



SCIENCE  
Always  
**SHINES**

# MESSAGE FROM US

## Welcome to the HKUST School of Science!

At the School of Science, we promote a vigorous and dynamic learning environment with continuous enhancement of our curriculum. Aside from the conventional science programs, we have designed several diverse, interdisciplinary and inquiry-driven programs to meet the ever-changing society's demands.

Outside the classroom, our students enjoy a wide range of learning opportunities such as overseas exchange programs, mentorship and internship programs, and social service activities. We also have a dedicated team that provides career advising and personalized support. Such co-curricular programs and activities broaden students' horizons and help realize their holistic development.

Our programs emphasize flexibility and creativity and are structured to equip our students with the skills, knowledge, and confidence to become inspirational leaders and independent thinkers. Our faculty members are dedicated to both teaching and research. They instill in our students the importance of scientific rigor and ethics, so that they can reach their full potential in academic and commercial settings.

The School's commitment to quality and excellence remains as strong as ever. Our past successes laid an excellent foundation for us to move forward and embrace change. By strengthening our ties with the local community and working closely with other leading institutions overseas, the School exerts global impact in diverse areas. Join us as we continue to advance the frontiers of scientific research and education!

School of Science  
Office of Academic Advising and Support



## INTRODUCTION TO SCHOOL OF SCIENCE

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Join HKUST, a top University in Asia, where educators inspire, creative minds thrive and young leaders bloom. You will grow in this vibrant and exciting community and you will fly high when you leave.

The School of Science is committed to pursuing cutting-edge research, making groundbreaking discoveries and establishing new research paradigms. Our quality and well-balanced education place particular emphasis on grit, curiosity and creativity. We are dedicated to equipping our students with the knowledge and confidence to be inspirational leaders capable of making a difference in society.

At the School of Science, we are proud of our exceptional academic departments, distinguished faculty,

challenging yet inspiring academic programs, achievements in research and development, and state-of-the-art research facilities.

High-quality education requires dedicated educators. The School of Science has recruited outstanding faculty members, many of whom are leaders in their research fields with international recognition for their scientific contributions. With their different backgrounds and research interests, they bring diverse, interdisciplinary perspectives to address the fundamental questions in science. Together, they help raise the School's research profile to a level of global excellence.

## World-class Research Facilities

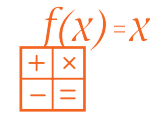
- State Key Laboratory of Molecular Neuroscience
- Hong Kong Branch of Chinese National Engineering Research Center for Tissue Restoration and Reconstruction
- Biosciences Central Research Facility
- Biotechnology Research Institute
- Brain and Intelligence Research Institute
- William Mong Institute of Nano Science and Technology
- Joint KAUST-HKUST Micro / Nanofluidics Laboratory
- GSK R&D China-HKUST Neuroscience Laboratory
- Sino-German Nano-Analytical Laboratory
- Ocean Research Facility
- Center for Cancer Research
- Center for Chinese Medicine R&D
- Center for Fundamental Physics
- Center for Metamaterials Research
- Center for Quantum Materials
- Center for Scientific Computation
- Center for Space Science Research
- Center for Statistical Science
- Center for Stem Cell Research
- Center for Systems Biology and Human Health
- HKUST Big Data Institute
- HKUST Energy Institute
- Molecular Neuroscience Center
- SSCI-IAS Super-Resolution Imaging Center



**45<sup>th</sup>**  
in Materials Science  
(No. 1 in Hong Kong)



**55<sup>th</sup>**  
in Chemistry  
(No. 1 in Hong Kong)



$f(x)=x$   
**59<sup>th</sup>**  
in Mathematics  
(No. 1 in Hong Kong)



**92<sup>nd</sup>**  
in Natural Sciences  
(No. 2 in Hong Kong)



**46<sup>th</sup>**  
in Statistics and Operational Research  
(No. 1 in Hong Kong)



**101<sup>st</sup>**  
in Physics and Astronomy  
(No. 1 in Hong Kong)



**50<sup>th</sup>**  
in Environmental Sciences  
(No. 2 in Hong Kong)

(QS World University Rankings by Subject 2023)



# PROGRAM OVERVIEW



# PROGRAM OVERVIEW

## School-based Admissions

The School-based programs at the School of Science provide an invaluable opportunity for students to have a deeper understanding of various aspects of science and their personal interests before deciding on their majors. The goal is to offer a more diverse, interdisciplinary, and inquiry-driven undergraduate education. Students can enjoy high flexibility in major and minor choices by following their aspirations.

The programs aim at nurturing young scientists who can contribute to the betterment of humankind with advanced scientific knowledge. Students will be equipped with the necessary knowledge and skills to engage in activities demanding critical thinking, analysis and task execution to excel in their future professions, including research and

development, education, manufacturing, logistics, and business and finance.

The School has particularly placed enormous efforts and resources into designing its laboratory and signature courses to nurture students' competency in experimental methods and logical analysis, which are the two indispensable pillars of scientific method.

In addition to rigorous academic training, we place equal emphasis on students' personal development. A wide range of co-curricular activities and training are provided to enrich students' university experience further. These include but are not limited to overseas exchange, undergraduate research, internship, community services and engagement programs designed specifically for the School of Science students.

The School of Science offers two general School-based program choices – **Science (Group A)** program and **Science (Group B)** program. The Science (Group A) program is tailor-made for students interested in the fields of physical sciences. The Science (Group B) Program is more suitable for students who are interested in the fields of chemistry and life science. The students will declare their corresponding majors upon completing their first year of studies.

## Science (Group A) and Science (Group B)

Under school-based admissions, students admitted into the School of Science upon completion of the first year of study will enroll in one of the following degree programs:

### Science (Group A) program:

- BSc in Data Analytics in Science
- BSc in Mathematics
- BSc in Mathematics with an Extended Major in Artificial Intelligence
- BSc in Mathematics with an Extended Major in Digital Media and Creative Arts
- BSc in Ocean Science and Technology with an Extended Major in Artificial Intelligence
- BSc in Physics
- BSc in Physics with an Extended Major in Artificial Intelligence
- BSc in Data Science and Technology\*
- BSc in Data Science and Technology with an Extended Major in Artificial Intelligence\*
- BSc in Mathematics and Economics\*
- BSc in Risk Management and Business Intelligence\*

### Science (Group B) program:

- BSc in Biochemistry and Cell Biology
- BSc in Biotechnology
- BSc in Chemistry
- BSc in Biotechnology and Business\*
- Dual Degree Program in Technology and Management (BSc & BBA)#

### Both Science (Group A) and Science (Group B) programs:

- BSc in Ocean Science and Technology
- BSc in Ocean Science and Technology with an Extended Major in Digital Media and Creative Arts
- BSc in Environmental Management and Technology#
- BSc in Individualized Interdisciplinary Major#

\* Joint School Programs

# Programs offered by the Academy of Interdisciplinary Studies

## Program Structure

In the first year of study, students will take the Science Foundation courses as well as some of the language, elective and/or general education courses. Upon completion of the first year, the students will declare their corresponding majors offered by the School of Science, as well as the Joint School Programs and the programs offered by the Academy of Interdisciplinary Studies.

Most science major programs offer different study tracks and options, while providing an opportunity for double majors and minors. The program's flexibility caters to students with diverse academic and career aspirations.

In Year 1, students will enroll in science foundation courses according to their interests and background, as well as courses in other areas to fulfill the University Common Core requirements.



Normative period of study:

**4 Years**

**Year 1**



Minimum credit requirement for graduation:  
**120 Credits**

**Year 2**

**Year 3**

**Year 4**

Students will declare a major program in their second year. They may also consider declaring a minor program to add a secondary area of focus to their studies.



