

**Technological and Higher  
Education Institute of Hong Kong**

香港高等教育科技學院



[www.thei.edu.hk](http://www.thei.edu.hk)

**Faculty of Science and Technology**

科技學院

**ST125103**

**Bachelor of Engineering (Honours) in**

**Building Services Engineering**

**(Full-time mode)**

**Programme Document (2017/18)**

## **A. Programme Aims and Objectives**

The programme aims to develop students to be highly skilled in developing and designing building services systems and be problem-solvers to meet ever-changing industry challenges, which involves complex building technology, innovative building design, and green building assessment. It also aims to equip students with the knowledge and skills of modern building services technologies, with emphasis on using projects as the main learning and teaching assessment method to reflect general industry practice.

Specifically, the programme objectives (PO) are:

- PO1: equip students with solid fundamental knowledge of science and engineering that will prepare them for professional careers in the building services engineering industry;
- PO2: train students with the abilities to apply theoretical engineering knowledge to professional practice and the solution of complex contemporary problems;
- PO3: develop students with professional skills in the design, operation, testing and maintenance of building services systems and with independent problem-solving skills, as well as good communication skills, so that they can work effectively in a multi-disciplinary project;
- PO4: strengthen students' commitment to understand the importance of ethical and societal considerations, including those related to health, safety and environmental sustainability; and
- PO5: build up students' leadership with national and international perspectives in the professional building services engineering and with a lifelong learning attitude.

## **B. Schematic Structure**

All THEi's programmes are offered through a credit-based module accumulation system with a multi-entry and multi-exist structure. Eligible students can enter Year 1 or Year 3 of the programme. Students can also exit the programme with a Higher Diploma (HD) award on completion of the required credit points and other requirements specified in this Programme Document and other relevant documents.

A credit-based programme comprises modules which have values expressed in terms of credit points (CPs). Most modules have 3 CPs and there are two types of modules: *Industry/Profession Specific (IPS) modules* and *General Education (GE) modules*.

The IPS modules are divided into three categories as follows. Usually, Programme Electives are modules offered by the host Faculty.

1. *Programme Core Modules* which provide the disciplinary fundamentals required by graduates to work in their chosen profession;
2. *Programme Elective Modules* which provide some specialisation within the programme; and
3. *Work-integrated Learning Modules* which are directed industry attachments that provide powerful learning experiences by integrating theoretical learning with its application in the workplace.

The GE modules introduce students to the broad perspectives of the domains of Humanities, Sciences and Social Sciences and their relationship to contemporary issues and the problems and challenges faced by professional practitioners. They cultivate broadly-applicable generic skills, competencies and values that will contribute to professional success, lifelong learning and whole-person development. GE modules are divided into two categories:

1. *GE Core Modules*, compulsory for all students, consist of 3 English Language modules, 2 Chinese Language modules, and 3 modules in the domains of Humanities, Sciences and Social Sciences, with one in each; and
2. *GE Elective Modules*, over which students have choices, examine issues important to society and broaden their horizons and contribute to the aim of the GE Programme.

For the full-time mode, before students can graduate, they must complete the Work-integrated Learning (WIL) module(s), which are equivalent to 6 CPs' worth of work for the Degree programme and 3 CPs for the HD programme. The WIL modules are assessed on a Pass/Fail basis and will not be counted as part of the required minimum number of CPs for graduation or included in the calculation of the Grade Point Average. The following tables give the distribution of modules and CPs by module type and Qualifications Framework (QF) level for both Degree and HD programmes:

**Table B1 –Schematic Programme Structure of Degree Programme**

Module Type		Years 1 & 2 (CP)		Years 3 & 4 (CP)		Total no. of Credit Points	
		QF-L4	QF-L5	QF-L4	QF-L5		
General Education (GE)	GE Core (3 Domains)	6	---	3	---	9	7%
	GE Core (English)	3	3	---	3	9	7%
	GE Core (Chinese)	3	---	---	3	6	4%
	GE Elective	---	6	---	6	12	9%
Industry/ Profession Specific (IPS)	Programme Core	27	21	---	39	87	73%
	Programme Elective	---	---	---	9	9	
	Work-integrated Learning*	(3)	---	(3)	---	(6)	---
<b>Total</b>		<b>69 (52%)</b>		<b>63 (48%)</b>		<b>132</b>	

**Table B2 –Schematic Programme Structure of Higher Diploma Programme**

Module Type		Years 1 & 2 (CP)		Extra Semester (CP)		Total no. of Credit Points	
		QF-L4	QF-L5	QF-L4	QF-L5		
General Education (GE)	GE Core (3 Domains)	6	---			6	8%
	GE Core (English)	3	3			6	8%
	GE Core (Chinese)	3	---	---	---	3	4%
	GE Elective	---	6			6	8%
Industry/ Profession Specific (IPS)	Programme Core	27	21	3	3	54	72%
	Work-integrated Learning*	(3)	---	---	---	(3)	
<b>Total</b>		<b>69 (92%)</b>		<b>6 (8%)</b>		<b>75 (100%)</b>	

Note:

- \* The Work-integrated Learning module(s) will not be counted as part of the required minimum number of CPs for graduation or included in the calculation of the Grade Point Average.

