpersonal communication. 3 Credits (3 Lecture -0 Lab)

SPC201

Interpersonal Communication

An introduction to the theories, models and practices in person-to-person communication, including a brief exposure to theories and methods of organizational communication. Emphasizes conflict management, gender and cross-cultural issues. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111.*

SPC203

Oral Communication for Business and Professions

Investigation and preparation of communication patterns and modes within the business and/or professional setting. While practical in emphasis, a portion of the time is spent examining and discussing theories of communication on the job. Specifically, this course offers training and experience in both informal and formal career-type presentations including informational briefs, symposia, group discussions and training sessions. In addition, students gain practical experience in interview situations. This course builds on fundamental knowledge and experience gained in SPC 101. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and SPC101. As needed.*

SPC301

Organizational Communication

Analysis and evaluation of formal and informal patterns of communication within organizations; exploration of both theoretical and practical aspects of how such patterns develop. Subject areas include communication aspects involved in social issues, briefings, conflict management, interview situations, conferences, administration and decision making. Considerable emphasis is placed upon issues of diversity, including but not limited to, gender, sexuality, ethnicity. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and SPC101 or ENL111 and SPC201. (Cultural Diversity)*

SPC302

Intercultural Communication

Investigation and interpretation of the many forms of communication which exist in different cultures. This course focuses on helping students toward an understanding and celebration of cultural diversity especially as it exists in the process of symbolic exchange which we call communication. Among areas covered are cultural variance in interpretation of language, symbolic ambiguity, culturally based conflict management, assimilation, and effective communication strategies across cultures. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and SPC101 or ENL111 and SPC201. (Cultural Diversity)*

SPC303

Group Communication

Investigation and practical application of group communication theories. Emphasis is on decision making, problem solving and leadership communication skills. Included as an integral part of the curriculum are examination and discussion of the impact of cultural difference on group interaction. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): ENL111 and SPC101 or ENL111 and SPC201. As needed.*

NUTRITION (SPN)

SPN222

Diet Therapy and Sports Application

The study of nutrition and the life cycle with a concentration on various stages of physical health and its effects on nutritional needs will be studied. Diet therapy and modification, nutritional interviewing and assessment, care planning, cultural foods and concerns, and state and federal regulations will be discussed. There will be a sports/health emphasis. The laboratory portion of the course will provide students with a hands-on approach to learning. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): BIO103 and FHD116 or BIO115 and BIO125 and FHD116.*

SPN224

Nutrition and Special Populations

The nutritional needs, and planning to meet the nutritional needs, of special populations are studied in this course. The relationships between food and nutrients and illness/wellness are examined. Age, gender, trauma, chronic and acute illnesses, metabolic disorders and their relationships to nutritional supports will be studied. It is assumed the student has a working understanding of nutrition. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and FHD116 or BIO115 and BIO125 and FHD116.*

SPN228

Nutrition for the Athlete and Body Builder

The athlete can be expected to have unique nutritional needs due to high-energy expenditures; this course explores those needs. Nutritional requirements of the professional/college athlete versus those of the amateur will be studied. Needs created by muscle development and aerobic development, and age and gender considerations will be addressed. Studies of nutritional supplements, additives and enhancements in the sports areas will take place. Legal and moral implications of supplement use will be discussed. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): BIO103 and FHD116 or BIO115 and BIO125 and FHD116.*

TOOL DESIGN (TDT)

TDT242

Die Design

The course presents the design of piercing, stamping, and forming dies and the theory and application of plastic injection dies. A computer-aided drafting project will be assigned. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): EDT110. As needed.*

TRAVEL AND TOURISM (TTM)

TTM110

Introduction to Travel and Tourism

This course is an overview of the structure and scope of the travel and tourism industry. Emphasis is placed on industry terminology and vocabulary and the interrelationships of the various industry components. Subjects covered include the motivation to travel, travel modes, international travel, industry reference materials, reservations and documentation techniques, the role of tour operators and travel agents, and career opportunities in the travel and tourism industry. 3 Credits (3 Lecture -0 Lab) **Fall Only.**