## Science (Group A) with an Extended Major in Artificial Intelligence

Science (Group A) with an Extended Major in Artificial Intelligence (SSCI-A (AI)) is designed for science students who want to learn solid knowledge in Science disciplines PLUS innovative applications of AI in their major areas.

The world is changing fast, artificial intelligence (AI) has come to define society today in ways we never anticipated. The knowledge of AI can be a perfect supplement to science subjects, which requires a solid mathematical sense and relevant tools to achieve synergy.

The pioneering SSCI-A (AI) program is designed to prepare our students for opportunities and challenges. The curriculum is cross-disciplinary and practical. Students will learn solid knowledge in one of the four relevant

major science subjects PLUS innovative application of AI in their major areas. In addition, students will gain cross-disciplinary problem-solving skills and professional insights through a Design Thinking course and Professional Seminars in AI. The Capstone Project+, with strong AI components and sponsorship from the industry, enables students to practice AI applications on real-world problems.

Students should expect to take approximately one additional course per term throughout four years. Upon satisfactory completion, students will be awarded a “BSc in (Mathematics / Physics / Ocean Science and Technology / Data Science and Technology) with an Extended Major in Artificial Intelligence”.



## International Research Enrichment (IRE)

The International Research Enrichment (IRE) program is designed for students interested in pursuing a research career in science or broadening their exposure to research during their undergraduate studies. It emphasizes curiosity and grit, which are the essential attributes of a successful career in scientific research.

The IRE program has a similar curriculum structure to the Science (Group A) and Science (Group B) programs. But it distinguishes itself from the regular science program by providing students with the following:

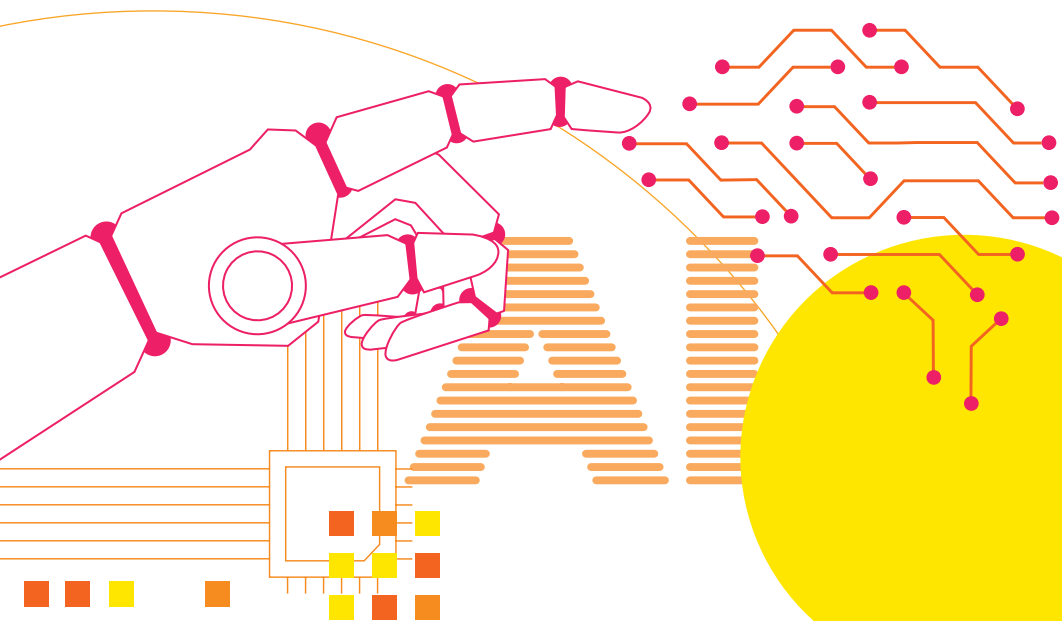
- **Free choice of major programs among Biochemistry and Cell Biology, Biotechnology, Chemistry, Mathematics, Ocean Science and Technology, and Physics**

- Participation in advanced research projects under the supervision of world-class professors
- Opportunities to meet with Nobel Laureates and renowned scientists
- Individualized research guidance and mentoring from experienced faculty members
- Undergraduate Research Opportunities Program (UROP)
- Exchange and internship opportunities in renowned foreign universities/ research institutes
  - Summer research internship opportunity in foreign universities and institutions
  - Scholarship support for overseas learning trips



### Student Sharing

I got my first taste of research from the UROP project in Year 2. The exchange study in Korea and the IRE research internship in Japan provided experience of research life in different cultures. The Capstone Project further sharpened my experimental skills. These experiences built a strong foundation for my MPhil and PhD research.



## Majors and Minors

### Major Programs

The School of Science offers the following major programs:

- BSc in Biochemistry and Cell Biology (BCB)
- BSc in Biotechnology (BIOT)
- BSc in Biotechnology and Business (BIBU)<sup>1</sup>
- BSc in Chemistry (CHEM)
- BSc in Data Analytics in Science (DASC)
- BSc in Data Science and Technology (DSCT)<sup>2</sup>
- BSc in Mathematics (MATH)
- BSc in Mathematics and Economics (MAEC)<sup>1</sup>
- BSc in Ocean Science and Technology (OST)
- BSc in Physics (PHYS)
- BSc in Risk Management and Business Intelligence (RMBI)<sup>3</sup>

Remarks: 1. Jointly offered by the School of Science and School of Business and Management  
2. Jointly offered by the School of Science and School of Engineering  
3. Jointly offered by the School of Science, School of Engineering and School of Business and Management

### Minor Programs

Students can enjoy different learning experiences by enrolling in various minor programs within or outside the School of Science.

#### Offered by School of Science

- #### Programs
- Actuarial Mathematics
  - Astrophysics and Cosmology
  - Biotechnology
  - Chemistry
  - Environmental Science
  - Mathematics
  - Physics

#### School of Engineering

- Aeronautical Engineering
- Big Data Technology
- Bioengineering
- Information Technology
- Robotics
- Smart City
- Sustainable Energy Engineering
- Technology Management

#### School of Business and Management School of Humanities and Social Science

- Business
- China Studies
- Humanities
- Social Science

#### Joint Schools / Academy of Interdisciplinary Studies

- Entrepreneurship<sup>1</sup>
- Psychological and Behavioral Science<sup>2</sup>
- Design<sup>3</sup>
- Sustainability<sup>3</sup>

Remarks: 1. Jointly offered by the School of Science and School of Business and Management  
2. Jointly offered by the School of Science and School of Engineering  
3. Offered by the Academy of Interdisciplinary Studies  
The availability of the above minor programs is subject to change.

# DATA ANALYTICS IN SCIENCE (DASC)

## Program Overview

In this big data era, an enormous amount of data is continuously generated and obtained in almost every science, technology, and social science field. Data Analytics in Science is a major program designed for science students who want to learn data analysis skills and practice them in various science disciplines.

## Program Curriculum

The curriculum starts with basic training in programming and computational skills, as well as analytic methods and statistics, and data visualization. Students will then declare one of the following study tracks at the start of Year 3 to practise and sharpen their skills.

- Applied Biosciences Track
- Environmental Science Track
- Information Science Track
- Molecular Science and Cheminformatics Track

Courses in the tracks are not meant to train students to be experts in the corresponding fields, but rather to bring them into the context of a domain of data-intensive research in science.

## Student Sharing

Studying DASC brings so many new experiences to me. Its unique teaching materials give challenging yet memorable learning experience throughout my university life. I have learned and upgraded my programming techniques through project-based courses by self-initiated research and the feedback provided by professors during the courses.



