(For students admitted in 2015-16 under the 4-year degree)

BEng in Computer Science

In addition to the requirements of their major programs, students are required to complete the University requirements for graduation. For details please refer to the respective section on this website.

Some courses can be used to fulfill both Major and University Common Core Requirements. Students may reuse a maximum of 6 credits of these courses to count towards both Requirements.

Major Requirements

Engineering Fundamental Course(s)

			Credit(s) attained
COMP		Note: COMP 1021 OR COMP 1022P OR COMP 1022Q	3
COMP	1021	Introduction to Computer Science	3
COMP	1022P	Introduction to Computing with Java	3
COMP	1022Q	Introduction to Computing with Excel VBA	3
ENGG	1010	Academic Orientation	0
CHEM/LIFS/ PHYS		Note: CHEM 1004 OR CHEM 1010 OR CHEM 1020 OR LIFS 1901 OR PHYS 1001 OR PHYS 1112 OR PHYS 1312	2-3
CHEM	1004	Chemistry in Everyday Life	3
CHEM	1010	General Chemistry IA	3
CHEM	1020	General Chemistry IB	2
LIFS	1901	General Biology I	3
PHYS	1001	Physics and the Modern Society	3
PHYS	1112	General Physics I with Calculus	3
PHYS	1312	Honors General Physics I	3
LANG	2030	Technical Communication I	3
MATH		Note: [(MATH 1012 OR MATH 1013 OR MATH 1023) AND (MATH 1014 OR MATH 1024)] OR [MATH 1020]	4-7
MATH	1012	Calculus IA	4
MATH	1013	Calculus IB	3
MATH	1014	Calculus II	3
MATH	1020	Accelerated Calculus	4
MATH	1023	Honors Calculus I	3
MATH	1024	Honors Calculus II	3
MATH	2111	Matrix Algebra and Applications	3
SENG		Engineering Introduction course (COMP students may also use COMP 1022P or COMP 1022Q to fulfill this requirement.)	3-4
COMP	1021	Introduction to Computer Science	3
CENG	1000	Introduction to Chemical and Biomolecular Engineering	3

CIVL	1100	Discovering Civil and Environmental Engineering	3
ELEC	1100	Introduction to Electro-Robot Design	4
ELEC	1200	A System View of Communications: from Signals to Packets	4
IELM	2010	Industrial Engineering and Modern Logistics	3
IELM	2200	Engineering Management	3
MECH	1901	Automotive Engineering	3
MECH	1902	Energy Systems in a Sustainable World	3
MECH	1905	Buildings for Contemporary Living	3
MECH	1906	Mechanical Engineering for Modern Life	3

Required Course(s)

			Credit(s) attained
COMP	1991	Industrial Experience	0
COMP		Note: (COMP 2011 AND COMP 2012) OR COMP 2012H	5-8
COMP	2011	Introduction to Object-oriented Programming	4
COMP	2012	Object-Oriented Programming and Data Structures	4
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5
COMP	2611	Computer Organization	4
COMP		Note: COMP 2711 OR COMP 2711H	4
COMP	2711	Discrete Mathematical Tools for Computer Science	4
COMP	2711H	Honors Discrete Mathematical Tools for Computer Science	4
COMP		Note: COMP 3111 OR COMP 3111H	4
COMP	3111	Software Engineering	4
COMP	3111H	Honors Software Engineering	4
COMP	3511	Operating Systems	3
COMP		Note: COMP 3711 OR COMP 3711H	3-4
COMP	3711	Design and Analysis of Algorithms	3
COMP	3711H	Honors Design and Analysis of Algorithms	4
COMP		Note: Students are required to take COMP 4900 for every regular term in which they are in residency at HKUST with major in COMP	0
COMP	4900	Academic and Professional Development	0
COMP		Note: COMP 4981 OR COMP 4981H (Students taking the Researcher Option must take COMP 4981H)	6
COMP	4981	Final Year Project	6
COMP	4981H	Final Year Thesis	6
ELEC/IELM/ MATH		Note: ELEC 2600 OR IELM 2510 OR MATH 2411 OR MATH 2421 OR MATH 2431	4
ELEC	2600	Probability and Random Processes in Engineering	4
IELM	2510	Engineering Probability and Statistics	4

MATH	2411	Applied Statistics	4
MATH	2421	Probability	4
MATH	2431	Honors Probability	4
ENGG	2010	Engineering Seminar Series	0
LANG	4030	Technical Communication II for CSE & CPEG	3

Elective(s)