TTM120

Travel Reservations and Ticketing

This course is an in-depth study of reservations, ticketing/documentation and completion of itineraries for the various travel modes and tourism components. Areas of study include airline schedules, fares, rules, reservation procedures, and all ticketing functions. Emphasis is placed on the total travel transaction to include air travel, hotels, tours, steamship, rail, motor coach and car rentals. 3 Credits (3 Lecture -0 Lab) **Spring Only.**

TTM230

Group Tour Operations

This course studies the procedures and practices commonly used in the hospitality and tourism industry to plan, promote, and operate travel programs for groups, tours, meetings, and conventions. Emphasis is placed on meeting customers' needs and providing quality service before, during, and after the travel experience. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): TTM120. Fall Only.*

TTM250

Travel and Tourism Management

This course examines the managerial functions and development of facilities, personnel, finances, marketing, and promotion for various travel-related services to include airlines, railroads, steamship travel, charter motor coach companies, tour operators and wholesalers, and car rental agencies. 3 Credits (3 Lecture -0 Lab) *Prerequisite(s): MGT115 and TTM120. Spring Only.*

URBAN FORESTRY (URF)

URF110

Introduction to Arboriculture

An introductory course to urban forestry. The course presents the history and development of cities throughout the world, values of urban societies and the need for, benefits, and uses of urban vegetation. Field trips are included to reinforce these topics and other introductory topics and concepts. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

URF150

Arboriculture Seminar

Provides exposure to a wide variety of outside expert opinions and theories regarding the future and direction of urban forestry and arboricultures, as well as ideas and concepts relating to established practices. 1 Credit (1 Lecture -0 Lab) **Spring Only.**

URF151

Urban Forestry Practicum

A field work experience using cooperative education guidelines. The field experience will allow students to learn through actual work in the arboriculture industry. Students will work alongside professionals, study the business in which they work, relate theory to practice, and apply skills developed in the laboratory. 1 Credit (0 Lecture -5 Lab) **Summer Only.**

URF201

Arboriculture

A basic course in Tree Care. The course presents trees as a living organism with an emphasis on tree health. Tree pruning, installation and establishment will be covered along with basic knot tying and climbing skills. (Formerly URF200) 3 Credits (2 Lecture -3 Lab)

URF220

Arboriculture Safety and Equipment

Covers the equipment and safe use of equipment commonly found in urban forestry practice. 3 Credits (2 Lecture -3 Lab) **Fall Only.**

URF250

Arboriculture II

Advanced course in pruning, knots, climbing and roping techniques, cabling, bracing, lightning protection, guying and staking trees, as well as tree and shrub evaluation, tree injections, wound and cavity treatment. 4 Credits (2 Lecture -6 Lab) *Prerequisite(s): URF210 and URF220. Spring Only.*

URF260

Inventory and Management of Urban Forests

The management of any resource begins with an inventory of the resource. This course will utilize different computer software packages to create and inventory and management plan for actual municipalities in the College's local area. The primary objective of the inventory is to maximize public benefits from street trees and to minimize public expense in achieving those benefits. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): CSC110 and HRT111 and HRT121 and URF210. Spring Only.*

URF270

Integrated Pest Management

Provide for the integration of all possible insect and disease control methods into a single unified plan to control plant pest problems, especially proper plant selection. This course will also include the diagnosing of biotic and abiotic plant problems as well as plant inspections, records and cost estimating. 4 Credits (3 Lecture -3 Lab) *Prerequisite(s): HRT239. Spring Only.*

VOCATIONAL TEACHER EDUCATION (VOC)

VOC100

Vocational Education

This course is designed as a survey course to provide an overview of the history and philosophies of education for employment in the United States. It focuses on important current issues, as well as emerging future trends in education and the work force. The purpose of this course is to provide an overview of vocational education in the United States from 1917 to present day and exploring trends in education for work force development. 3 Credits (3 Lecture -0 Lab) **As needed.**

