(For students admitted in 2021-22 under the 4-year degree)

BEng in Bioengineering

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 9 credits of these courses to count towards both Requirements.

Students may use no more than 6 credits earned from courses offered in self-paced online delivery mode to satisfy the graduation requirements of a degree program. This 6-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Some courses in the curriculum have been previously coded with CORE-prefix where the special CORE-prefix has been replaced by the domain code of courses starting from Fall 2023-24. Students who have registered with these CORE-coded courses may look up their latest course codes by consulting the conversion table published on the Common Core website.

Major Requirements

Engineering Fundamental Course(s)

			Credit(s) attained
COMP		Note: [COMP 1021] OR [(COMP 1022P OR COMP 2011 OR COMP 2012H) AND COMP 1029P]	3-6
COMP	1021	Introduction to Computer Science	3
COMP	1022P	Introduction to Computing with Java	3
COMP	1029P	Python Programming Bridging Course	1
COMP	2011	Programming with C++	4
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5
ENGG	1010	Academic Orientation	0
CHEM		Note: CHEM 1010 OR CHEM 1020	3
CHEM	1010	General Chemistry IA	3
CHEM	1020	General Chemistry I	3
CHEM	1050	Laboratory for General Chemistry I	1
LANG	2030	Technical Communication I	3
LIFS		Note: Students with level 3 or above in HKDSE 1x Biology are exempted from taking LIFS 1901	0-3
LIFS	1901	General Biology 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
PHYS		Note: PHYS 1112 OR PHYS 1312	3
PHYS	1112	General Physics I with Calculus	3
PHYS	1312	Honors General Physics I	3
SENG		Engineering Introduction course (If the students take an introduction course included in their major, this course can be counted towards their major requirement.)	3-4
BIEN	1010	Introduction to Biomedical Engineering	3
CENG	1000	Introduction to Chemical and Biological Engineering	3
CENG	1500	A First Course on Materials Science and Applications	3
CENG	1700	Introduction to Environmental Engineering	3
CIVL	1100	Discovering Civil and Environmental Engineering	3
COMP	1021	Introduction to Computer Science	3
ELEC	1100	Introduction to Electro-Robot Design	4
ELEC	1200	A System View of Communications: from Signals to Packets	4
ENGG	1100	First Year Cornerstone Engineering Design Project Course	3
IEDA	2010	Introduction of Industrial Engineering and Decision Analytics	3
IEDA	2200	Engineering Management	3
ISDN	1002	Redefining Problems for the Real Needs	3
ISDN	1006	Human-centered Innovation	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
MECH	1907	Introduction to Aerospace Engineering	3

Required Course(s)

			Credit(s) attained
BIEN/CENG		Note: BIEN 1010 OR CENG 1000	3
BIEN	1010	Introduction to Biomedical Engineering	3
CENG	1000	Introduction to Chemical and Biological Engineering	3
BIEN	2310	Modeling for Chemical and Biological Engineering	3
BIEN	2410	Cellular and Systems Physiology for Engineers	3
BIEN	2610	Chemical Biology for Engineers	3
BIEN	2990	Academic and Professional Development I	1
BIEN/LIFS/ MATH		Note: BIEN 3300 OR LIFS 3150 OR MATH 2411	3-4
BIEN	3300	Data Science for Molecular Engineering	3

LIFS	3150	Biostatistics	3
MATH	2411	Applied Statistics	4
BIEN		Note: BIEN 3310 OR BIEN 3320	3
BIEN	3310	Data Science for Neural Engineering	3
BIEN	3320	Data Science for Biology and Medicine	3
BIEN	3410	Introduction to Bioinstrumentation and Bioimaging	3
BIEN	3910	Bioengineering Laboratory	4
BIEN		Note: BIEN 4920 OR BIEN 4930 OR BIEN 4940	6
BIEN	4920	Bioengineering Capstone Design	6
BIEN	4930	Bioengineering Thesis Research	6
BIEN	4940	Bioengineering Industrial Project	6
BIEN	4990	Academic and Professional Development II	1
CENG	2210	Chemical and Biological Engineering Thermodynamics	3
CENG	2220	Transport Phenomena I	3
CENG	3230	Chemical and Biological Reaction Engineering	3
ENGG	2010	Engineering Seminar Series	0
LANG	4035	Technical Communication II for Chemical and Biological Engineering	3

Elective(s)

			Minimum credit(s) required
SSCI/SENG		Bioengineering Electives (5 courses from the specified elective list, of which at least 9 credits should be taken from a single specialty area (Area 1 or Area 2). Out of the 15 credits taken, at least 9 credits should be at 4000-level). Courses taken as Major Required Courses may not be counted towards this elective requirement.	15
Area 1: Biomedical Data Acquisition and Analytics			
BIEN	3310	Data Science for Neural Engineering	3
BIEN	4310	Statistical Signal Analysis and Applications in Neural Engineering	3
BIEN	5040	Introduction to Neural Engineering	3
BIEN	6930C	Fundamentals and Applications of Sensing Technologies in Healthcare	3
CENG	6000N	Deep Learning for Chemical and Biological Engineering	3
COMP	2012	Object-Oriented Programming and Data Structures	4
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5
COMP	4211	Machine Learning	3
COMP	4331	Data Mining	3
COMP	4421	Image Processing	3
ELEC	2100	Signals and Systems	4
ELEC	2100H	Honors Signals and Systems	4
ELEC	2420	Basic Electronics	3
ELEC	4820	Medical Imaging	3

Area 2: Bioprocesses, Biomaterials and Bioanalysis

BIEN	4110	Regulatory Affairs in the Healthcare Industry	3
BIEN	6930D	Synthetic Biology	3
CENG	3150	Integrated Chemical Process and Product Design	5
CENG	4510	Nature Engineering and DNA Nanotechnology	3
CENG	4620	Bioproducts and Processing	3
CENG	4640	Biomolecular Engineering**	3
CENG	4650	Biomaterials and Drug Delivery	3
CENG	4670	Pharmaceutical Engineering	3
CENG	5610	Protein Engineering	3
CHEM	2111	Fundamentals of Organic Chemistry	3
CHEM	2311	Analytical Chemistry	3

Other electives

CENG	4150	Product and Process Design in Chemical and Biological Engineering	3
ENGG	4930	Design for Global Health	3
LIFS	4370	Human Genetics and Personalized Medicine	3
LIFS	4760	Biochemistry of Diseases	3

***Remarks on course(s):*

- CENG 4640: The course title will be changed to "Synthetic Biology and Biomolecular Engineering" subject to approval.
- MECH 1901: The course was last offered in 2017-18 and was deleted subsequently.