

REGULATIONS FOR THE DEGREE OF BACHELOR OF ENGINEERING IN ENGINEERING SCIENCE [BEng(EngSc)]

These regulations apply to students admitted to the BEng in Engineering Science degree in the academic year 2016-17 and thereafter.

(See also General Regulations and Regulations for First Degree Curricula)

ES 1 Admission to the Degree

To be eligible for admission to the Bachelor of Engineering in Engineering Science degree, a candidate shall

- (a) comply with the General Regulations;
 - (b) comply with the Regulations for First Degree Curricula; and
 - (c) satisfy all the requirements of the curriculum in accordance with these regulations and the syllabuses.
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ES 2 Period of Study

The curriculum for the BEng degree shall normally require eight semesters of full-time study, extending over not fewer than four academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their studies beyond the maximum period of registration of six academic years.

ES 3 Curriculum Requirements

To complete the curriculum, a candidate shall

- (a) satisfy the requirements prescribed in UG 5 of the Regulations for the First Degree Curricula; and
 - (b) take not fewer than 240 credits of courses, in the manner specified in these regulations and syllabuses; candidates are also required to pass all courses as specified in the syllabuses;
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ES 4 Candidates shall normally select not fewer than 24 and not more than 30 credits of courses in any one semester (except the summer semester), unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of credits required to satisfy the outstanding curriculum requirements is fewer than 24 credits. Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. Candidates may, with the approval of the Board of the Faculty, exceed 72 credits in an academic year provided that the total number of credits taken shall not exceed 288 credits. Students making up for failed credits can be permitted by the Faculty to take up to 432 credits.

ES 5 Candidates with unsatisfactory academic progress may be required by the Board of the Faculty to take a reduced study load.

ES 6 Selection of Courses

Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each academic year. Changes to the selection of courses may be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate. Requests for changes after the designated add/drop period of the semester shall be subject to the approval of the Board of the Faculty. Withdrawal from courses beyond the designated add/drop period will be subject to the approval of the Board of the Faculty.

ES 7 Assessment and Grades

Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any one or any combination of the following manners: written examinations or tests, continuous assessment, laboratory work, field work, project reports, or in any other manner as specified in the syllabuses. Grades shall be awarded in accordance with UG8 of the Regulations for the First Degree Curricula.

ES 8 Written examinations or tests shall normally be held at the end of each semester unless otherwise specified in the syllabuses.

ES 9 Candidates are required to make up for failed courses in the following manner:

- (a) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or
 - (b) re-submitting failed coursework, without having to repeat the same course of instruction; or
 - (c) repeating the failed course by undergoing instruction and satisfying the assessments; or
 - (d) for elective courses, taking another course in lieu and satisfying the assessment requirements.
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ES 10 Candidates shall not be permitted to repeat a course for which they have received a grade D or above for the purpose of upgrading.

ES 11 There shall be no appeal against the results of examinations and all other forms of assessment.

ES 12 Unless otherwise permitted by the Board of the Faculty, a candidate will be recommended for discontinuation of their studies if

- (a) he/she fails to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take 36 credits in the two given semesters; or
- (b) he/she fails to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester); or
- (c) he/she has exceeded the maximum period of registration specified in ES2.

ES 13 Absence from Examination

Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.

ES 14 Advanced Standing

Advanced standing may be granted to candidates in recognition of studies completed successfully before admission to the curriculum in accordance with UG2 of the Regulations for First Degree Curricula. The amount of advanced credits to be granted shall be determined by the Board of the Faculty, in accordance with the following principles:

- (a) a minimum of four semesters of study at this University shall be required before the candidate is considered for the award of the degree; and
- (b) at least half of the credits requirements of the degree curriculum shall be accumulated through study at this University, or from transfer of credits for courses completed at other institutions in accordance with UG4(d) of the Regulations for the First Degree Curricula.

Credits granted for advanced standing shall not be included in the calculation of the GPA but will be recorded on the transcript of the candidate.