For Year 3 Entry students, their educational background will be studied and evaluated to determine if any additional modules may be required for the missing or inadequate knowledge as compared with the curriculum in Year 1 and Year 2. If needed, the additional modules will be identified by mapping the programme curriculum with the courses attained or academic qualifications already achieved by the students.

**C. Programme Overview and Curriculum**

The following tables give an overview and a summary of the overall curriculum structure for both Degree and HD Programmes:

**Table C1 –Degree Programme\***

Year-Sem	No.	Module Code	Module Title	QF Level	Credit Points	
Y1-S1	1	GEC4201	English for Academic Studies 1	4	3	18
	2	GEC4301	The Human Spirit	4	3	
	3	SBS4111	Calculus	4	3	
	4	SBS4112	Engineering Physics	4	3	
	5	SBS4113	Architecture & Buildings	4	3	
	6	SBS4125	Engineering Drawing & Construction CAD	4	3 <sup>‡</sup>	
Y1-S2	1	GEC4101	Chinese 1	4	3	15
	2	SBS4114	Built Environment	4	3	
	3	SBS4121	Fluid Mechanics	4	3	
	4	SBS4123	Electrical Services Fundamental	4	3	
	5	SBS4124	Engineering Thermodynamics	4	3	
Y1-SS@	6	SBS4109	Safety, Health & Industrial Training	4	(3) <sup>#</sup>	(3) <sup>#</sup>
<b>Year-1 Sub-total</b>					<b>33</b>	
Y2-S3	1	GEC5202	English for Academic Studies 2	5	3	18
	2	---	Select one GE Elective	5	3	
	3	SBS4211	Heat & Mass Transfer	4	3	
	4	SBS5211	Advanced Engineering Mathematics	5	3	
	5	SBS5212	Advanced Electrical Technology	5	3	
	6	SBS5225	HVACR I	5	3	
Y2-S4	1	GEC4302	Habit of Scientific Thinking	4	3	18
	2	---	Select one GE Elective	5	3	
	3	SBS5221	Pipe Services	5	3	
	4	SBS5222	Indoor Environmental Engineering	5	3	
	5	SBS5223	Power Distribution & Machines	5	3	
	6	SBS5224	Engineering Management	5	3	
<b>Year-2 Sub-total</b>					<b>36</b>	

Notes:

\* The actual delivery of the modules is subject to the arrangement of the respective Faculty/School.

‡ The module SBS4125 Engineering Drawing & Construction CAD replaces the previous two modules SBS4122 Engineering Drawing (2 credit points) and SBS4212 Construction CAD by AutoCAD (1 credit point).

**Table C1 (Cont'd) – Degree Programme\***

Year-Sem	No.	Module Code	Module Title	QF Level	Credit Points
Y3-S5	1	GEC5102	Chinese 2	5	3
	2	GEC4303	Social Dynamics of Organisations	4	3
	3	SBS5311	HVACRII	5	3
	4	SBS5312	Lighting Technology	5	3
	5	SBS5313	Fire Services	5	3
	6	SBS5314	Commissioning of Facilities	5	3
Y3-S6	1	GEC5206	English for Professional Purposes	5	3
	2	---	Select one GE Elective	5	3
	3	SBS5321	Numerical Method for Analysis	5	3
	4	SBS5322	Basics of Building Information Modelling	5	3
	5	SBS5413	Building Sustainability & Green Building Assessment	5	3
Y3-SS@	6	SBS4309	Industrial Attachment	4	(3) <sup>#</sup>
<b>Year-3 Sub-total</b>					<b>33</b>
Y4-S7	1	---	Select one GE Elective	5	3
	2	SBS5411	Building Information Modelling for BSE	5	3
	3	SBS5412	Design for Operation & Maintenance	5	3
	4	SBS5397	Final Year Project 1 (BSE Conceptual Design)	5	3
	5	SBS5498	Final Year Project 2 (Applied Research Project)	5	3
Y4-S8	1	SBS5421	Building Energy Efficiency cum Carbon Emission	5	3
	2	---	Select one Programme Elective	5	3
	3	---	Select one Programme Elective	5	3
	4	---	Select one Programme Elective	5	3
	5	SBS5499	Final Year Project 3 (MEP Design)	5	3
<b>Year-4 Sub-total</b>					<b>30</b>
<b>Total Credit Points for Degree Programme</b>					<b>132</b>