# MATHEMATICS (MATH)

## Program Overview

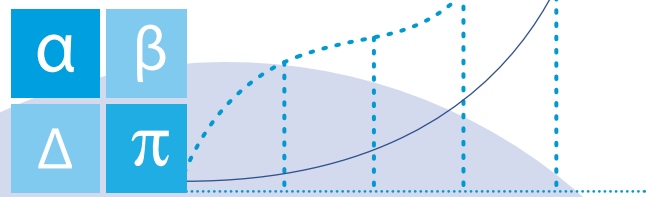
Mathematics permeates almost every discipline of science and technology. It is not only a tool for understanding the abstract models of real-world phenomena while solving practical problems, but it is also the language of commerce, engineering and other sciences such as biology, physics and computing.

## Program Highlights

The BSc in Mathematics program is unique among all universities in the territory. It offers seven tracks:

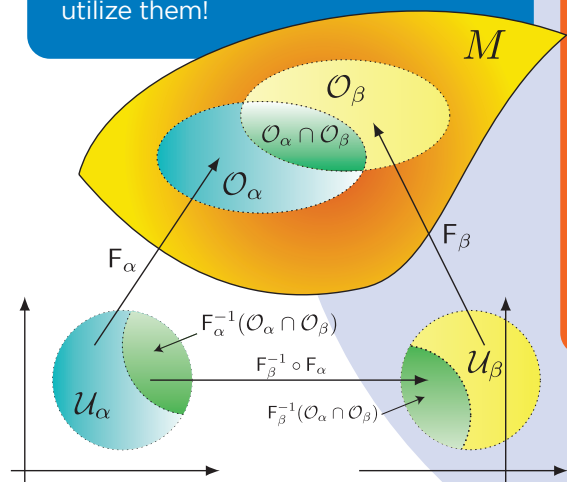
- Applied Mathematics Track
- Computer Science Track
- Financial and Actuarial Mathematics Track
- General Mathematics Track
- Pure Mathematics Track
- Pure Mathematics (Advanced) Track\*
- Statistics Track

\* The Pure Mathematics (Advanced) Track is specially designed for mathematically gifted students. Students in this track will study a series of mathematics courses at a deeper level, which better prepares students to pursue postgraduate studies.



### Student Sharing

I have joined research projects supervised by computer science and math professors and worked alongside postgraduate students. As a sweet bonus, I got the internships opportunities in Indonesia and Hong Kong. Overall, the math program and the university have given me the tools required for my early career, and I only need to utilize them!



### Extended Major Options

Students can opt for an Extended Major in Artificial Intelligence (AI) or Digital Media and Creative Arts (DMCA). Extended Major is not a standalone major, but is adhered to a certain majors as expanded choices, enabling students to keep abreast of emerging technology and innovation that are shaping our society in a multi-faceted way.

On top of expertise in mathematics or physics, the students with an Extended Major will acquire multidimensional visions and knowledge of emerging technologies

(AI or DMCA), and can apply innovative technological skills to solve real-world problems in the area of their expertise. Upon fulfilment of the curriculum requirement, the students will be awarded one of the following degrees:

- BSc in Mathematics with an Extended Major in Artificial Intelligence
- BSc in Mathematics with an Extended Major in Digital Media and Creative Arts
- BSc in Physics with an Extended Major in Artificial Intelligence

# PHYSICS (PHYS)

## Program Overview

Physics encompasses everything from the tiniest elementary particle to the ultimate fate of the universe, and provides the foundation for all modern science and engineering. The BSc in Physics program gives students depth and breadth in their studies. Students will learn about exciting topics ranging from quantum computing, superconductivity and nanotechnology to quarks and black holes. The program prepares students for science-related careers, or for further studies in physics and related fields.

## Program Highlights

The BSc in Physics program offers two options:

- **Honors Physics Option** - This option is intended for students planning to enter graduate school after their undergraduate studies at HKUST. The curriculum provides a strong foundation of courses and requires students to complete a research project and thesis in their final year.
- **Physics and Mathematics Option** - This option is tailor-made for students with a strong interest in both physics and mathematics. It is particularly useful for students who plan to pursue future studies in theoretical physics.

### Student Sharing

HKUST has provided me with various research opportunities, which allow me to explore different fields, including optical microscopy, nonlinear dynamics analysis, and astronomical instrumentation. I also got the precious chance to work with a Physics Nobel Prize Laureate for the astronomical instrumentation project. These experiences have trained me as a future scientist.



# OCEAN SCIENCE AND TECHNOLOGY (OST)

## Program Overview

BSc in Ocean Science and Technology (OST) is an integrative program that offers students with a comprehensive foundational understanding of the cross-disciplinary ocean science and technology, and provides exposure to the cutting-edge scientific and technological development related to investigating, conserving and managing ocean resources.

## Program Highlights

This program covers a variety of courses in different aspects of ocean science, which include:

- **Foundation:** biological, chemical and physical processes in the ocean, ecosystem functions;
- **Technology:** marine instrumentation, data management, pollution tracking;
- **Applications:** pollution bioremediation, environmental impact and risk assessment;
- **Socio-economy:** conservation and management of marine resources, fisheries and aquaculture.

A major emphasis of the curriculum is the provision of practicum experience, experiential learning and field trips to enhance students' academic, career and personal development.

## Extended Major Options

On top of expertise in ocean science and technology, OST students with an Extended Major in AI will acquire the latest knowledge in this emerging technology and learn to apply the knowledge to solve real-world problems such as the predicting the occurrence of harmful algal bloom and predicting climate change. The Extended Major in Digital Media and Creative Arts (DMCA) is for students who are interested in a career pathway that emphasizes the creation of multimedia contents for promotion and public education in environmental conservation and environmental protection. Upon the fulfilment of the curriculum requirement, the students will be awarded one of the following degrees:

- BSc in Ocean Science and Technology with an Extended Major in Artificial Intelligence
- BSc in Ocean Science and Technology with an Extended Major in Digital Media and Creative Arts

## Student Sharing

Thanks to the support from HKUST, I got the chance to work as intern at Wetland Park and learn about managing wetland and escorting eco tour. Other learning experience including field trips, lab works and faculty guidance have broadened my horizons, and helped me prepare for the career in environmental consultancy.

# CHEMISTRY (CHEM)

## Program Overview

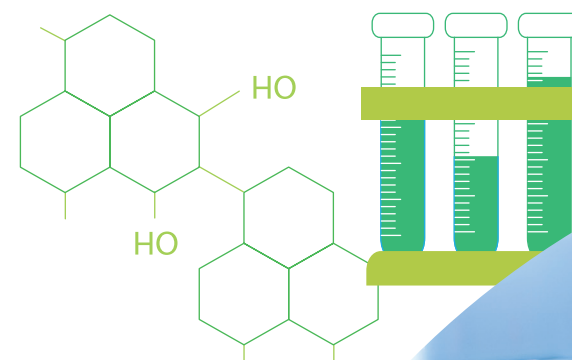
Students of BSc in Chemistry will study all aspects of chemistry and related disciplines. General areas covered include analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Specialized areas include environmental chemistry, medicinal chemistry, biological chemistry, polymer chemistry, materials chemistry including nanostructures, instrumentation, and computational / theoretical chemistry.

This program provides excellent general training in both analytical thinking and problem-solving skills. The curriculum, which includes basic training in analytical, inorganic, organic, and physical chemistry and modern laboratory techniques and skills, has been specifically designed to allow students maximum flexibility in determining the extent of their specializations.

