

CIVIL ENGINEERING (ENVIRONMENTAL ENGINEERING)

SYLLABUS

This syllabus applies to students admitted in the academic year 2012-13.

Curriculum

The curriculum comprises 180 credits of courses as follows:

(a) General Engineering Courses

Students are required to successfully complete at least 24 credits of General Engineering courses.

(b) Core Engineering Courses

Students are required to successfully complete ALL core engineering courses (90 credits), comprising of 18 credits of introductory core courses and 72 credits of advanced core courses.

(c) Advanced Elective Courses in Environmental Engineering

Students are required to take 30 credits of advanced elective courses in environmental engineering offered by the Department of Civil Engineering.

(d) Elective Course(s)

Students are required to take 9 credits of advanced elective course(s) offered by either the Department of Civil Engineering or other department(s) within or outside of the Faculty of Engineering.

(e) University Requirements

(i) Students are required to successfully complete two English language courses to accumulate up to a maximum of 6 credits.

(ii) Students are required to successfully complete one Chinese language course¹ (3 credits).

(iii) Students are required to successfully complete 12 credits of courses in the Common Core Curriculum, selecting no more than one course from each Area of Inquiry.

(f) Internship

Students are required to successfully complete an Internship (6 credits). The training normally takes place after the second year of study.

To complete the curriculum, a candidate is required to gain not fewer than 180 credits from the above listed courses.

¹ Putonghua-speaking students should take CUND0002 or CUND0003. Students who have not studied Chinese language during their secondary education / who have not attained the requisite level of competence in the Chinese language to take CENG1001 can apply (i) to take credit-bearing Cantonese or Putonghua language courses offered by the School of Chinese especially for international and exchange students; OR (ii) to be exempted from the Chinese language requirement and take an elective course in lieu.

Degree Classification

The degree of Bachelor of Engineering shall be awarded in five divisions in accordance with EN16 of the Regulations for the Degree of Bachelor of Engineering and UG9 of the Regulations for the First Degree Curricula.

An example of the programme structure is as follows:

(a) First Year

General Engineering Courses

Computer programming and applications or Computer programming and applications I	6
Engineering for sustainable development	6
One General Engineering course from another Department within the Faculty of Engineering	6
Mathematics I or <i>both</i> Mathematics IA and Mathematics IB	6

University Requirements

Practical Chinese language course for engineering students	3
Professional and technical oral communication for engineers	3
Professional and technical written communication for engineers	3
Course in University Common Core curriculum	6

Introductory Core Engineering Courses

Environmental engineering and fluid mechanics	6
Engineering mechanics and materials	6
Surveying & drawing	6
Total credits	57

(b) Second Year

Course in the University Common Core curriculum	6
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Advanced Core Engineering Courses

Engineering design and communication	6
Engineering geology and rock mechanics	6
Engineering mathematics II	6
Hydraulics and hydrology	6
Principles of civil engineering management	6
Soil mechanics	6
Theory and design of structures I	6
Theory and design of structures II	6
Water and air quality: concepts and measurement	6
Total credits	60

Summer Semester	
Internship	6
Total credits	6
(c) Third Year	
<u>Advanced Courses</u>	
Elective courses	9
Environmental engineering advanced elective courses	30
Project	12
Transportation engineering	6
Total credits	57

COURSE DESCRIPTIONS

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

Level One

General Engineering Courses

ENGG1002.	Computer programming and applications (6 credits)
ENGG1003.	Mathematics I (6 credits)
ENGG1004.	Mathematics IA (3 credits)
ENGG1005.	Mathematics IB (3 credits)
ENGG1006.	Engineering for sustainable development (6 credits)
ENGG1007	Foundation of computer science
ENGG1009	Industrial management and logistics
ENGG1011	Introduction to biomedical engineering
ENGG1015	Introduction to electrical and electronic engineering
ENGG1018	Introduction to mechanical engineering
ENGG1016.	Computer programming and applications I (6 credits)

For course descriptions, please refer to the General Engineering Courses in the syllabus for the degree of BEng for details.

University Requirements on Language Enhancement Courses

CAES1505. Professional and technical written communication for engineers (3 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

CAES1515. Professional and technical oral communication for engineers (3 credit units)

This course focuses on students developing technical and professional spoken English skills. Throughout the course, the students will give a series of presentations which will help them to improve skills such as accessing, abstracting, analyzing, organizing and summarizing information;

asking questions and negotiating meanings; making effective grammatical and lexical choices and using visual aids to ensure meaning is clear. The presentations give the students an opportunity to develop the skills to talk about general issues in Engineering in the Hong Kong context, engineering theories and their practical applications and also requires them to present a detailed exploration of one aspect of engineering related to their chosen major.

Assessment: 100% Continuous assessment.

CENG1001. Practical Chinese language course for engineering students (3 credits)

For course descriptions, please refer to the University Language Enhancement Courses in the syllabus for the degree of BEng for details.

University Common Core Curriculum

12 credits of courses in the University Common Core curriculum, selecting no more than one course from each Area of Inquiry:

- Scientific and Technology Literacy
 - Humanities
 - Global Issues
 - China: Culture, State and Society
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Introductory Core Engineering Courses

- CIVL1012. Environmental engineering and fluid mechanics (6 credits)**
CIVL1013. Engineering mechanics and materials (6 credits)
CIVL1014. Surveying and drawing (6 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

Advanced Core Engineering Courses

- CIVL1010. Theory and design of structures I (6 credits)**
CIVL1011. Transportation engineering (6 credits)

For course descriptions please refer to the syllabuses of the Civil Engineering programme.