VOC101

Early Field Experience

This course is designed to lead students through a series of planned visitations and assessments of secondary vocational classroom processes and procedures. Students will observe classes, interview teachers and administrators of secondary programs and report on findings. The aim of the course is to focus the student's educational development on the professional roles and responsibility of a career vocational educator. 1 Credit (0 Lecture -5 Lab) *Corequisite(s): VOC100. As needed.*

WELDING (WEL)

WEL100

Introduction to Welding Processes

Designed to give the non-welding major basic competencies in the four main welding processes used in industry today: shielded metal arc welding; oxy-acetylene welding and cutting; gas tungsten arc welding and gas metal arc welding. 3 Credits (2 Lecture -3 Lab)

WEL101

Acetylene/Electric Welding

Introduction to acetylene and electric welding for HVAC students. Acetylene welding of sheet metal. Oxyacetylene cutting and brazing. Basic skills in Shielded Metal Arc Welding (SMAW) and Oxygen Fuel Welding (OFW). 2 Credits (1 Lecture -3 Lab) **Spring Only.**

WEL113

Oxy-Fuel Welding and Cutting I

Students will be introduced to shop safety. This course will include the welding and brazing of various metals in all positions, the theory of welding and brazing, and the cutting of ferrous metals using oxy-acetylene hand and machine methods. Basic welding layout will also be included. (Formerly WEL 111) 2 Credits (1 Lecture -3 Lab) *Corequisite(s): WEL115. Fall Only.*

WEL114

Shielded Metal Arc I

An introduction to the principles and practices of basic Shielded Metal Arc Welding (SMAW) using various types of mild steel electrodes in the flat position. The fundamentals of AC and DC current and various types of power sources will also be covered. (Formerly WEL 112) 2 Credits (1 Lecture -3 Lab) *Corequisite(s): WEL116. Fall Only.*

WEL115

Oxy-Fuel Welding and Cutting II

The theory and applications introduced in WEL113 will be continued in this laboratory course. Students will develop advanced skills in welding, brazing, and cutting. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): WEL113. Fall Only.*

WEL116

Shielded Metal Arc II

The theory introduced in WEL 114 will be applied in this course. Students will develop practical hands-on techniques with various power sources using AC and DC current in the flat horizontal position. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): WEL114. Fall Only.*

WEL120

Gas Metal Arc I

The principles and applications of Gas Metal Arc Welding (GMAW) will be applied to ferrous and non-ferrous metals and their alloys. Students will be introduced to single and multi-pass welds using a variety of electrode wire types, diameters and transfer modes. (Formerly a combination of WEL121 and WEL 122) 2 Credits (1 Lecture -3 Lab) *Corequisite(s): WEL124. Spring Only.*

WEL123

Gas Tungsten Arc I

An introduction to the Gas Tungsten Arc Welding (GTAW) process. The theory and applications of the process will be applied to related equipment, electrical concepts, material properties, arc characteristic, puddle control and when and how to apply filler materials. Welding of ferrous and non-ferrous metals in the flat position will be covered. Admittance to course by successful completion of prerequisites or permission of instructor. (Formerly WEL232). 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): WEL113. Corequisite(s): WEL129. Spring Only.*

WEL124

Gas Metal Arc II

Continued laboratory practice of Gas Metal Arc Welding (GMAW) introduced in WEL 120. Activities include fundamental applications on ferrous and non-ferrous metals in all positions using various modes of metal transfer and wire electrodes. (Formerly a combination of WEL125 and WEL126) 2 Credits (0 Lecture -6 Lab) *Corequisite(s): WEL120. Spring Only.*

WEL129

Gas Tungsten Arc II

This course continues the laboratory activities introduced in WEL123. The welding of ferrous and non-ferrous metals in various joint configurations will be emphasized. All welding in this class will be in the flat position. Joining dissimilar metals and metal identification will also be covered. Admittance to this course by successful completion of prerequisites or permission of instructor. (Formerly WEL236) 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): WEL113. Corequisite(s): WEL123. Spring Only.*

WEL130

Plastic Welding

This course will expose the student to several methods of joining plastics. Students will obtain basic understanding of many of the processes used in today's fabrication of thermo plastics. Hot gas and hot plate projects will be completed by students with a basic understanding of identification of several groups of plastics. 2 Credits (1 Lecture -3 Lab) **As needed.**