The program offers four options for students to specialize in an area:

- Biomolecular Chemistry Option
- Environmental and Analytical Chemistry Option
- Materials Chemistry Option
- Pure Chemistry Option

Co-curricular activities and experimental learning experiences, such as internships and undergraduate research opportunities, will be provided to enhance students' career development.



## Student Sharing

Studying Chemistry at HKUST is absolutely an enlightening and rewarding experience! Doing research with professors in HKUST and HKSTP place significant importance on my self-exploration during my study. They further ignite my passion for Chemistry research!



# LIFE SCIENCE

## BIOCHEMISTRY AND CELL BIOLOGY (BCB)

### Program Overview

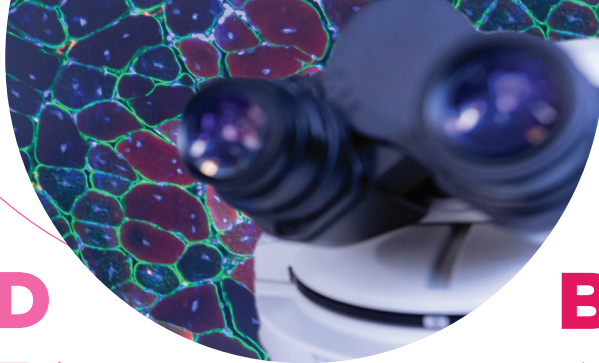
Students will study how living organisms are built upon the complex interplay of biological pathways. An emphasis is placed on knowledge gained through research on cell-free experimental systems (Biochemistry) and within cells (Cell Biology). The early curriculum is broad-based and teaches students the fundamental concepts and principles of Biochemistry and Cell Biology. This will enable students to explore and develop their own interests in various aspects of modern molecular life sciences. As they progress through the program, they will take more advanced and specialized elective courses. BCB students will also have the option of engaging in intensive practical training and research opportunities.

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#### Student Sharing

The BCB program gave me all-around laboratory training that equipped me for a career in the medical laboratory industry. With high flexibility in course enrollment, students can enroll in any courses leading to their goals in future. HKUST staff and faculty members are always helpful to offer supports in career planning to students.



## BIOTECHNOLOGY (BIOT)

### Program Overview

The Biotechnology (BIOT) program is designed to cover the research and development of biotechnology products and services, including medicines, cosmetics, health supplements and genetic diagnostics. The program provides students with theoretical and practical knowledge of the latest biotechnological developments, with a particular focus on the applied aspects of life science. The curriculum also requires a basic understanding of concepts across various biological spectra including biochemistry, cell biology, molecular biology, microbiology and genetics.

BIOT students can choose one of two study tracks that have distinct strengths:

#### • Applied Bioscience Track

This track aims at enhancing students' learning through a range of experiential learning or project-based courses. Students will be provided with ample opportunities to tackle real-world problems in biotechnology, formulate experimental plans, devise biotechnological solutions, and transfer practical knowledge to society.

#### • Entrepreneurship Track

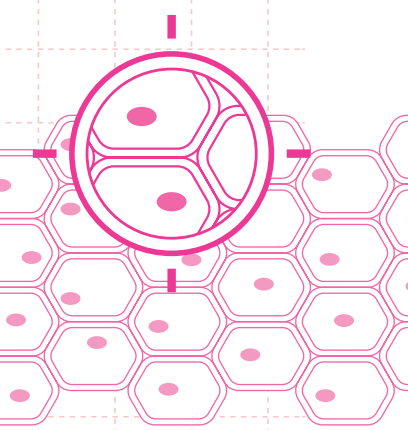
This track aims at enhancing students' vision and knowledge of entrepreneurship through various co-curricular activities. Students will be trained to formulate integrated commercial solutions to academic and real-world problems in biotechnology. Students will also be encouraged to enter internal and external entrepreneurial competitions and turn their ideas into commercial practice.

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#### Student Sharing

As a biotechnology student who is passionate in research, I was thrilled with the opportunities that HKUST provided so that students can gain hands-on research experience in top-notch facilities and laboratories! Without such opportunities, I would not have found my research interest, and I would not have reached this point where I can pursue a Ph.D. in the United States.



# JOINT SCHOOL PROGRAMS

## BIOTECHNOLOGY AND BUSINESS (BIBU)

### Program Overview

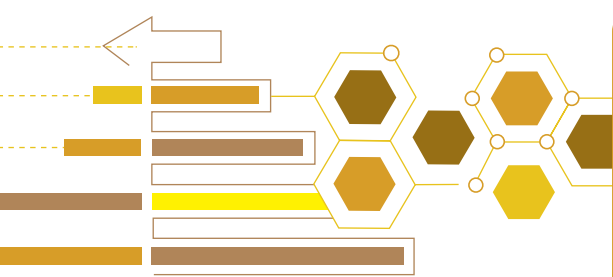
The Biotechnology and Business Program (BIBU) is jointly offered by the School of Science and the School of Business and Management. It aims to groom students with a hybrid interest in both biotechnology applications and business operations. It offers students a broad-based learning experience that encompasses essential life science and biotechnology knowledge, as well as complementary business know-how, including accounting, finance, economics, marketing, operations management. It also enhances students' creative and critical thinking abilities while helping them develop a global outlook on biotechnology development and applications, thereby laying a solid foundation of knowledge and skills to develop, manage, and market biotechnology initiatives.



## MATHEMATICS AND ECONOMICS (MAEC)

### Program Overview

The Mathematics and Economics (MAEC) program is jointly offered by the School of Science and the School of Business and Management of HKUST. The program provides students with solid training in the fundamental theories of both mathematics and economics. The curriculum equips students with quantitative reasoning skills, conceptual understanding, and the ability to effectively communicate in mathematics and in the language of economics and social sciences. This interdisciplinary degree is suitable for students who seek to obtain a finance industry position that emphasizes quantitative skills or who intend to pursue postgraduate study in applied mathematics, economics, business or related areas such as operations research or management science.



### Student Sharing

BIBU offers a unique blend of scientific expertise and entrepreneurial acumen by building a bridge between the two ever-growing industries. This multidisciplinary education, which provides the ultimate flexibility in career options, helps me to be a more versatile professional with new and limitless opportunities.

### Student Sharing

I can really feel the support from both Schools, that provides me with ample resources for personal and career development. It is an incredible experience to study Mathematics and Economics at a world-class university.



# DATA SCIENCE AND TECHNOLOGY (DSCT)

## Program Overview

The Data Science and Technology (DSCT) program is jointly offered by the School of Science and the School of Engineering. Various business and industry sectors have a huge demand for data specialists / scientists to conduct an in-depth analysis of the valuable datasets collected during the business process. Data Science and Technology graduates are a perfect fit for these emerging job opportunities in the market. The program will equip students with various mathematical tools, data analytical skills and IT technologies to make sense of data obtained from various sources.

DSCT students use a wide spectrum of mathematical and IT tools to develop basic knowledge of data analysis and programming skills that will allow them to understand and analyze actual phenomena of massive data obtained from rich information sources. Additionally, students will receive hands-on experience and expert guidance to acquire practical skills in data analysis that will provide them with an excellent step in their future. Areas of expertise in this program include machine learning, classification, clustering, data mining, database management, cloud computing, data visualization, etc.

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## Extended Major Option

The DSCT students can opt for an Extended Major in Artificial Intelligence (AI). Extended Major is not a standalone major, but is adhered to a certain majors as expanded choices. It enables students to keep abreast of emerging technology and innovation that are shaping our society in a multi-faceted way. The curriculum of this program is cross-

disciplinary and practical. DSCT students with this extended major can learn many innovative applications of artificial intelligence in the related areas to Data Science and Technology. Upon fulfilment of the curriculum requirement, the students will be awarded the BSc degree in Data Science and Technology with an Extended Major in Artificial Intelligence.