Notes: (Cont'd)

<sup>#</sup> The module SBS4109 Safety, Health & Industrial Training and the module SBS4309 Industrial Attachment are Work-integrated Learning modules which must be completed before graduation. Normally, the module SBS4109 takes place during the summer semester of Year 1 and the module SBS4309 during the summer semester(s) of Year 3 and/or Year 2. These two 3-CP modules will be assessed on a Pass/Fail basis and will not be counted as part of the required minimum number of CPs for graduation or included in the calculation of the Grade Point Average (GPA)

<sup>@</sup> Summer Semester

**Table C2–Higher Diploma Programme\***

Year-Sem	No.	Module Code	Module Title	QF Level	Credit Points
Y1-S1	1	GEC4201	English for Academic Studies 1	4	3
	2	GEC4301	The Human Spirit	4	3
	3	SBS4111	Calculus	4	3
	4	SBS4112	Engineering Physics	4	3
	5	SBS4113	Architecture & Buildings	4	3
	6	SBS4125	Engineering Drawing & Construction CAD	4	3 <sup>‡</sup>
Y1-S2	1	GEC4101	Chinese 1	4	3
	2	SBS4114	Built Environment	4	3
	3	SBS4121	Fluid Mechanics	4	3
	4	SBS4123	Electrical Services Fundamental	4	3
	5	SBS4124	Engineering Thermodynamics	4	3
Y1-SS <sup>@</sup>	6	SBS4109	Safety, Health & Industrial Training	4	3
<b>Year-1 Sub-total</b>					<b>33</b>
Y2-S3	1	GEC5202	English for Academic Studies 2	5	3
	2	---	Select one GE Elective	5	3
	3	SBS4211	Heat & Mass Transfer	4	3
	4	SBS5211	Advanced Engineering Mathematics	5	3
	5	SBS5212	Advanced Electrical Technology	5	3
	6	SBS5225	HVACR I	5	3
Y2-S4	1	GEC4302	Habit of Scientific Thinking	4	3
	2	---	Select one GE Elective	5	3
	3	SBS5221	Pipe Services	5	3
	4	SBS5222	Indoor Environmental Engineering	5	3
	5	SBS5223	Power Distribution & Machines	5	3
	6	SBS5224	Engineering Management	5	3
<b>Year-2 Sub-total</b>					<b>36</b>
Y2-SS <sup>@</sup>	1	GEC4200	English for Workplace Communication	4	--
	2	SBS5314	Commissioning of Facilities	5	3
	3	SBS4319	Integrated Design Project	4	3
<b>Extra Semester Sub-total</b>					<b>6</b>
<b>Total Credit Points for Higher Diploma Programme</b>					<b>75</b>

Notes:

\* The actual delivery of the modules is subject to the arrangement of the respective Faculty/School. Students opting to exit with a HD award should notify the Registry of their intention in writing before the end of the third semester. They will be required to complete the Year-1 and Year-2 curriculum and at least one extra semester's work with IPS modules. They are also required to complete a module on English for Workplace Communication, which is assessed on a Pass/Fail basis and will not be counted as part of the required minimum number of CPs for graduation or included in the calculation of the GPA.

‡ The module SBS4125 Engineering Drawing & Construction CAD replaces the previous two modules SBS4122 Engineering Drawing (2 credit points) and SBS4212 Construction CAD by AutoCAD (1 credit point).

@ Summer Semester

**Table C3–List of Programme Elective Modules\***

No.	Module Code	Module Title	QF Level	CP
1	SBS5431	Building Automation and Control	5	3
2	SBS5432	Fire Dynamics	5	3
3	SBS5433	Renewable Energy	5	3
4	SBS5434	Acoustics Engineering	5	3
5	SBS5435	Indoor Air Quality	5	3
6	SBS5436	Technology Integration for Facility Management	5	3
7	SBS5437	Technology Integration Professional Practice	5	3
8	SBS5438	Economics for Facility Management	5	3
9	SCE5481	Principles of Project Finance	5	3
10	SCE5482	Construction Law & Practice	5	3
11	SEV5342	Biological Wastewater Engineering	5	3
12	SEV5411	Environmental Impact Assessment	5	3

Note:

\* The actual delivery of the modules is subject to the arrangement of the respective Faculty/School.

