(For students admitted in 2012-13 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

				Credit(s)
Engineering Fundamental Course(s)				
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 1152 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 1152	Accelerated General Physics I with Calculus	2	
	PHYS 1312	Honors General Physics I	3	
LANG	2030	Technical Communication I		3
MATH		Note: [(MATH 1013 OR MATH 1023) AND (MATH 1014 OR MATH 1024)] OR [MATH 1020]		4-6
	MATH 1013	Calculus I	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	

Required Course(s)

COMP 1991	Industrial Experience		0
COMP 2011	Introduction to Object-oriented Programming		4
COMP	Note: COMP 2012 OR COMP 2012H		4
COMP 2012	Object-Oriented Programming and Data Structures	4	
COMP 2012H	OOP and Data Structures (Honors Study Track)**	4**	
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 4900	Academic and Professional Development		0
COMP	Note: COMP 4981 OR COMP 4981H (Students taking the Research Option must take COMP 4981H)		6
COMP 4981	Final Year Project	6	
COMP 4981H	Final Year Thesis (Honors Study)	6	
ELEC/ IELM/ MATH	Note: ELEC 2600 OR IELM 2510 OR MATH 2411 OR MATH 2421		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	
LANG 4030	Technical Communication II for CSE & CPEG		3

Elective(s)

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

AI / Theory

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 5421	Computer Vision	3
COMP 5711	Introduction to Advanced Algorithmic Techniques	3

Graphic / Multimedia

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

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 Laboratory	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	Embedded Systems Software	3

Systems Networking

COMP 4511	Operating Systems Laboratory	3
COMP 4521	Embedded Systems Software	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 4641	Social Information Network Analysis and Engineering	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)

COMP	4911	IT Entrepreneurship	3

Elective Course(s)

SENG/SBM		Entrepreneur Elective (1 course from the specified elective list.)		3
	IELM 2200	Engineering Management	3	
	IELM 4170	Product Design and Lifecycle Management	3	
	MECH 2800	Intellectual Property Law in Engineering	3	
	ENTR 3010	Structured Mentoring: Inspiring Leadership	3	
	ENTR 3020	Identifying Innovation Opportunities	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)

COMP		Practitioner Laboratory Electives (2 courses from the specified elective list.) (The list to be updated by the department.)	6

Researcher Option

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

Elective Course(s)

COMP/UROP		Researcher Elective (2 courses from the specified elective list, of which at least 1 course taken from COMP 5000-level courses.)		6
	COMP	Any COMP courses at 5000-level as approved by the advisor		
	UROP 1100	Undergraduate Research Opportunities Series 1	1	
	UROP 1200	Undergraduate Research Opportunities Series 2	1	
	UROP 1300	Undergraduate Research Opportunities Series 3	1	
	UROP 1400	Undergraduate Research Opportunities Series 4	1	

***Remarks on course(s):*

- COMP 2012H: The course title will be changed to "Honors Object-Oriented Programming and Data Structures" starting from Fall, 2014-15.
- COMP 2012H: The credit value will be changed to 5 starting from Fall, 2014-15.