## Student Sharing

Studying Data Science at HKUST has been an exhilarating journey. The cutting-edge curriculum and hands-on projects have equipped me with valuable analytical and programming skills. I am excited to apply my knowledge to solve real-world challenges in the data-driven era.

# RISK MANAGEMENT AND BUSINESS INTELLIGENCE (RMBI)

## Program Overview

Risk management and business intelligence form a vital part of a company's strategic planning and decision-making. The BSc in Risk Management and Business Intelligence (RMBI) program integrates training in both risk management and business intelligence to address market demands in one single undergraduate program.

Combining the strengths of HKUST's School of Business and Management, School of Engineering, and School of Science, the cutting-edge BSc in RMBI program incorporates a curriculum that put strong emphasis on quantitative techniques and business knowledge, encompassing:

- Mathematical models and methods for assessing and minimizing risks
- Data / text mining methods and advanced technologies to analyze and manage the increasingly large volume of business data available for decision-making

- Understanding of risks in financial institutions and other firms, including market risks, credit risks, operational risks, and business risks

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## FinTech Option

An academic option "Financial Technology" is provided to students who wish to gain a deeper understanding of financial technology and its engineering foundations, cryptoventures and the latest development in the area.



# RESEARCH EXCELLENCE

## Department of Physics

### Research Foci

- Cold Atoms, Optics and Quantum Information
- Condensed Matter Experiments and Advanced Materials
- Condensed Matter Theory, Statistical and Computational Physics
- Particle Physics and Cosmology
- Soft Matter and Biological Physics
- Wave Functional Materials and Physics

Research in the Department covers a broad range of topics, from the smallest to the largest scale, with complementary strengths in theory and experiment. Faculty members work both independently and collaboratively, in affiliation with the several research institutes and centers:

- William Mong Institute of Nano Science and Technology
- Center for Metamaterials Research
- Center for Quantum Materials
- HKUST Energy Institute
- Center for Scientific Computation
- Institute for Advanced Study's Center for Fundamental Physics
- Institute for Advanced Study's Center for Quantum Technologies



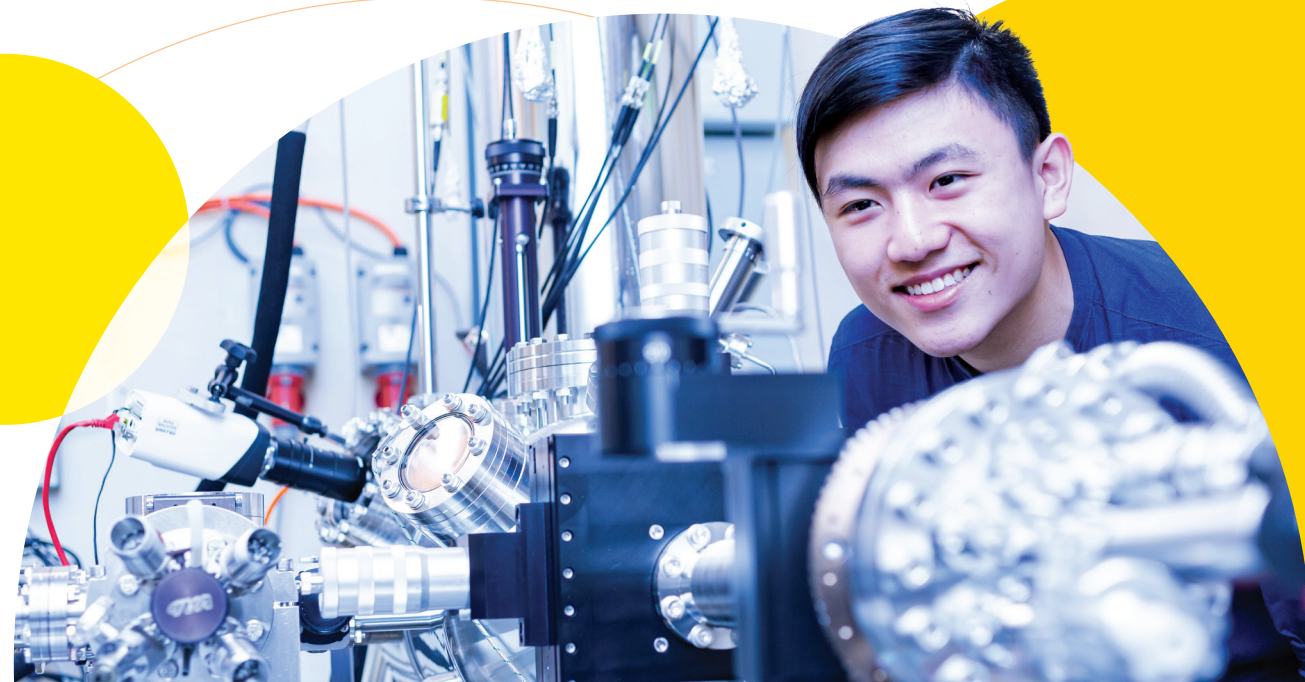
## Department of Mathematics

### Research Foci

- Algebra and Number Theory
- Geometry and Topology
- Analysis and Differential Equations
- Applied and Computational Mathematics
- Financial Mathematics
- Probability and Statistics
- Data Science

The Department utilizes a range of up-to-date facilities and equipment for teaching and research purposes. Apart from a computer laboratory with 40 high-end desktop computers, there is also a High Performance Computing Laboratory equipped with 200 powerful CPU- & GPU-based computer servers having 200 TFLOPS

aggregate processing power and 1 PB storage capacity. By making use of these powerful computing facilities, our faculty and students are able to solve computationally intensive problems in their innovative research projects so that they can stay at the forefront of their research fields.





## Department of Chemistry

### Research Foci

- Analytical / Environmental Chemistry
- Synthetic Chemistry
- Materials Chemistry
- Physical / Computational Chemistry
- Chemical Biology / Medicinal Chemistry

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The Department is well equipped with modern laboratories and state-of-the-art instruments. In addition, the Department has international links with major chemical industries and

has played a key role in setting up broad-based collaborations involving universities, research institutions and companies in Hong Kong, Mainland China, Japan, Europe and the US.



## Division of Life Science

### Research Foci

- Cellular Regulation and Signaling
- Cancer Biology
- Developmental Biology
- Molecular and Cellular Neuroscience
- Macromolecular Structure and Function
- Biotechnology and Medicinal Biochemistry

Faculty members working in these areas form coordinated research teams. Synergy between research laboratories empowered multi-disciplinary investigation of biological problems. At the same time, it creates a stimulating atmosphere in which students experience the challenge of modern research through direct participation.

The Division is excellently equipped for research in a broad range of areas. The Laboratory Animal Facility provides a centralized and modern facility for animal studies. Centralized state-of-the-art facilities for biochemical and cellular studies are provided by the Biosciences Central Research Facility.

## Department of Ocean Science

### Research Foci

- Marine Ecology
- Oceanography
- Ocean Technology

The Department emphasizes building cross-disciplinary research and educational programs in Ocean Science and Technology. Our primary study sites include the estuarine environment of the Pearl River, the coastal bays of Hong Kong, and the deep sea in the Pacific Ocean and beyond.