WEL140

General Welding

This course provides the opportunity to explore new or different welding processes for the experienced welder. Building upon previous formal or informal training, the course allows the individual to develop skills in those welding processes that are desired. Principle areas emphasized, but not limited to, include SMAW, GMAW, GTAW and Oxy-Fuel. 2 Credits (1 Lecture -3 Lab) **As needed.**

WEL210

Flux Cored and Sub-Arc I

Advanced theory on Flux-Cored Arc Welding (FCAW) and Submerged Arc Welding (SAW) will be emphasized. The advantages and disadvantages of the two processes will be discussed. The American Welding Society's (AWS) numbering system for both processes will be explained. Other topics, which will be covered, are technical terms, gases, their mixtures, and the various types of fluxes used. (Formerly WEL 231) 2 Credits (1 Lecture -3 Lab) *Corequisite(s): WEL214. Fall Only.*

WEL213

Gas Tungsten Arc III

This advanced Gas Tungsten Arc Welding course will continue the theory covered in WEL123. Welding applications of special metals such as copper, nickel, cobalt and titanium will be discussed. Theory and practice of GTAW on ferrous and non-ferrous metals in all positions will be covered. Pipe and tube set-up and welding of open root and consumable inserts will also be covered. 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): WEL123 and WEL129. Corequisite(s): WEL219. Fall Only.*

WEL214

Flux Cored and Sub-Arc II

The course continues the hands-on activities introduced in WEL210. Students will weld with the flux-cored arc welding process using semi-automatic machines in all positions with a variety of electrode wires, diameters and gases. Submerged arc welding will be in the flat and horizontal position with semi-automatic torches using gravity or pressurized systems. The students will also receive instruction on machine applications. (Formerly WEL235) 2 Credits (0 Lecture -6 Lab) *Corequisite(s): WEL210. Fall Only.*

WEL219

Gas Tungsten Arc IV

Gas tungsten arc welding will be covered with extensive hands-on welding of ferrous/non-ferrous metals and pipe and tube. Basic welding positions common to the pipe and tube industry; 1G, 2G, 5G, 6G will be used. Restriction weldments similar to that found when welding boiler tube water-walls will also be employed. 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): WEL123 and WEL129. Corequisite(s): WEL213. Fall Only.*

WEL230

Shielded Metal Arc III

Various joint designs will be emphasized for the various positions with different types of electrodes. Advanced shielded metal arc techniques for welding plate to AWS standards along with various techniques used in industry. Theory of cast iron welding will be introduced. (Formerly WEL241) 2 Credits (1 Lecture -3 Lab) *Prerequisite(s): WEL114 and WEL116. Corequisite(s): WEL233. Spring Only.*

WEL233

Shielded Metal Arc IV/Pipe Welding

Structural and pipe welding techniques will be emphasized using various types of electrodes using shielded metal arc welding. Specifications of the ASME, ASTM, API will be used and the AWS numbering systems will be required. Students will learn the concept of air carbon arc gouging and safety required. 2 Credits (1 Lecture -3 Lab) *Corequisite(s): WEL230 and WEL234 and WEL239. Spring Only.*

WEL234

Shielded Metal Arc V

This course introduces the standard practice of joining plate using the open root and backing bars. The E-6010 and E-7018 electrodes will be used. All position welding of plate of various joint design including variation of bevels along with cast iron welding in the flat position will be covered. (Formerly WEL245) 2 Credits (0 Lecture -6 Lab) *Prerequisite(s): WEL114 and WEL116. Corequisite(s): WEL230. Spring Only.*

WEL239

Shielded Metal Arc VI/Pipe Welding

Standard practices of joining pipe using the open root and chill rings will be introduced. The E-6010 and E-7018 electrodes will be used. Fixed horizontal, fixed vertical and fixed 45-degree welding positions will be covered. Welding processes may be combined. 2 Credits (0 Lecture -6 Lab) *Corequisite(s): WEL230 and WEL233 and WEL234. Spring Only.*

