

Computer Science
Applicable to students admitted in 2018-19 (Advance standing)

Major Programme Requirement

Students are required to complete a minimum of 75 units of courses as follows:

	Units
1. Faculty Package: ENGG1100/ESTR1000, ENGG1110/ESTR1002, ENGG1410/ESTR1004	9
2. Foundation Science Courses:	9
(a) 2 courses from the following, in which at least 3 units must be a Physics course: Chemistry Courses: CHEM1380 Life Science Courses: LSCI1001, 1003 Physics Courses[a]: ENGG1310/ESTR1003, PHYS1003, 1110	
(b) CSCI1130/ESTR1102[b]	
3. Foundation Mathematics Courses: ENGG2430/ESTR2002, ENGG2440/ESTR2004[c], MATH1510[d]	9
4. Required Courses:	
(a) CSCI2100/ESTR2102, CSCI3100, 3130, CSCI3150/ESTR3102, CSCI3160/ESTR3104, CSCI3180/ESTR3106, CSCI3250, 3251, ENGG2020/ESTR2104	24
(b) Research Component Courses[e]: CSCI4998, 4999	6
5. Choose any ONE from the following seven options:	18
(a) <u>General Computer Science</u> Elective Courses: Choose 18 units from CSCI3230/ESTR3108, CSCI4180/ESTR4106, CSCI4430/ESTR4120, ENGG1820, (ENGG3802 and 3803), ENGG4030/ESTR4300, STAT2004, 2006 and the CENG/CSCI courses of which at least 15 units must be from courses at 3000 or above level	
(b) <u>Stream 1: Intelligence Science</u> Required Courses: CSCI3230/ESTR3108 Elective Courses: Choose at least 9 units from the following: CSCI3220, 3320, 4190, 4220, 4230, 5030, 5050, 5150, CSCI5160/ENGG5102, CSCI5170, CSCI5180/ENGG5103, CSCI5240, CSCI5250/ENGG5106, CSCI5280/ENGG5104, CSCI5350, 5390, 5430, CSCI5510/ENGG5108, CSCI5580, ENGG1820, ENGG4030/ESTR4300, ENGG5781, IERG3320, SEEM3510 Remaining units can be chosen from the following: CENG/CSCI courses at 2000 or above level, (ENGG3802, 3803), STAT2004, 2006	
(c) <u>Stream 2: Database and Information Systems</u> Required Courses: CSCI3170 Elective Courses: Choose at least 9 units from the following: CSCI3220, 3420, 4140, 4160, CSCI4430/ESTR4120, CSCI5010, 5120, CSCI5180/ENGG5103, CSCI5250/ENGG5106, CSCI5470/ENGG5105, CSCI5510/ENGG5108, CSCI5520, 5550, 5570, 5590, ENGG1820, ENGG4030/ESTR4300, ENGG5781 Remaining units can be chosen from the following: CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), STAT2004, 2006	

- (d) Stream 3: Rich Media
 Required Courses:
 CSCI3260, 3280
 Elective Courses:
 Choose at least 6 units from the following:
 CSCI3290, 3420, 4120, 4160, CSCI4430/ESTR4120, CSCI5210, CSCI5280/ENGG5104,
 CSCI5390, 5460, CSCI5510/ENGG5108, CSCI5530, ENGG1820
 Remaining units can be chosen from the following:
 CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803),
 ENGG4030/ESTR4300, STAT2004, 2006
- (e) Stream 4: Distributed Systems, Networks and Security
 Required Courses:
 CSCI4180/ESTR4106, CSCI4430/ESTR4120
 Elective Courses:
 Choose at least 6 units from the following:
 CSCI3310, 3420, 4140, 4160, 4190, 4210, 5070, 5080, 5390, 5440, CSCI5470/ENGG5105,
 CSCI5510/ENGG5108, CSCI5520, 5550, 5570, 5590, 5600, ENGG1820,
 ENGG4030/ESTR4300, IERG4130/ESTR4306, IERG4210
 Remaining units can be chosen from the following:
 CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), STAT2004, 2006
- (f) Stream 5: Theoretical Computer Science
 Elective Courses:
 Choose at least 12 units from the following:
 CSCI3120, 3220, 4220, 4230, 5010, 5020, 5060, CSCI5160/ENGG5102, CSCI5170, 5240,
 5320, 5350, 5370, 5430, 5440, 5450, 5520, 5560, 5580, ENGG1820
 Remaining units can be chosen from the following:
 CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803),
 ENGG4030/ESTR4300, STAT2004, 2006
- (g) Stream 6: Data Analytics
 Required Courses:
 CSCI3320, STAT2006
 Elective Course 1:
 Choose at least 6 units from the following:
 CSCI3170, 3220, CSCI4180/ESTR4106, CSCI4190, 4230, 5020, 5030, 5050, 5070, 5120,
 5150, CSCI5180/ENGG5103, CSCI5510/ENGG5108, CSCI5550, 5570, 5580, IERG4230,
 IERG4330/ESTR4316
 Elective Course 2:
 Choose at least 3 units from the following:
 RMSC4002, STAT3004, 4002, 4003, 4006
 Remaining units can be chosen from the following:
 CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803),
 ENGG4030/ESTR4300, STAT2003, 2004

