



DEPARTMENT OF  
SYSTEMS ENGINEERING AND  
ENGINEERING MANAGEMENT



香港中文大學  
The Chinese University of Hong Kong

# Bachelor of Engineering Programme in SYSTEMS ENGINEERING AND ENGINEERING MANAGEMENT

## 系統工程與工程管理學工程學士課程



### EMPOWER WITH MANAGERIAL VISION

最早於香港提供綜合技術與管理的學系  
課程設計緊扣香港經濟支柱行業的需要  
教授隊伍在學術領域享譽盛名  
教研設施達世界一流水準



# WHAT SEEM DOES

## 項目宗旨

The Bachelor of Engineering in Systems Engineering and Engineering Management (SEEM) trains students to utilize technologies (such as machine learning, big data analytics, and artificial intelligence) and mathematical tools (such as optimization, stochastic modeling, and simulation) to tackle decision-making problems for businesses including, but not limited to,

financial investment decisions and risk management

developing, pricing, and risk analysis of new financial products

designing the supply chain network for global business

developing, supporting, managing, and maintaining information systems and apps for data-intensive business applications

dynamic pricing for the airline industry or e-commerce platforms

large-scale route planning and scheduling in logistics systems

patient flow management in healthcare systems

## ADMISSION REQUIREMENTS

### 入學要求

Applicants applying on the strength of the HKDSE examination results will be admitted through the Joint University Programmes Admissions System (JUPAS) (JUPAS Code - JS4458). Please visit the JUPAS website ([www.jupas.edu.hk](http://www.jupas.edu.hk)) for eligibility and details of JUPAS application. Non-JUPAS applications are strongly encouraged.



# STREAMS OF SPECIALISATION

## 專修範圍



### Business Information Systems 商務資訊系統

The core of any enterprise in a knowledge-based society

- Software engineering for knowledge-based information processing
- Computational intelligence for decision making
- User interface technologies and design
- Information security and authentication

- 知識及信息處理的軟件工程
- 決策分析中的計算智能
- 人機界面的技術及設計
- 信息保安及確証



### Decision Analytics 決策分析

The application of quantitative approaches and information technologies to solve financial problems

- Decision methodology and applications
- Financial decision and asset pricing models
- Financial markets and risk management
- Investment analysis and portfolio management

- 決策方法及應用
- 金融決策及定價模型
- 金融市場及風險管理
- 投資分析組合管理

The strategic and operational nexus of a successful business

- Quality control and management
- Logistics systems planning
- Production and operations management
- Supply chain management: Analysis and coordination
- 品質控制與管理
- 物流系統策劃
- 生產和營運管理
- 供應與需求鏈之分析和協調

An interdisciplinary approach to develop complex systems connecting people and technologies

- Service systems
- Service computing
- Service management
- Electronic payment systems
- 服務系統
- 服務計算學
- 服務營運的管理
- 電子支付系統



# CURRICULUM



There are two streams of specialization: **Business Information Systems, Decision Analytics**. Students may choose to specialize in one of the two streams and select courses as prescribed. A student who does not wish to specialize in any of the two streams should follow a study scheme devised with the advice of the academic advisers of the Department.

## Recommended Study Plan

Students are required to complete a minimum of 75 units of courses as follows:

- (i) Faculty Package 9 units      (iii) Required Courses 30 units  
 (ii) Foundation Courses 18 units      (iv) Six Elective Courses 18 units

Total: 75 units

### Term 1

	Course Title	Unit
ENGG1110/ESTR1002	Problem Solving By Programming	3
MATH1510	Calculus for Engineers	3
		6

### Term 2

	Course Title	Unit
ENGG1120/ESTR1005	Linear Algebra for Engineers	6
ENGG1130/ESTR1006	Multivariable Calculus for Engineers	
ENGG1310/ESTR1003/	Engineering Physics: Electromagnetics, Optics and Modern Physics	2
ENGG2720/ESTR2014/	Complex Variables for Engineers	
ENGG2740/ESTR2016/	Differential Equations for Engineers	
PHYS1003/	General Physics for Engineers	
PHYS1110/	Engineering Physics: Mechanics and Thermodynamics	
SEEM2460/ESTR2540	Introduction to Data Science	8

### Term 3

	Course Title	Unit
CSCI1120/1130/	Introduction to Computing Using C++/Introduction to Computing Using Java	11
ESTR1100/1102		
ENGG2440/ESTR2004	Discrete Mathematics for Engineers	11
ENGG2760/ESTR2018	Probability for Engineers	
SEEM2440/ESTR2500	Engineering Economics	

### Term 4

	Course Title	Unit
CSCI2100/ESTR2102	Data Structures	9
ENGG2780/ESTR2020	Statistics for Engineers	
SEEM2420	Operations Research I	
SEEM2602	Systems Engineering Practicum	
		9

### Term 5

	Course Title	Unit
CSCI2040	Introduction to Python	8
SEEM3410	System Simulation	
SEEM3440/ESTR3500	Operations Research II	
	Major Elective for respective stream	3
		11

### Term 6

	Course Title	Unit
SEEM3550/ESTR3506	Fundamentals in Information Systems	6
SEEM3650/ESTR3516	Fundamentals in Decision and Data Analytics	3
	Major Elective for respective stream	
		9

### Term 7

	Course Title	Unit
SEEM4998	Final Year Project I	3
	Major Electives for respective stream	6
		9

### Term 8

	Course Title	Unit
SEEM3450/ESTR3502	Engineering Innovation and Entrepreneurship	6
SEEM4999	Final Year Project II	6
	Major Electives for respective stream	
		12

## Recommended Elective Courses

Students choosing a stream of specialization should take at least 6 courses (2 stream required and 4 stream elective courses) from the corresponding list for their stream of specialization.