ES 15 Degree Classification

To be eligible for the award of the BEng degree, candidates shall have:

- (a) satisfied all the requirements in the UG5 of the Regulations for First Degree Curricula;
 - (b) passed not fewer than 240 credits, comprising
 - i) introductory courses, including General Engineering Courses;
 - ii) advanced courses;
 - iii) capstone experience;
 - iv) a Chinese language enhancement course¹;
 - v) two English language enhancement courses, including Core University English² and English in the Discipline;
 - vi) Common Core courses;
 - vii) all required courses as prescribed in respective syllabuses; and
 - viii) elective courses.
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¹ Students are required to successfully complete the 6-credit Faculty-specific Chinese language enhancement course, except for:

- (a) Putonghua-speaking students who should take CUND9002 (Practical Chinese and Hong Kong Society) or CUND9003 (Cantonese for Non-Cantonese Speaking Students); and
- (b) students who have not studied Chinese language during their secondary education or who have not attained the requisite level of competence in the Chinese language to take the Chinese language enhancement course should seek approval from the Board of the Faculty of Engineering for exemption from the Chinese language requirement, and
 - (i) take a 6-credit Cantonese or Putonghua language course offered by the School of Chinese especially for international and exchange students; OR
 - (ii) take an elective course in lieu.

² Candidates who have achieved Level 5** in English Language in the HKDSE or equivalent are exempted from this requirement but must take an elective in lieu.

ES16 The degree of Bachelor of Engineering in Engineering Science shall be awarded in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the degree of BEng with the following Cumulative GPA (CGPA) scores, with all courses taken (including failed courses) carrying equal weighting:

<i>Class of honours</i>	<i>CGPA range</i>
First Class	3.60 – 4.30
Second Class	(2.40 – 3.59)
Division One	3.00 – 3.59
Division Two	2.40 – 2.99
Third Class	1.70 – 2.39
Pass	1.00 – 1.69

ES 17 Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the BEng degree may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in ES16 of the higher classification by not more than 0.1 of a Grade Point.

ES 18 A list of candidates who have successfully completed all degree requirements shall be posted on Faculty notice boards.

SYLLABUS FOR THE DEGREE OF BACHELOR OF ENGINEERING IN ENGINEERING SCIENCE [BEng(EngSc)]

The syllabus applies to students admitted in the academic year 2016-17 and thereafter under the four-year curriculum.

Curriculum Structure

Candidates are required to complete not fewer than 240 credits in accordance with the regulations and syllabuses for the Bachelor of Engineering degree in Engineering Science. The curriculum structure of the Bachelor of Engineering degree in Engineering Science is as follows:

Course Categories	No. of credits
<u>UG5 Requirements</u>	
• English language enhancement courses	12
• Chinese language enhancement courses	6
• Common Core Curriculum Courses	36
<i>Sub-total</i>	54
<u>Major option in Engineering Science</u>	
• General Engineering Courses	18 to 24
• Discipline Introductory Courses	18 to 30
• Discipline Advanced Courses	12 to 30
• Capstone Experience	6 to 12
• Discipline Elective Courses	6 to 36
<i>Sub-total</i>	96
Elective Courses (including Discipline Elective Courses, Second Major/Minor option; Free Electives)	90
Total	240

Major Options

- Environmental Engineering
- Energy Engineering
- Materials Engineering
- Biomedical Engineering
- Computing & Data Analytics

Curriculum

The Curriculum comprises 240 credits of courses as follows:

General Engineering Courses

Students are required to complete 18 to 24 credits of General Engineering Course.

Discipline Core Courses

Students are required to complete ALL discipline core courses in accordance with the syllabuses of major option concerned (30 to 60 credits), comprising introductory core courses and advanced core courses.

Discipline Elective Courses

Students are required to complete 6 to 36 credits of discipline elective courses in accordance with the syllabuses of major option concerned.

Elective Courses

Students are required to complete at least 90 credits of elective course(s) offered by departments within or outside of the Faculty of Engineering.