Total: 75

In addition to fulfilling the above Major Programme Requirement, students may also challenge themselves by taking the following stream offered by the Faculty:

Engineering Leadership, Innovation, Technology and Entrepreneurship (ELITE) Stream[f]

Elective Courses:

15 units of courses[g]:

- i) 12 units of ESTR courses of which at most 6 units of courses at 1000 or 2000 level and at least 6 units of courses at 3000 or 4000 level[h]
- ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level[i]

Explanatory Notes:

1. Students who have fulfilled the Major Programme Requirements of their respective Engineering programmes (or equivalent courses as approved by the Sub-Committee on Education Technologies) will be eligible to apply for exemption of 1 unit of University Core IT Requirement/
Students are required to apply for the exemption. When exemption from a particular course is recognized, students can only be exempted from the course but not the units. Please follow the application procedures as announced by the IT Foundation Course Office at <https://engg1000.cse.cuhk.edu.hk>.
 2. BMEG/CENG/CSCI/EEEN/ELEG/ENER/ENGG/ESTR/IERG/MAEG/SEEM courses at 2000 and above level will be included in the calculation of Major GPA for honours classification, excluding courses in Faculty Package, Foundation Science courses and Foundation Mathematics courses.
- [a] The compulsory Physics course shall be taken in accordance with students' academic backgrounds as follows:
- i) Students without HKDSE Physics or who have attained Level 2 or below in HKDSE Physics or Combined Science with Physics Component shall take PHYS1003 in advance.
 - ii) Students who have attained Level 3 or above in HKDSE Physics or Combined Science with Physics component shall take either ENGG1310/ESTR1003 or PHYS1110.
 - iii) Non-JUPAS students will be assigned to take either PHYS1003 or 1110 according to advice of the Engineering Physics Panel.
 - iv) Mainland students with Gao Kao examination results will be assigned to take either ENGG1310/ESTR1003 or PHYS1110 according to advice of the Engineering Physics Panel.
- [b] CSCI1130/ESTR1102 shall be taken in Term 1 of Year 2.
- [c] ENGG2440/ESTR2004 is equivalent to CSCI2110.
- [d]
- i) Non-JUPAS admittees and JUPAS admittees with HKDSE Mathematics Extended Modules I or II are required to attend a Mathematics Placement Test. Students who fail or are absent from the Placement Test will be required to take MATH1020 in the same term when they take MATH1510.
 - ii) JUPAS admittees without HKDSE Mathematics Extended Modules I or II are required to take MATH1020 concurrently with MATH1510.
 - iii) Students who fail MATH1510 in Term 1 will have to retake the course in Term 2. The pre-assigned course, ENGG1410, will also be dropped.
- [e] Students who have declared to specialize in the ELITE Stream will be required to complete 6 units of ESTR4998 and 4999 to substitute for CSCI4998 and 4999.
- [f] Details of the entrance and coursework requirements, and declaration procedures for the ELITE Stream can be found at the ELITE website (www.erg.cuhk.edu.hk/elite).
Non-ELITE Engineering students may be allowed to take ESTR courses. Students are required to seek approval from their respective Major Programmes for using ESTR courses taken to fulfill the Major Programme Requirement. Details are available at the ELITE website.
- [g] Students can use up to 9 units of courses which have been taken to fulfill the requirements of items 1 to 5 above (excluding item 4(b) Research Component Courses) to fulfill the elective requirements of the ELITE Stream. A full list of ESTR courses is available at the ELITE website.
- [h] Students can use BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level to substitute for ESTR courses at 3000 or 4000 level, subject to the approval of the Stream Director and the Associate Dean (Education).
- [i] The requirement of at least 3 units of Engineering courses at 5000 level is a requirement for the ELITE Stream only. It should not be interpreted as a requirement of the Major Programme.