Level Two

Advanced Core Engineering Courses

- CIVL2001. Engineering design and communication (6 credits)**
CIVL2002. Engineering geology and rock mechanics (6 credits)
CIVL2003. Engineering mathematics II (6 credits)
CIVL2004. Hydraulics and hydrology (6 credits)
CIVL2006. Soil mechanics (6 credits)
CIVL2007. Theory and design of structures II (6 credits)
CIVL2008. Principles of civil engineering management (6 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

CIME2001. Water and air quality: concepts and measurement (6 credits)

Water quality and pollution; standard methods of water and wastewater examination; air quality and air pollution control principles; measurement techniques in air pollution.

Prerequisite: CIVL1012 Environmental engineering and fluid mechanics (for students of the Department of Civil Engineering only)

Assessment: 10% practical work, 10% continuous assessment, 80% examination

Internship

CIVL2009. Internship (6 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

Advanced Elective Course

CIVL2010 Experiential Learning (6 credits)

To complete a period of training in industry, workshop training, study tour, or leadership programme, approved by the Head of Department, not less than a total of four weeks during the summer semester, subject to satisfactory performance in these activities and the submission of a satisfactory completion report.

Assessment: 100% continuous assessment

Level Three

Advanced Core Engineering Course

CIVL3013. Project (12 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

Advanced Elective Courses in Environmental Engineering

- CIVL3003. Construction project management (6 credits)**
- CIVL3006. Engineering hydraulics (6 credits)**
- CIVL3007. Environmental impact assessment of civil engineering projects (6 credits)**
- CIVL3008. Foundation engineering (6 credits)**
- CIVL3010. Management and communication skills for engineers (3 credits)**
- CIVL3011. Municipal and industrial wastewater treatment (6 credits)**
- CIVL3015. Solid and hazardous waste management (6 credits)**
- CIVL3018. Theory and design of structures III (6 credits)**
- CIVL3021. Water resources engineering (6 credits)**

CIVL3022. Wind engineering (6 credits)

For course descriptions, please refer to the syllabuses of the Civil Engineering programme.

For double-degrees in BEng/BBA, students may take business elective courses in Finance, HRM or Marketing major offered by the Faculty of Business and Economics up to a maximum of 12 credits to satisfy the requirements of advanced elective courses in environmental engineering.

Advanced Elective Course (9 credits)

Students are expected to select 9 credits of Advanced courses offered by either the Department of Civil Engineering or other department(s) within or outside of the Faculty of Engineering.

Minor Programmes (not applicable to candidates from the Department of Civil Engineering)

In the 2011-12 academic year, candidates from other departments in the Faculty of Engineering or from other faculties may pursue a Minor in Environmental Engineering or Minor in Geotechnical Engineering.

Minor in Environmental Engineering

Candidates are required to complete a total of 36 credits of courses comprising:

(a) Introductory courses (12 credits)

Students are required to complete ENGG1006 Engineering for sustainable development* (6 credits) AND CIVL1012 Environmental engineering and fluid mechanics (6 credits).

*Students opting for the Minor cannot use the course ENGG1006 Engineering for sustainable development as satisfying the requirements of the General Engineering Course.

(b) Advanced Elective courses (24 credits)

Students must complete 24 credits of advanced elective courses to be chosen from the following list:

- CIVL2004 Hydraulics and hydrology (6 credits)
- CIVL3006 Engineering hydraulics (6 credits)
- CIVL3007 Environmental impact assessment of civil engineering projects (6 credits)
- CIVL3011 Municipal and industrial wastewater treatment (6 credits)
- CIVL3015 Solid and hazardous waste management (6 credits)
- CIVL3021 Water resources engineering (6 credits)
- CIVL3022 Wind engineering (6 credits)

Minor in Geotechnical Engineering

Candidates are required to complete a total of 36 credits of courses comprising:

(a) Introductory courses (12 credits)

Students are required to complete ENGG1003 Mathematics I (6 credits) AND CIVL2006 Soil Mechanics (6 credits).

(b) Advanced Elective courses (24 credits)

Students must complete 24 credits of advanced elective courses to be chosen from the following list:

- CIVL2002 Engineering geology and rock mechanics (6 credits)
- CIVL3008 Foundation engineering (6 credits)
- CIVL3014 Slope engineering (6 credits)
- CIVL3029 Numerical analysis in geotechnical engineering (6 credits)
- CIVL3031 Earth retaining system (6 credits)
- CIVL3032 Geotechnical testing, instrumentation and monitoring (6 credits)
- CIVL3033 Ground improvement (6 credits)
- CIVL3034 Environmental Geotechnology (6 credits)

Double-Degrees in BEng/BBA Option

Candidates pursuing studies for the double-degrees in BEng/BBA are required to satisfy all the requirements of the above BEng curriculum and pass 54 credits of courses as listed below:

Course Code	Course	Credits
BUSI1002	Introduction to accounting	6
BUSI1003	Introduction to management information system	6
BUSI1004	Marketing	6
BUSI1007	Principles of management	6
ECON1001	Introduction to economics I	6
FINA1003	Corporate finance	6
BUSI0027	Management accounting I	6
	Business Electives (Any 2 courses in Finance, HRM or Marketing major)	12
	Total	54

Candidates pursuing the double-degrees in BEng/BBA are granted exemptions from the following courses:

Courses in the BEng curriculum to be exempted	Business courses to be completed
CAES1505 Professional and technical written communication for engineers (3 credits)	CAES1907 Business communication (3 credits)
CIVL2008 Principles of civil engineering management (6 credits)	BUSI1007 Principles of management
One Advanced Elective Course in Environmental Engineering (6 credits)	BUSI1003 Introduction to management information system or other equivalent Business course as approved by the Department of Civil Engineering and the Faculty
One Advanced Elective Course in Environmental Engineering (6 credits)	One 6-credit Business Electives course