University Requirements

Students are required to complete:

- a) 12 credits in English language enhancement, including 6 credits in “CAES1000 Core University English” and 6 credits in English-in-the-Discipline course of respective major option;
- b) 6 credits in Chinese language enhancement course “CENG9001 Practical Chinese for Engineering Students” and
- c) 36 credits of courses in the Common Core Curriculum, comprising at least one and not more than two courses from each Area of Inquiry with not more than 24 credits of courses being selected within one academic year except where candidates are required to make up for failed credits.

Capstone Experience

Students are required to complete 6-credit or 12-credit capstone experience course of respective major option to fulfill the capstone experience requirement for the degree of BEng in Engineering Science.

Internship

Students may enroll in the 6-credit internship of respective departments as discipline elective course subject to the approval of the Programme Director. The internship normally takes place after their third year of study.

Degree Classification

The degree of Bachelor of Engineering shall be awarded in five divisions in accordance with ES16 of the Regulations for the Degree of Bachelor of Engineering in Engineering Science and UG9 of the Regulations for the First Degree Curricula.

The details of the distribution of the above course categories are as follows:

The curriculum of BEng in Engineering Science degree comprises 240 credits of courses with the following structure:

A. Common Requirements for all major options in BEng in Engineering Science

UG 5 Requirements (54 credits)

Course Code	Course	No. of credits
CAES1000	Core University English	6
CAES95##	English in the Discipline course*	6
CENG9001	Practical Chinese for engineering students	6

CC##XXXX	University Common Core Course (6 courses)**	36
Total for UG5 Requirements		54

*English in the Discipline course of respective major options of BEng in Engineering Science curriculum is as follows:

Course Code	Course Title	Major option of BEng(EngSc)	Year/ Semester
CAES9544	Technical English for Mechanical Engineering	Materials Engineering	Semester 2, Year 4
CAES9531	Technical English for Medical Engineering	Biomedical Engineering	Semester 1, Year 3
CAES9540	Technical English for Civil Engineering	Environmental Engineering	Semester 1, Year 4
CAES9541	Technical English for Electrical and Electronic Engineering	Energy Engineering	Semester 2, Year 4
CAES9542	Technical English for Computer Science	Computing & Data Analytics	Semester 1, Year 4

** Students have to complete 36 credits of courses in the Common Core Curriculum, comprising at least one and not more than two courses from each Area of Inquiry with not more than 24 credits of courses being selected within one academic year except where candidates are required to make up for failed credits.

B. Specific Requirements for Individual Major Option of BEng in Engineering Science degree

1. Environmental Engineering

General Engineering Courses (24 credits)

Course Code	Course Title	No. of credits
MATH1851	Calculus and ordinary differential equations	6
MATH1853	Linear algebra, probability & statistics	6
ENGG1111/ ENGG1112	Computer programming and applications/ Computer programming and applications I	6
PHYS1050	Physics for engineering students	6
Total for General Engineering Courses		24

Discipline Core Courses (30 credits)

Introductory Courses (18 credits)

Course Code	Course Title	No. of credits
CIVL1105	Environmental engineering	6
CIVL2103	Fluid mechanics	6
ENGG1201	Engineering for sustainable development	6
Total for Introductory Discipline Core Courses		18

Advanced Courses (12 credits)

Course Code	Course Title	No. of credits
CIVL2104	Hydraulics and hydrology	6
MECH2407	Multivariable calculus and partial differential equations	6
Total for Advanced Discipline Core Courses		12

Capstone Experience (6 - 12 credits)

Course Code	Course Title	No. of credits
CIVL4101	Capstone design project	6
OR		
CIVL4102	Project	12
Total for Capstone Experience		6 - 12

Discipline Elective Courses (30 - 36 credits)

Course Code	Course Title	No. of credits
CIME2101	Water & air quality: concepts & measurements	6
CIVL3106	Engineering hydraulics	6
CIVL3107	Environmental impact assessment of civil engineering projects	6
CIVL3111	Wastewater treatment	6
CIVL3115	Solid and hazardous waste management	6
CIVL3121	Water resources engineering	6
CIVL3122	Wind engineering	6
MECH3420	Air pollution control	6
MECH4428	Sound and vibration	6
Total for Discipline Elective Courses		30 - 36

Elective Courses (90 credits)

At least 90 credits of elective course(s) offered by departments within or outside the Faculty of Engineering.