**Table C4 – List of General Education Elective (GEE) Modules\***

No.	Module Code	Offering Faculty / Department	Module Title	QF Level	CP
1	GEE5101	Faculty of Design and Environment (FDE)	Effective Branding & Consumer Behaviour	5	3
2	GEE5102		Impact of Contemporary Design on Society	5	3
3	GEE5104		Landscape Appreciation	5	3
4	GEE5105		Urban Greenery & Ecology	5	3
5	GEE5106		Tree Safety Inspection & Climbing	5	3
6	GEE5201	Faculty of Management and Hospitality (FMH)	Stress Management	5	3
7	GEE5202		Wellness & Lifestyle Management	5	3
8	GEE5203		Corporate Social Responsibility in Action	5	3
9	GEE5204		Personal Financial Management	5	3
10	GEE5205		Self-marketing & Personal Branding	5	3
11	GEE5206		The Tourism Industry in Hong Kong	5	3
12	GEE5207		Marketing Essentials	5	3
13	GEE5208		Accounting for Non-Accountants	5	3
14	GEE5209		Business Management in Hong Kong	5	3
15	GEE5210		Essentials in People Management	5	3
16	GEE5302	Faculty of Science and Technology (FST)	Urban Development in Hong Kong	5	3
17	GEE5304		Nutrition & Health	5	3
18	GEE5305		The Art & Science of Film	5	3
19	GEE5306		Technological & Economic Development in a Global Context	5	3
20	GEE5307		Food in Daily Life	5	3



No.	Module Code	Offering Faculty / Department	Module Title	QF Level	CP
21	GEE5308		Web Technology & E-Commerce	5	3
22	GEE5309		Housing Policy & Management	5	3
23	GEE5310		Safety & Quality of Consumer Products	5	3
24	GEE5401	School of General Education and Languages (SGEL)	Between Empires: A Short History of Hong Kong, China & Britain	5	3
25	GEE5403		Hong Kong Society: Continuity & Change	5	3
26	GEE5404		Literature & Modern China	5	3
27	GEE5405		Modern Europe: History & Culture	5	3
28	GEE5406		Language, Culture & Society	5	3
29	GEE5407		Translation in Everyday Life (English-Chinese)	5	3
30	GEE5408		Journey to the Exotic World of Microorganisms	5	3
31	GEE5409		Plants & Human Civilisations	5	3
32	GEE5410		Creative Writing in Chinese	5	3
33	GEE5411		China Through Western Eyes	5	3
34	GEE5412		Introduction to Spanish Language & Culture	5	3
35	GEE5413		Service Leadership in a New Era	5	3
36	GEE5414		Making Sense of Our World: Selected Topics in Sociology	5	3
37	GEE5415		Cantonese in Hong Kong Popular Culture	5	3
38	GEE5416		Beyond Hollywood: Introduction to World Cinema	5	3
39	GEE5417		Western Classical Music Appreciation	5	3
40	GEE5501		FDE and SGEL	Gender & Design	5

Note:

\* The actual delivery of the modules is subject to the arrangement of the respective Faculty/School.

### **GEE graduation requirements**

- (a) Students are only allowed to take GEE modules that are outside the realm of their programmes as the goal is to broaden their perspectives and knowledge base. The corollary is that students will not be allowed to take a GEE module in the realm of their programmes, even if the module is offered by other Faculties or the School of General Education and Languages;
- (b) Students joining 4-year full-time programmes have to take at least two GEE modules from two different Faculties other than their own / School of General Education and Languages (excluding the co-offered GEE);
- (c) Students exiting with a Higher Diploma have to take one GEE module from a Faculty other than their own / School of General Education and Languages (excluding those co-offered GEEs);
- (d) Year-3 entrants are required to take at least one GEE module from a Faculty other than their own / School of General Education and Languages (excluding those co-

offered GEEs);

- (e) Part-time students sharing same entry requirement with Year-3 entrants are required to take at least one GEE module from a Faculty other than their own / the School of General Education and Languages (excluding those co-taught GEEs);
- (f) Students who have dropped “GEC4101 Chinese 1” and “GEC5102 Chinese 2” will need to take two extra GEE modules to fulfil the graduation requirement;
- (g) Students are allowed to either take “GEE5304 Nutrition & Health” or “GEE5307 Food in Daily Life” but not both modules to fulfil the graduation requirements;
- (h) Students are allowed to either take “GEE5305 The Art and Science of Film” or “GEE5416 Beyond Hollywood: Introduction to World Cinema” but not both modules to fulfill the graduation requirement;
- (i) Students are not allowed to take both “GEE5201 Stress Management” and “GEE5202 Wellness & Lifestyle Management” to fulfil the graduation requirements.