WEL240

Basic CNC Programming

Introduction to the theory and applications of programming and operation of CNC welding and cutting equipment. Set up of equipment, electrical concepts, absolute and incremental programming, photocell tracing and use of computer software to create programs. CAD/CAM software will be used to produce programs as well as trouble shooting programs. (Formerly WEL238) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EDT107. Fall Only.*

WEL247

Welding Design

This course will emphasize the use of basic drafting skills for layout of plate steel, sheet metal, and patterns, and the selection of welding processes and joint design. Students will calculate and estimate weldment and weld metal, and will learn how to allow for distortion and for the use of jigs, fixtures, and positioners. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EDT107. Spring Only.*

WEL248

Robotic Welding

An introduction to robotics, robot classification and the application of robotics to the welding industry. Students will study the safety of robotics in industrial applications and will learn the different types of end effectors. Students will operate various robotic systems using computer and teach pendant modes. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): WEL120. Spring Only.*

WEL250

Advanced Pipe Welding

Techniques previously studied will be applied to join pipe and tube. The combination of GTAW root and hot pass with FCAW or SMAW to fill and cap

pipe/tube weldments will be taught. Basic layout and fitting for welding pipe will be covered. Admittance to course by satisfactory completion of prerequisites or permission of the instructor. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): WEL233 and WEL239. As needed.*

WEL300

Industrial Welding and Cutting Processes

Continuation of WEL240 with emphasis on advanced CNC programming techniques. CAD/CAM, estimating and design software will be used. Explores the various automated cutting and welding processes used in the welding industry. (Formerly WEL325) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MTH180 and WEL240. As needed.*

WEL400

Fabrication of Alloys

Fundamental principles of welding metallurgy applied to the joining of ferrous and non-ferrous metals. Iron carbon diagrams and isothermal transformation diagrams to show changes in material properties caused by heat. Topics to include cladding, joining of stainless steels, titanium, cobalt alloys and nickel alloys. Principles and application of the metallizing process. (Formerly WEL425) 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): MSC106 and WEL120 and WEL123 and WEL210 and WEL230. As needed.*

WEL420

Welding Codes and Procedures

The course focuses on reviewing standard welding terms and definitions along with the standard welding symbols used in the welding industry. Visual inspection of weld discontinuities commonly found in welding will be emphasized. The requirements and duties of the certified welding inspector will be discussed. Qualifications of welding procedures and specifications along with qualification of the welding operator will be covered, with respect to AWS, API, and ASME standards. Admittance to this course by successful completion of prerequisites or permission of the instructor. 3 Credits (2 Lecture -3 Lab) *Prerequisite(s): EDT107 and QAL237. As needed.*

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PLASTICS MANUFACTURING CENTER

**THE LYCOMING COUNTY SCHOOL-TO-WORK
PARTNERSHIP STEERING COMMITTEE**

ADVISORY COMMITTEES

*denotes Penn College Alumni

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Business/Industry Representative/Director
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Shaun Knight

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Representative/Coordinator
of Community Education
STW Partnership of Centre County,
Boalsburg

Robert Knorr, Jr.

Business/Industry Representative/Adult
and Industry Education Coordinator
Columbia-Montour Area Vo-Tech,
Bloomsburg