Note: Students can take Research Postgraduate courses as discipline elective course subject to the approval of the Programme Director.

Reference Table for BEng in Engineering Science (Environmental Engineering)

Year	Language	Common Core	General Engineering/ Core/Capstone Experience	Discipline Electives	Elective Courses	Total
1	6	24	30	0	0	60
2	0	12	18	12	18	60
3	12	0	12 - 18	18 - 24	12	60
4	0	0	0	0	60	60
Total	18	36	60 - 66	30 - 36	90	240

2. Energy Engineering

General Engineering Courses (24 credits)

Course Code	Course Title	No. of credits
MATH1851	Calculus and ordinary differential equations	6
MATH1853	Linear algebra, probability & statistics	6
ENGG1111	Computer programming and applications	6
PHYS1050	Physics for engineering students	6
Total for General Engineering Courses		24

Discipline Core Courses (54 credits)

Introductory Courses (24 credits)

Course Code	Course Title	No. of credits
ENGG1203	Introduction to electrical and electronic engineering	6
ELEC2147	Electrical energy technology	6
ELEC2346	Electric circuit theory	6
ELEC2441	Computer organization and microprocessor	6
Total for Introductory Discipline Core Courses		24

Advanced Courses (30 credits)

Course Code	Course Title	No. of credits
ELEC3141	Power transmission and distribution	6
ELEC3142	Electrical energy conversion	6
ELEC3143	Power electronics	6
MECH2407	Multivariable calculus and partial differential equations	6
MECH3402	Engineering thermodynamics	6
Total for Advanced Discipline Core Courses		30

Capstone Experience (6 – 12 credits)

Course Code	Course Title	No. of credits
ELEC3848	Integrated design project	6
OR		
ELEC4848	Senior design project	12
Total for Capstone Experience		6 - 12

Discipline Elective Courses (6 - 12 credits)

Course Code	Course Title	No. of credits
ELEC2242	Introduction to electromagnetic waves and fields	6
ELEC3241	Signal and linear systems	6
ELEC3844	Engineering management and society	6
ELEC4141	Electric railway systems	6
ELEC4142	Power system protection and switchgear	6
ELEC4144	Electric vehicle technology	6

ELEC4145	Building services – electrical services	6
ELEC4146	Building services – electrical installations	6
ELEC4147	Power system analysis and control	6
MECH3418	Dynamics and control	6
MECH4409	Energy conversion systems	6
MECH4411	Heat transfer	6
MECH4423	Building energy management and control systems	6
Total for Discipline Elective Courses		6 - 12

Elective Courses (90 credits)

At least 90 credits of elective course(s) offered by departments within or outside the Faculty of Engineering.

Note: Students can take Research Postgraduate courses as discipline elective course subject to the approval of the Programme Director.

Reference Table for BEng in Engineering Science (Energy Engineering)

Year	Language	Common Core	General Engineering/ Core/Capstone Experience	Discipline Electives	Elective Courses	Total
1	6	24	30	0	0	60
2	0	12	24	0	24	60
3	12	0	30 - 36	6 - 12	6	60
4	0	0	0	0	60	60
Total	18	36	84 - 90	6 - 12	90	240

3. Materials Engineering

General Engineering Courses (24 credits)

Course Code	Course Title	No. of credits
MATH1851	Calculus and ordinary differential equations	6
MATH1853	Linear algebra, probability & statistics	6
ENGG1111/ ENGG1112	Computer programming and applications/ Computer programming and applications I	6
PHYS1050	Physics for engineering students	6
Total for General Engineering Courses		24

Discipline Core Courses (54 credits)

Introductory Courses (30 credits)

Course Code	Course Title	No. of credits
ENGG1205	Introduction to mechanical engineering	6
MECH2404	Drawing and elements of design and manufacture	6
MECH2413	Engineering mechanics	6
MECH2419	Properties of materials	6
ELEC2242	Introduction to electromagnetic waves and fields	6
Total for Introductory Discipline Core Courses		30