Remark:

Students, who take “GEE5416 Beyond Hollywood: Introduction to World Cinema”, have to be over 18 years old.

#### **D. Assessment Methods**

Assessment will be continuous and criteria-based and shall enable students to demonstrate achievement of the intended learning outcomes of the modules and the programme. The guiding principles of assessment are that the assessment methods align with the learning objectives and outcomes, cater for students’ abilities and diversity, track their progress over time, and provide timely feedback to identify their strengths and weaknesses.

Modules in this programme will adopt either one or both of the following assessment methods:

- (a) end-of-semester examination; and
- (b) continuous assessment
  - in the Safety, Health & Industrial Training, Industrial Attachment and Final Year Project modules, where students are assessed on their performances throughout the module and the quality of the deliverables,
  - in modules where coursework, in the form of assignments, tests/quizzes, laboratories and practical work, field exercises, project reports, presentations and class participation, is used to assess students’ performance.

#### **E. Grades and Marks**

A student’s academic result is derived from the assessment of class-work, written papers, reports, examination results and participation. In the case of projects where there are no end-of-semester examinations, the module is assessed on the student’s performance in the required project elements.

The different grades, descriptions of standards and grade points for a module are given in the following table:

Grade	Description of Standard	Grade Point
A	Excellent	4.0
A-		3.7
B+	Very Good	3.3
B		3.0
B-	Good	2.7
C+	Satisfactory	2.3
C		2.0
C-		1.7
D+	Pass	1.3
D		1.0
F	Fail	0

Under normal circumstances, students are not allowed to retake a passed module in order to improve his/her academic results. Students who fail to obtain a CGPA of 2.00 or above at the end of the 4th year (8th year for part-time students) may apply to the Faculty Dean via the Programme Leader for permission to retake passed modules for the purpose of improving their CGPA. For modules which have been retaken, the grades of the best attempt will be used in the calculation of the CGPA. There is no limit to the number of attempts so long as they are made within the maximum registration period. For students with a CGPA below 2.00 but at or above 1.30 and opted to graduate with a pass degree, the decision could not be reversed and no retaking of passed modules will be allowed.

## **F. Regulations for Awards**

A student is eligible for the Bachelor of Engineering (Honours) in Building Services Engineering award if the following have been completed:

- (a) Accumulation of 132 CPs and satisfactory completion of the Work-integrated Learning module;
- (b) Satisfying all “compulsory” and “elective” requirements; and
- (c) Having an Award Grade Point Average (AGPA) of 1.30 or above at the end of the degree programme.
- (d) Satisfying the *Professional Seminar Requirement*: where students are required to attend at least EIGHT *Professional Seminars*\* during their entire period of study, students are required to present all of their *Professional Seminar* attendance certificates to the General Office before graduation.

\**Professional Seminar* shall be provided by local or international bodies e.g. HKIE, CIBSE, ASHRAE, or equivalent. The duration of a seminar is to be at least 1.0 CPD hours (CPD: continuing professional development). Field trip or work-camp offered by local or international bodies shall be equivalent to at least 2 seminars (which will be accessed for

equivalent CPD hours on a case-by-case basis).

The Award Grade Point Average (AGPA) is a weighted average of the overall marks of the programme. The AGPA is calculated by multiplying the grade point (GP) by the QF Level weighting and then by the credit points of the module. The weighted credit points are then summed. Finally, the sum of the weighted grade points is divided by the sum of the weighted credit points.

$$AGPA = \frac{\sum_{i=module} W \times GP}{\sum_{i=module} W}$$

W = 1.0 (QF Level 4 modules) or

W = 1.5 (QF Level 5 modules)

For modules which have been failed and re-taken, only the grades obtained in the final attempt are used in the calculation.

### **G. Honours Classifications**

The Honours classification is decided by the weighted GPA score listed below:

<b>Honours Classification</b>	<b>Description of Standard</b>	<b>Award GPA</b>
First	Excellent	AGPA ≥ 3.50
Second (Division I)	Very good	3.50 > AGPA ≥ 3.00
Second (Division II)	Good	3.00 > AGPA ≥ 2.50
Third	Satisfactory	2.50 > AGPA ≥ 2.00
Pass	Pass	2.00 > AGPA ≥ 1.30
Fail	Fail	AGPA < 1.30