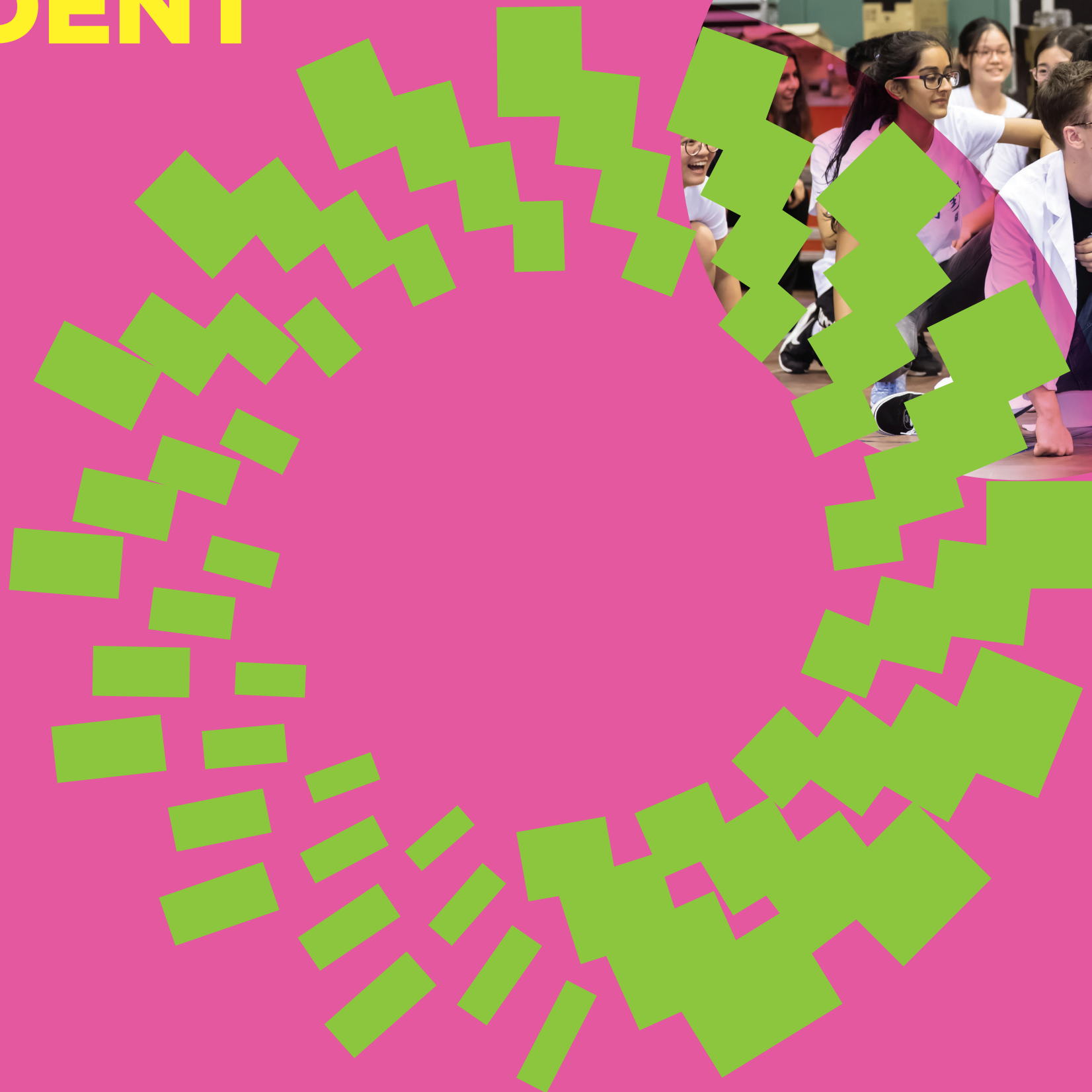
The Ocean Research Facility on campus is a key item of infrastructure supporting our marine research,

while the Environmental Central Facility provides a range of equipment and technology commonly used in water and atmospheric environmental research.



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# STUDENT LIFE



# STUDENT LIFE

## Academic Advising

The Office of Academic Advising and Support is established in the School of Science to provide students with a general orientation to the university, initial advice on course selection and consultation on the choice of major. The Office provides guidance to students on academic-related issues through –

- Providing accurate and relevant information about academic programs and other educational experiences;
- Providing one-on-one consultation on the choice of major and possible double major / major-minor combinations to suit their interests, abilities and goals;
- Explaining university regulations, graduation requirements, and institutional policies and procedures;
- Enhancing their awareness of available educational resources on campus such as internship, mentorship, undergraduate research and exchange programs;
- Encouraging the use of institutional and community services in support of academic success.

## MAGNET (Make A Great Net)

MAGNET is a peer mentoring program in the School of Science that aims to help freshmen make a smooth transition to HKUST by providing a supportive environment. It allows students with diverse backgrounds to bond over similar experiences and interests. Peer mentors are selected senior-year students from different

science disciplines, who are interested in assisting new students in overcoming the obstacles they may encounter during their first year. The mentor / mentee connection provides an academic, cultural, and social support network for students seeking academic excellence and satisfaction.

## First Year Course - HMAW 1905 - Behavioral Foundations of University Education: Habits, Mindsets, and Wellness

HMAW1905, led by faculty advisors, advising staff and peer mentors, is a one-year course designed to help new students adapt to university life through advising, sharing and discussion, and applying the science of well-being to enhance their personal and interpersonal development. It also aims to foster their self-understanding and confidence as young adults who can fully enjoy their university education and career thereafter.

## Student Development Programs - Science for Success

### University Student Sponsorship Program in Wildlife Conservation (USSP)

Collaborating with the Ocean Park Conservation Foundation Hong Kong, selected students will be fully sponsored to travel overseas to gain first-hand research experience, while contributing to wildlife conservation.

### MenTernship Program

Students joining the MenTernship Program will be offered opportunities to shadow social dignitaries, and learn through social events and internship experience in the mentors' respective fields.

### Overseas Cultural Exploration and Service Trips

To raise students' awareness of serving the community, service-learning trips to Cambodia and Sri Lanka have been held. Students engaged in various service projects that facilitated cultural exchanges with the local people. The trips also included visits to heritage sites of historical significance.

### Cultural Study Tours to Mainland China

Our School has established close relationships with renowned institutions in Mainland China for various study tours. We encourage students to step out of their comfort zone to experience a glimpse of Chinese culture.

### SCI/NUCLEUS Team

SCI/NUCLEUS is a student-driven science busking team established to mobilize Science students, alumni and staff to promote pop science and serve the community together.







## Internships, Research Opportunities and Student Exchanges

### Career Training and Internship Opportunities

Students are provided with an array of career training activities including one-on-one career consultation on exploring their career goals, mock interviews with HR experts from different industries, and firm visits. The School also provides

individualized services such as referrals to partner companies for students who seek internship experiences and graduate jobs.



### Undergraduate Research Opportunities Program (UROP)

UROP is a HKUST signature program designed to provide undergraduate students with exciting opportunities to engage in academic research. In Fall, Spring and Summer semesters, lists of UROP projects are open for student application. Qualified students will work closely with faculty members and their postgraduate research students, thereby developing insightful perspectives on diverse scientific fields.

Successful completion of UROP courses may lead to stipends as encouragement or credits to fulfill part of the program requirement. Students will be sponsored to attend international academic conferences if their UROP project papers / posters are accepted for presentation. Students who demonstrate excellent research performance may also be nominated for internal awards, in recognition of their contribution to research and innovation at the HKUST.



## Student Exchanges

Currently, the School has over a hundred exchange partner institutions around the world. Students joining the exchange program will be afforded opportunities to learn and experience new cultures overseas for an entire semester.