Advanced Courses (24 credits)

Course Code	Course Title	No. of credits
ELEC3347	Electronic materials and quantum physics	6
ELEC2347	Fundamentals of optics	6
MECH4414	Materials for engineering applications	6
MEDE3600	Biomaterials science and engineering	6
Total for Advanced Discipline Core Courses		24

Capstone Experience (6 - 12 credits)

Course Code	Course Title	No. of credits
MECH3427	Design and manufacture	6
OR		
MECH4429	Integrated capstone experience	12
Total for Capstone Experience Courses		6 - 12

Discipline Elective Courses (6 - 12 credits)

Course Code	Course Title	No. of credits
IMSE3106	Manufacturing technology	6
ELEC4248	Photonic systems technologies	6
MECH3409	Mechanics of solids	6
MECH3416	Fundamentals of aeronautical engineering	6
MECH4412	Product design and development	6
MECH4415	Applied stress and strength analysis	6
MEDE4500	Biomedical instrumentation and systems	6
Total for Discipline Elective Courses		6 - 12

Elective Courses (90 credits)

At least 90 credits of elective course(s) offered by departments within or outside the Faculty of Engineering.

Note: Students can take Research Postgraduate courses as discipline elective course subject to the approval of the Programme Director.

Reference Table for BEng in Engineering Science (Materials Engineering)

Year	Language	Common Core	General Engineering/ Core/Capstone Experience	Discipline Electives	Elective Courses	Total
1	6	24	30	0	0	60
2	0	12	24	0	24	60
3	12	0	30 - 36	6 - 12	6	60
4	0	0	0	0	60	60
Total	18	36	84 - 90	6 - 12	90	240

4. Biomedical Engineering

General Engineering Courses (24 credits)

Course Code	Course Title	No. of credits
MATH1851	Calculus and ordinary differential equations	6
MATH1853	Linear algebra, probability & statistics	6
ENGG1111/ ENGG1112	Computer programming and applications/ Computer programming and applications I	6
PHYS1050	Physics for engineering students	6
Total for General Engineering Courses		24

Discipline Core Courses (42 credits)

Introductory Courses (30 credits)

Course Code	Course Title	No. of credits
ENGG1203	Introduction to electrical and electronic engineering	6
ENGG1205	Introduction to mechanical engineering	6
ENGG1206	Introduction to biomedical engineering	6
ENGG1207	Foundations of biochemistry for medical engineering	6
MEDE2301	Life sciences I (Biochemistry)	6
Total for Introductory Discipline Core Courses		30

Advanced Courses (12 credits)

Course Code	Course Title	No. of credits
MEDE2302	Life sciences II (Cell Biology & Physiology)	6
MEDE3301	Life sciences III (Physiology)	6
Total for Advanced Discipline Core Courses		12

Capstone Experience (6 - 12 credits)

Course Code	Course Title	No. of credits
MEDE3010	Integrated Project	6
OR		
MEDE4010	Final year project	12
Total for Capstone Experience		6 - 12

Discipline Elective Courses (18 - 24 credits)

Course Code	Course Title	No. of credits
MEDE3500	Electromagnetics in biomedicine	6
MEDE3501	Medical imaging	6
MEDE3600	Biomaterials science and engineering	6
MEDE3602	Thermofluids for medical engineering	6
MEDE4500	Biomedical instrumentation and systems	6
MEDE4501	Biophotonics	6

MEDE4602	Molecular and cellular biomechanics	6
MEDE4603	Transport phenomena in biological systems	6
MEDE4604	Cell and tissue engineering	6
ELEC4242	Robotics	6
Total for Discipline Elective Courses		18 - 24

Elective Courses (90 credits)

At least 90 credits of elective course(s) offered by departments within or outside the Faculty of Engineering.

Note: Students can take Research Postgraduate courses as discipline elective course subject to the approval of the Programme Director.