Business Information Systems (BIS)	
SEEM3430	Information Systems Analysis and Design
SEEM4540	Open Systems for E-Commerce
AIST3510/SEEM3510	Human and Computer Interaction
CSCI4140	Open Source Software Project Development
ENGG1820	Engineering Internship (1 Unit)
FTEC4001	Advanced Database Technologies
FTEC4005	Financial Informatics
FTEC4007	Introduction to Blockchain and Distributed Ledger Technology
IERG4210	Web Programming and Security
SEEM3460/ ESTR3504	Computer Processing System Concepts
SEEM3490	Information Systems Management
SEEM3680/ ESTR3512	Technology, Consulting and Analytics in Practice
SEEM4570	System Design and Implementation
SEEM4630	E-Commerce Data Mining

Decision Analytics (DA)	
SEEM3620/ESTR3514	Introduction to Logistics and Supply Chain Management
SEEM4760/ESTR4512	Stochastic Models for Decision Analytics
ENGG1820	Engineering Internship (1 Unit)
FTEC4002	Behavioral Analytics
FTEC4005	Financial Informatics
MKTG2010	Marketing Management
SEEM2520	Fundamentals in Financial Engineering
SEEM3500	Quality Control and Management
SEEM3580	Risk Analysis for Financial Engineering
SEEM3590/ESTR3509	Investment Science
SEEM3630/ESTR3510	Service Management
SEEM4630	E-Commerce Data Mining
SEEM4670	Service Systems
SEEM4720/ESTR4506	Computational Finance
SEEM4730/ESTR4508	Statistics Modeling and Analysis in Financial Engineering
SEEM4750/ESTR4510	Advances in Logistics and Supply Chain Management

# CAREER PROSPECTS

## 畢業生就業概況

With a curriculum closely related to the four pillar industries (finance, trading and logistics, professional service, and tourism) in HK, SEEM program keeps the graduates very competitive in the job market. After graduation, some students of the program have joined leading firms like AIA, Bank of China, Cathy Pacific Airways, FedEx, HSBC, IBM, PCCW, The Hong Kong SAR Government, and so on. SEEM program graduates will be ideally suited for positions requiring strong engineering background (in technologies like AI and in mathematics like mathematical modeling) and a comprehensive understanding of the business management environment. Our graduates are very competitive for jobs such as

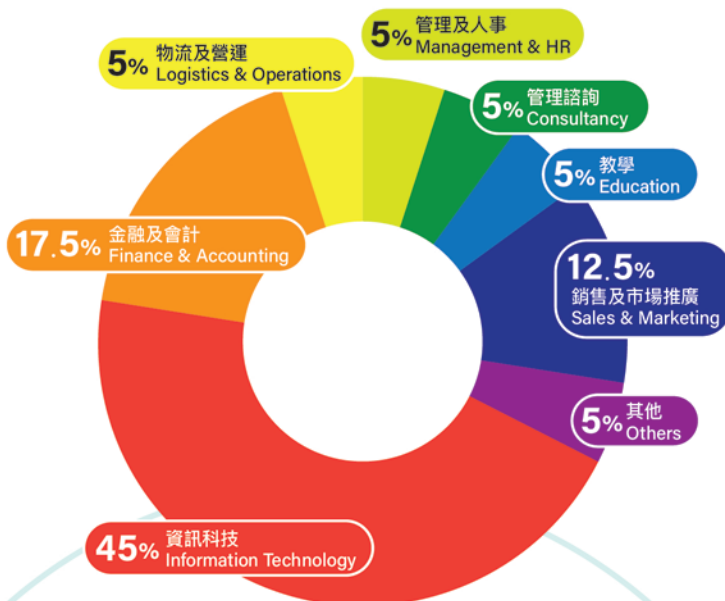


由於與香港四大支柱產業(貿易及物流、金融服務、專業服務和旅遊)結合緊密，系統工程與工程管理項目的畢業生於就業市場上非常有競爭力。部分學生畢業後，加入了傑出公司如友邦保險、中國銀行、國泰航空、聯邦快遞、滙豐銀行、IBM、電訊盈科、香港政府機構等等。系統工程與工程管理項目的畢業生非常適合需要深厚的工程背景(專注於人工智能等技術及數學建模等數學領域)和對商業管理環境有全面了解的職位。我們的畢業生在工作方面非常有競爭力，例如

- **Asset and wealth management**  
(e.g., data-driven investment strategy design)
- **Information Technology consulting**  
(e.g., provide guidance on technology to companies to meet their business demands)
- **IT Companies or IT service roles in banking or e-commerce companies**  
(e.g., develop, support, manage, or maintain the IT system in these companies)
- **Supply chain system management in e-commerce**  
(e.g., use data analytics to predict the demand and hence determine the inventory level)
- **Dynamic pricing for a broad class of industries**  
(e.g., real-time pricing for flight tickets by incorporating customer behaviors)
- **Healthcare systems management**  
(e.g., appointment scheduling for surgeries)
- **Operational analyst for logistics companies**  
(e.g., using optimization models to improve the operations in logistics systems, such as route planning and scheduling)

### Career Placements in Recent Years

#### 近年畢業生的就業概況





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