Merrill Lambert

Union Representative/President
Local U A W 787, Williamsport

William Lantz

Community Representative/Chairperson
Williamsport

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Representative/Coordinator
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Community Representative/Superintendent
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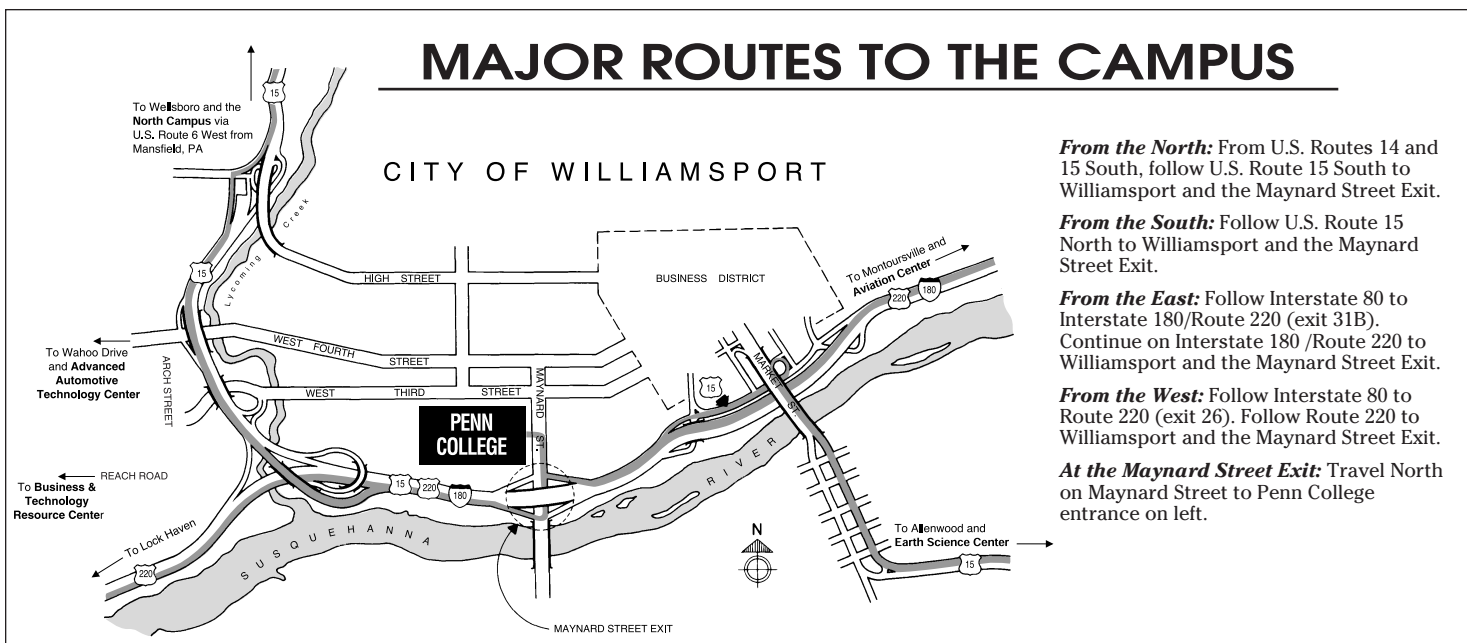
Director, Administrative Information Systems

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MAJOR ROUTES TO THE CAMPUS



From the North: From U.S. Routes 14 and 15 South, follow U.S. Route 15 South to Williamsport and the Maynard Street Exit.

From the South: Follow U.S. Route 15 North to Williamsport and the Maynard Street Exit.

From the East: Follow Interstate 80 to Interstate 180/Route 220 (exit 31B). Continue on Interstate 180 /Route 220 to Williamsport and the Maynard Street Exit.

From the West: Follow Interstate 80 to Route 220 (exit 26). Follow Route 220 to Williamsport and the Maynard Street Exit.

At the Maynard Street Exit: Travel North on Maynard Street to Penn College entrance on left.

Other Campus Sites

Directions are provided from the Main Campus entrance along Maynard Street.