Reference Table for BEng in Engineering Science (Biomedical Engineering)

Year	Language	Common Core	General Engineering/ Core/Capstone Experience	Discipline Electives	Elective Courses	Total
1	6	18	36	0	0	60
2	0	18	24	0	18	60
3	12	0	12 - 18	18 - 24	12	60
4	0	0	0	0	60	60
Total	18	36	72 - 78	18 - 24	90	240

5. Computing & Data Analytics

General Engineering Courses (18 credits)

Course Code	Course Title	No. of credits
COMP2121	Discrete mathematics	6
ENGG1111/ ENGG1112	Computer programming and applications # Computer programming and applications I	6
MATH1013	University mathematics II*	6
Total for General Engineering Courses		18

Non-BEng students are required to complete “COMP1117 Computer programming” (6 credits) in place of ENGG1111.

*Students can be waived for taking “MATH1013 University mathematics II” and take another elective course in lieu, should they complete “MATH1851 Calculus and ordinary differential equations” and “MATH1853 Linear algebra, probability & statistics”.

Pre-requisite for “MATH1013 University mathematics II”:

- Level 2 or above in HKDSE Mathematics plus Extended Module 1; or
- Level 2 or above in HKDSE Mathematics plus Extended Module 2; or
- Completed “MATH1011 University mathematics I”

Discipline Core Courses (54 credits)

Introductory Courses (30 credits)

Course Code	Course Title	No. of credits
COMP2119	Introduction to data structures and algorithms	6
COMP2123	Programming technologies and tools	6
MATH2014	Multivariable calculus and linear algebra	6
STAT2601	Probability and statistics I	6
STAT2602	Probability and statistics II	6
Total for Introductory Discipline Core Courses		30

Advanced Courses (24 credits)

Course Code	Course Title	No. of credits
COMP3250	Design and analysis of algorithms	6
COMP3278	Introduction to database management systems	6
COMP3407	Scientific computing	6
STAT3600	Linear statistical analysis	6
Total for Advanced Discipline Core Courses		24

Capstone Experience (6 - 12 credits)

Course Code	Course Title	No. of credits
COMP4804	Computing and data analytics project	6
OR		
COMP4801	Final year project *	12
Total for Capstone Experience		6 - 12

* The project must be related to Computing and Data Analytics.

Discipline Elective Courses (12 - 18 credits)

Course Code	Course Title	No. of credits
STAT3609	The statistics of investment risk	6
STAT3612	Data mining	6
STAT3613	Marketing engineering	6
STAT3615	Practical mathematics for investment	6
STAT3618	Derivatives and risk management	6
STAT3622	Data visualization	6
STAT4601	Time series analysis	6
STAT4607	Credit risk analysis	6
STAT4608	Market risk analysis	6
STAT4609	Big data analytics	6
Total for Discipline Elective Courses		12 - 18

Elective Courses (90 credits)

At least 90 credits of elective course(s) offered by departments within or outside the Faculty of Engineering.

Note: Students can take Research Postgraduate courses as discipline elective course subject to the approval of the Programme Director.

Reference Table for BEng in Engineering Science (Computing and data analytics)

Year	Language	Common Core	General Engineering/ Core/Capstone Experience	Discipline Electives	Elective Courses	Total
1	6	24	30	0	0	60
2	0	12	12	0	36	60
3	6	0	30	12 - 18	6 - 12	60
4	6	0	6 - 12	0	42 - 48	60
Total	18	36	78 - 84	12 - 18	90	240

Programme Structure of BEng in Engineering Science - Reference

Major Option/ Course Type	General Engineering	Introductory Course	Advanced Course	Capstone Experience	Discipline Electives	Total
Environmental Engineering	24	18	12	6 - 12	30 - 36	96
Energy Engineering	24	24	30	6 - 12	6 - 12	96
Materials Engineering	24	30	24	6 - 12	6 - 12	96
Biomedical Engineering	24	30	12	6 - 12	18 - 24	96
Computing & Data Analytics	18	30	24	6 - 12	12 - 18	96

COURSE DESCRIPTIONS

Candidates will be required to do the coursework in the respective courses selected. Not all courses are offered every semester.