			Minimum credit(s) required
COMP		COMP Elective (Any 1 course offered under COMP)	3
COMP		COMP Electives (5 courses from the specified elective list, of which at least 3 courses should be taken from 1 area and at least 2 courses outside that area.)	15
Artificial Intelligence / Theory Area			
COMP	3211	Fundamentals of Artificial Intelligence	3
COMP	3721	Theory of Computation	3
COMP	4211	Machine Learning	3
COMP	4221	Introduction to Natural Language Processing	3
COMP	4331	Data Mining	3
COMP	4332	Big Data Mining and Management	3
COMP	4421	Image Processing	3
COMP	5211	Advanced Artificial Intelligence	3
COMP	5212	Machine Learning	3
COMP	5421	Computer Vision	3
COMP	5711	Introduction to Advanced Algorithmic Techniques	3
COMP	5712	Introduction to Combinatorial Optimization	3
COMP	5713	Computational Geometry	3
Graphic / Multimedia Area			
COMP	4411	Computer Graphics	3
COMP	4421	Image Processing	3
COMP	4431	Multimedia Computing	3
COMP	4441	Computer Music	3
COMP	4451	Game Programming	3
COMP	5411	Advanced Computer Graphics	3
COMP	5421	Computer Vision	3
Software / Database Area			
COMP	3021	Java Programming	3
COMP	3031	Principles of Programming Languages	3
COMP	3311	Database Management Systems	3
COMP	4021	Internet Computing	3
COMP	4111	Software Engineering Practices	3
COMP	4311	Principles of Database Design	3

COMP	4321	Search Engines for Web and Enterprise Data	3
COMP	4331	Data Mining	3
COMP	4332	Big Data Mining and Management	3
COMP	4521	Mobile Application Development	3
COMP	5311	Database Architecture and Implementation	3

Systems / Networking Area

COMP	4511	System and Kernel Programming in Linux	3
COMP	4521	Mobile Application Development	3
COMP	4611	Design and Analysis of Computer Architectures	3
COMP	4621	Computer Communication Networks I	3
COMP	4622	Computer Communication Networks II	3
COMP	4631	Computer and Communication Security	3
COMP	4632	Practicing Cybersecurity: Attacks and Counter-measures	3
COMP	4641	Social Information Network Analysis and Engineering	3
COMP	5621	Computer Networks	3
COMP	5622	Advanced Computer Communications and Networking	3
COMP	5631	Cryptography and Security	3

Student may opt to graduate with or without an option. Students who take an option MUST complete all requirements specified in addition to the major requirements.

Option(s)

Entrepreneur Option

Required Course(s)

			Credit(s) attained
COMP	4911	IT Entrepreneurship	3

Elective Course(s)

			Minimum credit(s) required
SENG/SBM		Entrepreneur Elective (1 course from the specified elective list.)	3
ENTR	3010	Structured Mentoring: Inspiring Leadership	3
ENTR	3020	Identifying Innovation Opportunities	3
IELM	2200	Engineering Management	3
IELM	4170	Product Design and Lifecycle Management	3
MECH	2800	Intellectual Property Law in Engineering	3
FINA	2203	Fundamentals of Business Finance	3
ISOM	2030	Business Protections for Innovations	3
ISOM	4020	Innovation Management and Technology Entrepreneurship	3
MARK	2120	Marketing Management	3
MGMT	3140	Negotiation	4

Practitioner Option

Elective Course(s)			Minimum credit(s) required
COMP		Practitioner Electives (2 courses from the specified elective list. Courses taken as Major Electives may not be counted towards this elective requirement.)	6
COMP	4111	Software Engineering Practices	3
COMP	4511	System and Kernel Programming in Linux	3
COMP	4521	Mobile Application Development	3
COMP	4632	Practicing Cybersecurity: Attacks and Counter-measures	3

Researcher Option

Students in the Researcher Option should also take COMP 4981H as specified in the major requirements.

Elective Course(s)			Minimum credit(s) required
COMP/UROP		Researcher Elective (2 courses from the specified elective list, of which at least 1 course taken from COMP 5000-level courses. Courses taken as Major Electives may not be counted towards this elective requirement.)	6
COMP		Any COMP courses at 5000-level as approved by the advisor	
COMP	4971	Independent Work	1-4
UROP	1100	Undergraduate Research Opportunities Series 1	1
UROP	2100	Undergraduate Research Opportunities Series 2	1
UROP	3100	Undergraduate Research Opportunities Series 3	1
UROP	4100	Undergraduate Research Opportunities Series 4	1