### Europe

#### Austria

- MCI Management Center Innsbruck

#### Denmark

- Technical University of Denmark
- University of Copenhagen

#### Finland

- University of Helsinki

#### France

- CY Cergy Paris University
- Ecole Polytechnique
- Universite Grenoble Alpes

#### Germany

- RWTH Aachen University
- Technische Universitaet Darmstadt
- Technische Universitaet Muenchen
- University of Stuttgart

#### Ireland

- Trinity College Dublin
- University of Galway

#### Luxembourg

- University of Luxembourg

#### Norway

- University of Bergen

#### Poland

- Jagiellonian University

#### Russia

- National Research University  
Higher School of Economics

#### Sweden

- Chalmers University of Technology
- KTH Royal Institute of Technology
- Lund University

#### Switzerland

- Ecole Polytechnique Federale de  
Lausanne

- ETH Zurich

- University of Zurich

#### The Netherlands

- Erasmus University Rotterdam
- University of Groningen
- Utrecht University
- Wageningen University & Research

#### Turkey

- Sabanci University

#### United Kingdom

- Cardiff University
- Lancaster University
- Newcastle University
- The University of Birmingham
- The University of St Andrews
- University of Aberdeen
- University of Bristol
- University of Exeter
- University of Glasgow
- University of Leeds
- University of Southampton
- University of Strathclyde
- University of Sussex

### North & Latin America

#### Canada

- The University of British Columbia
- University of Manitoba
- University of Toronto
- University of Waterloo

#### Mexico

- Tecnologico de Monterrey

#### United States

- Columbia University
- Cornell University
- Georgia Institute of Technology
- Iowa State University
- Lehigh University
- Missouri University of Science  
and Technology
- Northwestern University
- Rice University
- Rutgers, The State University of  
New Jersey
- Smith College
- Stony Brook University
- University of California
- University of Florida
- University of Hawai'i at Mānoa
- University of Massachusetts Amherst
- University of Notre Dame
- University of Virginia
- University of Wisconsin-Madison



### Asia

#### Japan

- Kyoto University
- Kyushu University
- Osaka University
- Sophia University
- The University of Tokyo
- Tohoku University
- Tokyo Institute of Technology
- University of Tsukuba

#### Mainland China

- Beihang University
- Beijing Institute of Technology
- Fudan University
- Harbin Institute of Technology
- Nanjing University
- Peking University
- Shanghai Jiaotong University
- Shanghai University of Finance  
and Economics
- Tianjin University
- Tsinghua University
- University of Chinese Academy  
of Sciences
- Xi'an Jiaotong University
- Zhejiang University

#### Malaysia

- Universiti Putra Malaysia

#### Philippines

- Ateneo de Manila University

#### Singapore

- Nanyang Technological University
- National University of Singapore
- Singapore University of  
Technology and Design

#### South Korea

- Ewha Womans University
- Korea Advanced Institute of  
Science and Technology
- Korea University
- Pohang University of Science  
and Technology
- Seoul National University
- Ulsan National Institute of  
Science and Technology

#### Taiwan

- National Central University
- National Chengchi University
- National Taiwan University
- National Tsing Hua University
- National Yang Ming Chiao Tung University

### Oceania

#### Australia

- Monash University
- The Australian National  
University
- The University of New  
South Wales



# CAREER PROSPECTS

Our programs not only nurture students to become scientists who generate academic knowledge for the betterment of humankind, but also train students to excel in their future professions including industrial research and development, education, manufacturing, logistics, and business and finance.

Each year, however, apart from entering the job market upon graduation, about 25-30% of our science graduates pursue further studies in renowned universities, which include:

- California Institute of Technology
- Imperial College London
- ETH Zurich
- University College London
- University of Chicago
- National University of Singapore
- Yale University
- Columbia University
- King's College London
- The University of Sydney
- New York University
- Université PSL
- University of British Columbia
- The University of Queensland
- University of California, San Diego
- Technical University of Munich

# HIGH-ACHIEVING ALUMNI



**Rigil YEUNG**

BSc in Biochemistry, Class of 2013  
 PhD in Life Science, HKUST, Class of 2018  
 Senior Medical Science Liaison at MSD

Determined to devote my career to the biotech & pharma industry, I decided to study the Biochemistry program at HKUST.

The undergraduate curriculum has equipped me with a strong foundation of scientific knowledge and allowed me to participate in world-class research

projects. Besides, I had the privilege to participate in co-curricular programs offered by the School of Science, which added significant values to my growth.

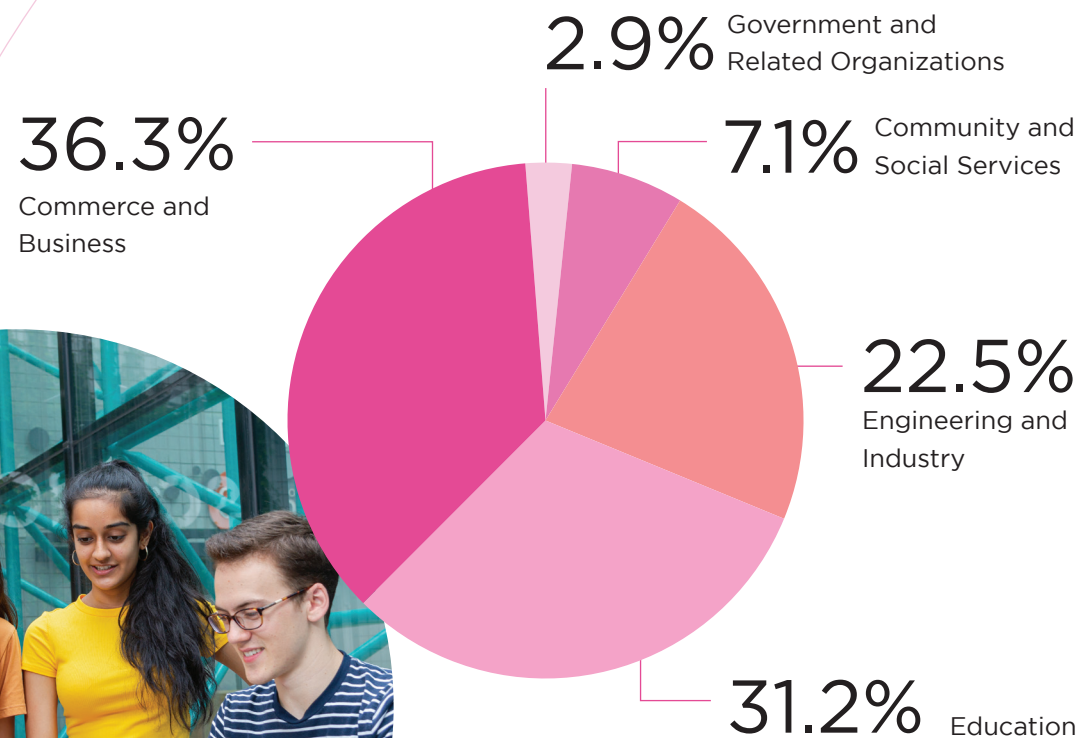
Graduated with a first-class honor, I pursued my PhD degree at HKUST. At that time, I gained a better understanding of drug development and later joined the pharmaceutical industry smoothly. I am pleased to say, my years at HKUST are memorable and rewarding.

**Tommy LEE**

BSc in Chemistry, Class of 2014  
 MSc in Environmental Engineering and Management, HKUST, Class of 2019  
 Generation Chemist at HK Electric

My three years of undergraduate studies have shaped my career path. HKUST had provided me with plenty of opportunities, such as research, service learning, internship, and mentorship. I have tried many of these and found the area that I want to endeavor the most.