General Engineering Courses

ENGG1111	Computer programming and applications (6 credits) or
ENGG1112	Computer programming and applications I (6 credits)
MATH1851	Calculus and ordinary differential equations (6 credits)
MATH1853	Linear algebra, probability & statistics (6 credits)
MECH2407	Multivariable calculus and partial differential equations (6 credits)
PHYS1050	Physics for engineering students (6 credits)
ENGG1201	Engineering for sustainable development (6 credits)
ENGG1202	Foundation of computer science (6 credits)
ENGG1203	Introduction to electrical and electronic engineering (6 credits)
ENGG1205	Introduction to mechanical engineering (6 credits)
ENGG1206	Introduction to biomedical engineering (6 credits)
ENGG1207	Foundations of biochemistry for medical engineering (6 credits)

Please refer to the General Engineering Courses in the syllabus for the degree of BEng for details.

University Requirements on Language Enhancement Courses

All the students admitted to the Bachelor of Engineering in Engineering Science curriculum are required to take two English language enhancement courses and one Chinese language enhancement course in the study year as specified in the syllabuses:

CAES1000. Core University English
CENG9001. Practical Chinese for engineering students (to be taken at the first semester of third year of study)

Please refer to the University Language Enhancement Courses in the syllabus for the degree of BEng for details.

CAES95##. English in the Discipline course for respective BEng curriculum and BEng(EngSc) major option

Please refer to the syllabus of the respective BEng programmes for course description.

University Common Core Curriculum

Successful completion of 36 credits of courses in the Common Core Curriculum, comprising at least one and not more than two courses from each Area of Inquiry with not more than 24 credits of courses being selected within one academic year except where candidates are required to make up for failed credits:

- Scientific and Technology Literacy
 - Humanities
 - Global Issues
 - China: Culture, State and Society
-

Discipline Core/Discipline Elective/Capstone Experience Courses

CIME2101. Water and air quality: concepts and measurement
CIVL1105. Environmental engineering (6 credits)
CIVL2103. Fluid mechanics (6 credits)
CIVL2104. Hydraulics and hydrology (6 credits)
CIVL3106. Engineering hydraulics (6 credits)
CIVL3107. Environmental impact assessment of civil engineering projects (6 credits)
CIVL3111. Wastewater treatment (6 credits)
CIVL3115. Solid and hazardous waste management (6 credits)
CIVL3121. Water resources engineering (6 credits)
CIVL3122. Wind engineering (6 credits)
CIVL4101. Capstone Design Project (6 credits)
CIVL4102. Project (12 credits)
CAES9540. Technical English for Civil Engineering (6 credits)

Please refer to the syllabus of the Civil Engineering programme for course description.

- COMP2119. Introduction to data structures and algorithms (6 credits)**
- COMP2121. Discrete mathematics (6 credits)**
- COMP2123. Programming Technologies and tools (6 credits)**
- COMP3250. Design and analysis of algorithms (6 credits)**
- COMP3278. Introduction to database management systems (6 credits)**
- COMP3407. Scientific computing (6 credits)**
- COMP4801. Final year project (12 credits)**
- COMP4804. Computing and Data Analytics Project (6-credits)**
- CAES9542. Technical English for Computer Science (6 credits)**

Please refer to the syllabus of the Computer Science programme for course description.

- ELEC2147. Electrical energy technology (6 credits)**
- ELEC2242. Introduction to electromagnetic waves and fields (6 credits)**
- ELEC2346. Electric circuit theory (6 credits)**
- ELEC2347. Fundamentals of optics (6 credits)**
- ELEC2441. Computer organization and microprocessors (6 credits)**
- ELEC3141. Power transmission and distribution (6 credits)**
- ELEC3142. Electric energy conversion (6 credits)**
- ELEC3143. Power electronics (6 credits)**
- ELEC3241. Signals and linear systems (6 credits)**
- ELEC3347. Electronic materials and quantum physics (6 credits)**
- ELEC3844. Engineering management and society (6 credits)**
- ELEC3848. Integrated design project (6 credits)**
- ELEC4141. Electric railway systems (6 credits)**
- ELEC4142. Power system protection and switchgear (6 credits)**
- ELEC4144. Electric vehicle technology (6 credits)**
- ELEC4145. Building services- electrical services (6 credits)**
- ELEC4146. Building services- electrical installations (6 credits)**
- ELEC4147. Power system analysis and control (6 credits)**
- ELEC4242. Robotics (6 credits)**
- ELEC4248. Photonic systems technologies (6 credits)**
- ELEC4848. Senior design project (12 credits)**
- CAES9541. Technical English for Electrical and Electronic Engineering (6 credits)**