Advanced Automotive Technology Center

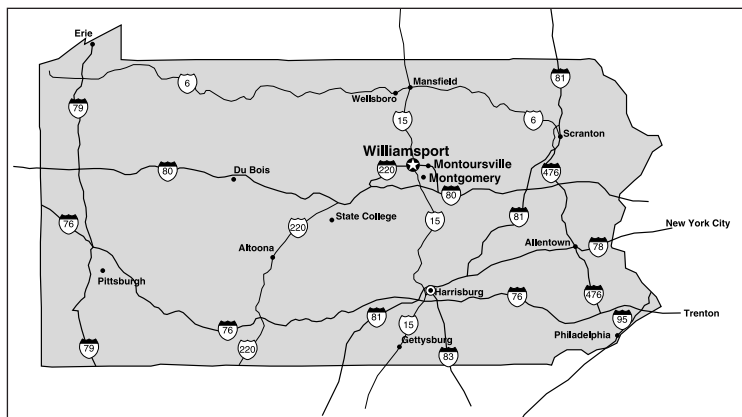
3341 Wahoo Drive, Williamsport
Turn right (south) onto Maynard Street. Turn right (west) onto Route 180/220/15 (across from Burger King). Travel west past the last Williamsport exit (Reach Road) into Woodward Township. Watch for sign "Expressway Ends" (approximately 2.5 miles from Reach Road exit). Turn left at first turnaround/crossover road across Route 180/220 (approximately .4 miles after expressway ends) onto Route 180/220 going east. IMMEDIATELY watch for exit to Williamsport High School. Take exit and follow signs to Williamsport High School and Wahoo Industrial Park (entrance marked with war memorial torpedo and flagpole). Turn right at Wahoo Drive (at Industrial Park sign) to the first building on the right, marked with a College sign.

Schneebeli Earth Science Center

203 Allenwood Camp Road, Montgomery
Turn right (south) onto Maynard Street and cross the Susquehanna River via the Maynard Street bridge. At the second traffic light after the bridge, turn left onto Southern Avenue and travel through the Borough of South Williamsport to Market Street (Route 15). Turn right and follow Market Street/Route 15 South for approximately 10 miles (traveling toward Montgomery and Allenwood). Watch for signs to Pennsylvania College of Technology, Earth Science Center. Turn right at White Deer Golf Course sign on Route 15 onto Allenwood Camp Lane. Earth Science Center is on the left.

Lumley Aviation Center

500 Airport Road, Montoursville
Turn right (south) onto Maynard Street. Turn left (east) onto Route 180/220/15 (past the Burger King). Travel east for approximately seven miles and follow signs to Williamsport Regional Airport at Montoursville exit.



Main Campus is in Williamsport, a city with a population of 35,000, nestled in the valley of the Susquehanna River. A haven from the everyday pressures of urban life, the city is just hours away from New York City, Philadelphia, Pittsburgh, Baltimore and Washington D.C.

The campus is located just north of the Susquehanna River and Interstate 180/220 in Williamsport. Exit Interstate Route 180/220 at the Maynard Street Exit and travel north on Maynard Street to Penn College entrance on left.

Travel across bridge into Borough of Montoursville. At first traffic light (Loyalsock Avenue), turn right (south) following signs to the airport. Watch for Penn College sign on the right, before you reach the main airport terminal.

Paramedic Education at Susquehanna Health System

777 Rural Avenue, Williamsport
Turn left (north) onto Maynard Street. At first light, turn right onto West Third Street and travel east one block to Campbell Street. Turn left onto Campbell Street and travel north seven blocks to Louisa Street. Turn right for parking behind hospital. Enter Medical Hall through glass doors and take stairs (at left) to Paramedic Education