The staff and professors here are always resourceful and ready to help. Nothing is unachievable as my classmates share the same value and work together towards the goals. I would say full of memories and grown-up here!



Students pursuing further studies are not included in this survey.  
 (Source: Graduate Employment Survey 2022, Career Center, HKUST)





**Manvela LUI**

BSc in Mathematics, Class of 2016  
Senior Consultant at Deloitte

Working as a consultant to diagnose organization problems and devise solutions for our clients might not seem to have direct relationship with math at first sight. However, math forms the backbone of how we approach things here – from dissecting a problem from different angles, drawing findings from models and analysis to supporting with multi-dimensional solutions.

Most importantly, the determination of a break-through mindset where we keep challenging ourselves and generating new ideas are originated in math, cultivated through every course and learning experience at HKUST.



**Abigail WANG**

BSc in Chemistry (International Research Enrichment Track), Class of 2020  
PhD student at Massachusetts Institute of Technology

I am very thankful to HKUST for its rich resources and the opportunities I have been exposed to during my time there. I have developed the most previous friendship, gained international experiences, and seen a much bigger world in those four years. I would like to encourage current students to be brave enough to step out of their comfort zone. For it is always through the most uncomfortable, challenging path, that we grow and mature the most.

**Ronan CHAN**

BSc in Biology, Class of 1996  
General Manager – Hong Kong & Taiwan,  
Cardiac Rhythm Management at Abbott



At HKUST I did experience the rigorous academic training and the demanding assessment, which gave me a sense of connection to the competitive business world. HKUST is willing to invest and attract distinctive lecturers and professors. I still miss the chance with honor to attend lectures by a world-famous biologist. Together with the communion atmosphere with the multicultural community and the beautiful landscape, I strongly recommend HKUST as a good choice for you!

**Harry TAM**

BSc in Physics (International Research Enrichment Track), Class of 2018  
PhD in Physics, University of Pennsylvania  
Postdoctoral Fellow at Princeton University

It is very fruitful! I have taken advantage of the many research opportunities offered by the IRE program. In the first two years, I was in Prof. Lortz's research group doing experimental research on high-temperature superconductors. I continued my interest in this subject after I went for exchange at Columbia University and worked with a renowned theorist Prof. Andrew Millis on the novel superconductivity of FeSe. After returning to HKUST, I joined Prof. Vic Law's research group and started to train myself to be a condensed matter theorist and get to know the field of topological superconductors. The IRE program has given me plenty of training to be a serious researcher and opportunities to interact with brilliant scholars.



# ADMISSIONS

## Admissions Routes

Our undergraduate students are drawn from a wide range of academic, cultural and social backgrounds. Our applicants can be classified into the following categories:

- Local applicants applying via JUPAS on the basis of Hong Kong Diploma of Secondary Education (HKDSE) results;
- Local applicants applying on the basis of non-HKDSE qualifications (Local Direct Admissions);
- International applicants;
- Mainland China, Taiwan and Macau (MTM) applicants

Applicants follow either one of the following admissions routes:

- JUPAS Admissions (JUPAS applicants should submit the application to JUPAS Office)
- Direct Admissions (All non-JUPAS applicants should submit the application directly to HKUST via the Online Application System for Undergraduate Programs)

For details, please visit <https://join.hkust.edu.hk>

## Admissions Requirements (JUPAS Admissions)

### Minimum Entrance Requirements for Science Programs

Applicants must achieve the following minimum grades in four core subjects and two electives:

Subjects	Science (Group A) (JS5102) Science (Group B) (JS5103) International Research Enrichment (IRE) (JS5101)	Science (Group A) with an Extended Major in Artificial Intelligence (SSCI-A (AI)) (JS5181)
English Language	Level 3	Level 3
Chinese Language	Level 3	Level 3
Mathematics (Compulsory Part)	Level 2	Level 3
Citizenship and Social Development	Attained	Attained
Elective 1	Level 3	Level 3
Elective 2	Level 3	Level 3

M1 / M2 can be accepted in place of an elective

## Science (Group A), Science (Group B) and SSCI-A (AI) programs:

The weighted scores of the following 5 subjects are summated to form the admissions score:

Subjects	Weightings	
	Science (Group A) / SSCI-A (AI)	Science (Group B)
English Language	x 1.5	
Mathematics (Compulsory Part)	x 1	
Best science elective* <small>Must be one of M1 / M2 / Biology / Chemistry / Physics</small>	Physics / M1 / M2 (x 2)	Biology / Chemistry (x 2)
Best two other subjects* <small>Can be core subject, M1 / M2 or any Category A subject</small>	Biology / Chemistry (x 1.5)	Physics / M1 / M2 (x 1.5)

\*Notes: The highest scores of at most TWO weighted science electives will be taken in the admissions score calculation.

## International Research Enrichment (IRE) program:

The unweighted scores of the following 5 subjects are summated to form the admissions score:

Subjects	Weightings
English Language	x 1
Mathematics (Compulsory Part)	x 1
Best two science electives: <small>Must be from: Biology, Chemistry, Physics, M1 / M2</small>	x 1
Next best subject: <small>Can be core subject, M1 / M2 or any Category A subject</small>	x 1

Note: Satisfactory interview performance is required for admissions to the IRE program. Applications should put the IRE program among the Band A choices to get the interview opportunity.

## JUPAS Score Calculation

### Grade-to-score conversation scale:

HKUST adopts the following conversation scale in calculating the JUPAS admissions scores\*:

HKDSE subject grade	5**	5*	5	4	3	2	1
Admissions score	8.5	7	5.5	4	3	2	1

JUPAS Score Calculator <https://join.hkust.edu.hk/admissions/jupas>

\*Note: For Category A Core/Elective Subjects only

## Admissions Requirements (Direct Admissions)

HKUST School of Science considers the following factors in making admissions decisions:

- Public examination results and academic performance
- Personal statement
- Non-academic achievements
- Referees' reports
- Interview performance (if applicable)

### Applicants with International Qualifications (e.g. IB, GCEAL, SAT/AP, etc.):

In addition to fulfilling the University's general requirements, applicants applying for:

- **Science (Group A) and SSCI-A (AI)** programs must have at least one senior-level subject from Mathematics / Physics
- **Science (Group B)** program must have at least one senior-level subject from Biology / Chemistry
- **IRE** program must have at least one senior-level subject from Biology / Chemistry / Mathematics / Physics

### Applicants with Joint Entrance Examination for Universities in PRC (JEE, PRC) Qualification:

- 1) Science stream, or;
- 2) For candidates from provinces that do not distinguish between Arts and Science streams are required to take at least one of the following subjects:
  - for **Science (Group A)** and **SSCI-A (AI)** programs: Physics
  - for **Science (Group B)** program: Chemistry, Biology / Life Science
  - for **IRE** program: Chemistry, Physics, Biology / Life Science

### Applicants with Post-Secondary Qualifications:

Applicants must fulfill either one of the following requirements:

- 1) Completion of an Associate Degree in a post-secondary institution recognized by HKUST
- 2) Completion of a Higher Diploma program in a post-secondary institution recognized by HKUST
- 3) Transfer students from local or overseas degree programs: GPA B+ or GPA of 80% is normally expected

## Joint School Programs:

For the Biotechnology and Business (BIBU) program, please visit

<https://bibu.hkust.edu.hk> 🔍

For the Mathematics and Economics (MAEC) program, please visit

<https://maec.hkust.edu.hk> 🔍








## Scholarships

The University and the School of Science offer a number of scholarships to top students from all backgrounds, based on academic merits and non-academic achievements upon entry and during the course of study. For details, please refer to

<https://sfao.hkust.edu.hk> 🔍



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