Please refer to the syllabus of the Computer Engineering/Electrical Engineering/Electronic Engineering programme for course description.

- IMSE3106. Manufacturing technology (6 credits)**

Please refer to the syllabus of the Industrial Engineering and Logistics Management programme for course description.

- MECH2404. Drawing and elements of design and manufacture (6 credits)**
- MECH2413. Engineering Mechanics (6 credits)**
- MECH2419. Properties of materials (6 credits)**
- MECH3402. Engineering thermodynamics (6 credits)**
- MECH3409. Mechanics of solids (6 credits)**
- MECH3416. Fundamentals of aeronautical engineering (6 credits)**
- MECH3418. Dynamics and control (6 credits)**
- MECH3420. Air pollution control (6 credits)**
- MECH3427. Design and manufacture (6 credits)**
- MECH4409. Energy conversion systems (6 credits)**
- MECH4411. Heat transfer (6 credits)**
- MECH4412. Product design and development (6 credits)**
- MECH4414. Materials for engineering applications (6 credits)**
- MECH4415. Applied stress and strength analysis (6 credits)**
- MECH4423. Building energy management and control systems (6 credits)**
- MECH4428. Sound and vibration (6 credits)**
- MECH4429. Integrated capstone experience (12 credits)**
- CAES9544. Technical English for Mechanical Engineering (6 credits)**

Please refer to the syllabus of the Mechanical Engineering programme for course description.

- MEDE2301. Life sciences I (Biochemistry) (6 credits)**
- MEDE2302. Life sciences II (Cell Biology & Physiology) (6 credits)**
- MEDE3010. Integrated project (6 credits)**
- MEDE3301. Life sciences III (Physiology) (6 credits)**
- MEDE3500. Electromagnetics in biomedicine (6 credits)**
- MEDE3501. Medical imaging (6 credits)**
- MEDE4010. Final year project (12 credits)**
- MEDE4500. Biomedical instrumentation and systems (6 credits)**
- MEDE4501. Biophotonics (6 credits)**
- MEDE3600. Biomaterials science and engineering (6 credits)**
- MEDE3602. Thermofluids for medical engineering (6 credits)**
- MEDE4602. Molecular and cellular biomechanics (6 credits)**
- MEDE4603. Transport phenomena in biological systems (6 credits)**
- MEDE4604. Cell and tissue engineering (6 credits)**
- CAES9531. Technical English for Medical Engineering (6 credits)**

Please refer to the syllabus of the Medical Engineering programme for course description.

- MATH1013. University mathematics II (6 credits)**
- MATH2014. Multivariable calculus and linear algebra (6 credits)**
- STAT2601. Probability and statistics I (6 credits)**
- STAT2602. Probability and statistics II (6 credits)**
- STAT3600. Linear statistical analysis (6 credits)**
- STAT3609. The statistics of investment risk (6 credits)**
- STAT3612. Data mining (6 credits)**
- STAT3613. Marketing engineering (6 credits)**
- STAT3615. Practical mathematics for investment (6 credits)**

STAT3618. Derivatives and risk management (6 credits)
STAT3622. Data visualization (6 credits)
STAT4601. Time-series analysis (6 credits)
STAT4607. Credit risk analysis (6 credits)
STAT4608. Market risk analysis (6 credits)
STAT4609. Big data analytics (6 credits)

Please refer to the syllabus for the degree of BSc for course description.