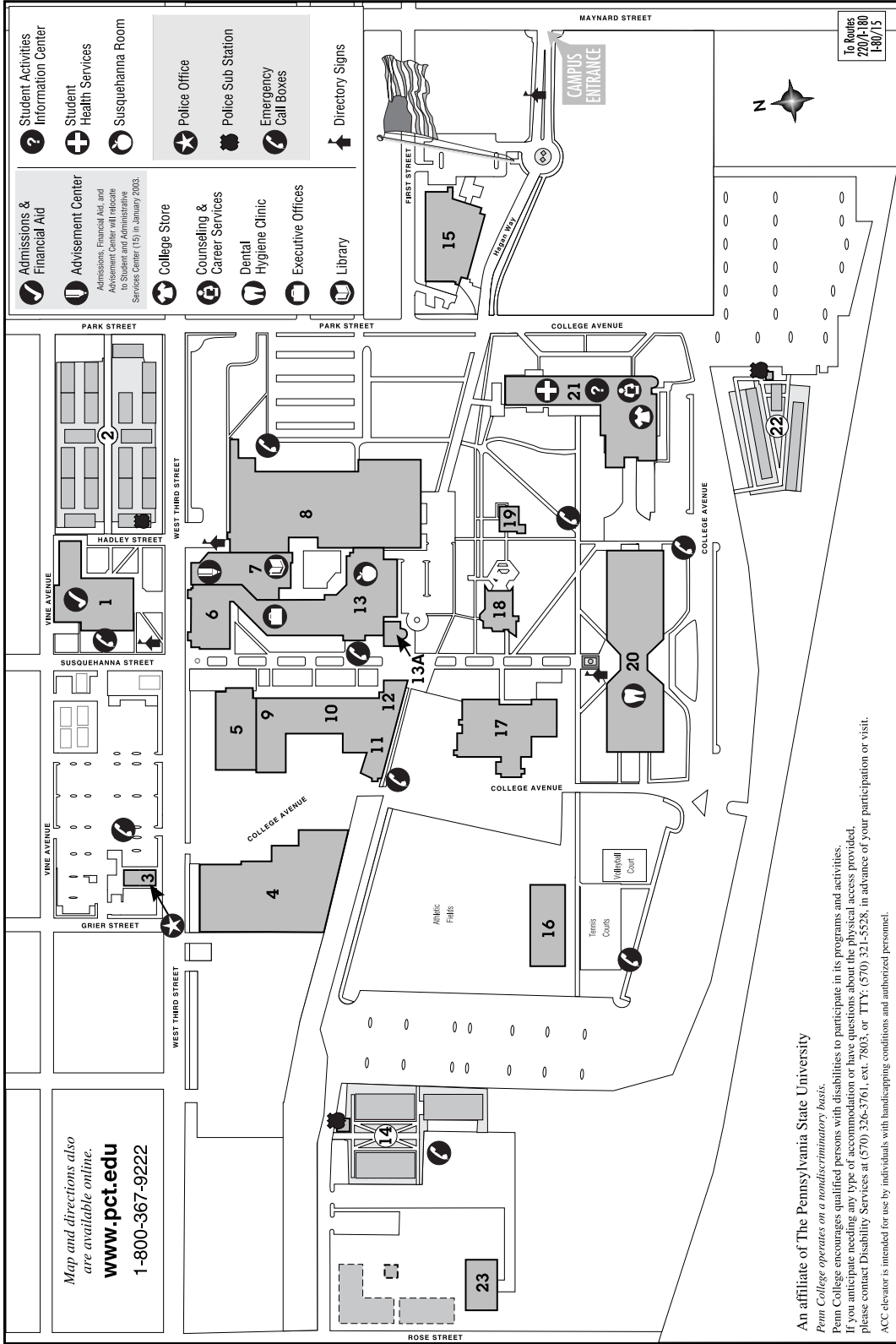
Business & Technology Resource Center

2401 Reach Road, Williamsport
Turn right (south) onto Maynard Street. Turn right (west) onto Route 180/220/15 (across from Burger King). Travel approximately two miles west to the Reach Road exit. Follow the exit ramp to the Williamsport Industrial Park. Turn right (east) onto Reach Road and watch for sign at the Business & Technology Resource Center (on the right).

North Campus

RR3, Box 436, Wellsboro
Turn right (south) onto Maynard Street. Turn right (west) onto Route 180/220/15 (across from Burger King). Turn right at next exit (Route 15 North). Follow Route 15 North approximately 50 miles toward Mansfield. Take Route 6 (just south of Mansfield) west toward Wellsboro. The North Campus is on the left in a scenic rural area just east of Wellsboro.

MAIN CAMPUS MAP Pennsylvania College of Technology • One College Avenue • Williamsport, PA



Map and directions also
are available online.
www.pct.edu
1-800-367-9222

An affiliate of The Pennsylvania State University
Penn College operates on a nondiscriminatory basis.
Penn College encourages qualified persons with disabilities to participate in its programs and activities.
If you anticipate needing any type of accommodation or have questions about the physical access provided,
please contact Disability Services at (570) 326-3761, ext. 7803, or TTY: (570) 321-5528, in advance of your participation or visit.
ACC elevator is intended for use by individuals with handicapping conditions and authorized personnel.

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Pennsylvania College of Technology

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