	Recommended Course Pattern	Units
First Year of Attendance	1 st term Faculty Package: ENGG1100/1110/ESTR1000/1002 Major Required: ENGG1310/ESTR1003/PHYS1003/1110, CHEM1380/LSCI1001/1003, MATH1510 Major Elective(s):	3 3-9
	2 nd term Faculty Package: ENGG1100/1110/ESTR1000/1002, ENGG1410/ ESTR1004 Major Required: ENGG1310/ESTR1003/PHYS1003/1110, CHEM1380/LSCI1001/1003 Major Elective(s):	6 3-6
Second Year of Attendance	1 st term Major Required: CSCI1130/ESTR1102, ENGG2020/ESTR2104, ENGG2440/ESTR2004 Major Elective(s):	9
	2 nd term Major Required: CSCI2100/ESTR2102, CSCI3250, 3251, ENGG2430/ ESTR2002 Major Elective(s):	9
Third Year of Attendance	1 st term Major Required: CSCI3130, CSCI3150/ESTR3102, CSCI3160/ ESTR3104 Major Elective(s): 3 units from stream required course / major elective courses	9 3
	2 nd term Major Required: CSCI3100, CSCI3180/ESTR3106 Major Elective(s): 6 units from stream required course / major elective courses	6 6
Fourth Year of Attendance	1 st term Major Required: CSCI4998 Major Elective(s): 6 units from major elective courses / stream elective courses	3 6
	2 nd term Major Required: CSCI4999 Major Elective(s): 3 units from major elective course / stream elective course	3 3
Total (including Faculty Package):		75

Major Programme Requirement (for Associate Degree or Higher Diploma holders admitted to senior-year places) (2-year curriculum)

Students are required to complete a minimum of 51 units of courses as follows:

	Units
1. Faculty Package: ENGG1410/ESTR1004	3
2. Foundation Mathematics Courses: ENGG2430/ESTR2002, ENGG2440/ESTR2004[a]	6
3. Required Courses:	
(a) CSCI3100, 3130, CSCI3150/ESTR3102, CSCI3160/ESTR3104, CSCI3180/ESTR3106, CSCI3250, 3251	18
(b) Research Component Courses[b]: CSCI4998, 4999	6
4. Choose any ONE from the following seven options:	18
(a) <u>General Computer Science</u> Elective Courses: Choose 18 units from CSCI3230/ESTR3108, CSCI4180/ESTR4106, CSCI4430/ESTR4120, ENGG1820, (ENGG3802 and 3803), ENGG4030/ESTR4300, STAT2004, 2006 and the CENG/CSCI courses of which at least 15 units must be from courses at 3000 or above level	
(b) <u>Stream 1: Intelligence Science</u> Required Courses: CSCI3230/ESTR3108 Elective Courses: Choose at least 9 units from the following: CSCI3220, 3320, 4190, 4220, 4230, 5030, 5050, 5150, CSCI5160/ENGG5102, CSCI5170, CSCI5180/ENGG5103, CSCI5240, CSCI5250/ENGG5106, CSCI5280/ENGG5104, CSCI5350, 5390, 5430, CSCI5510/ENGG5108, CSCI5580, ENGG1820, ENGG4030/ESTR4300, ENGG5781, IERG3320, SEEM3510 Remaining units can be chosen from the following: CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), STAT2004, 2006	
(c) <u>Stream 2: Database and Information Systems</u> Required Courses: CSCI3170 Elective Courses: Choose at least 9 units from the following: CSCI3220, 3420, 4140, 4160, CSCI4430/ESTR4120, CSCI5010, 5120, CSCI5180/ENGG5103, CSCI5250/ENGG5106, CSCI5470/ENGG5105, CSCI5510/ENGG5108, CSCI5520, 5550, 5570, 5590, ENGG1820, ENGG4030/ESTR4300, ENGG5781 Remaining units can be chosen from the following: CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), STAT2004, 2006	
(d) <u>Stream 3: Rich Media</u> Required Courses: CSCI3260, 3280	

Elective Courses:

Choose at least 6 units from the following:

CSCI3290, 3420, 4120, 4160, CSCI4430/ESTR4120, CSCI5210, CSCI5280/ENGG5104, CSCI5390, 5460, CSCI5510/ENGG5108, CSCI5530, ENGG1820

Remaining units can be chosen from the following:

CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), ENGG4030/ESTR4300, STAT2004, 2006

(e) Stream 4: Distributed Systems, Networks and Security

Required Courses:

CSCI4180/ESTR4106, CSCI4430/ESTR4120

Elective Courses:

Choose at least 6 units from the following:

CSCI3310, 3420, 4140, 4160, 4190, 4210, 5070, 5080, 5390, 5440, CSCI5470/ENGG5105, CSCI5510/ENGG5108, CSCI5520, 5550, 5570, 5590, 5600, ENGG1820, ENGG4030/ESTR4300, IERG4130/ESTR4306, IERG4210

Remaining units can be chosen from the following:

CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), STAT2004, 2006

(f) Stream 5: Theoretical Computer Science

Elective Courses:

Choose at least 12 units from the following:

CSCI3120, 3220, 4220, 4230, 5010, 5020, 5060, CSCI5160/ENGG5102, CSCI5170, 5240, 5320, 5350, 5370, 5430, 5440, 5450, 5520, 5560, 5580, ENGG1820

Remaining units can be chosen from the following:

CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), ENGG4030/ESTR4300, STAT2004, 2006

(g) Stream 6: Data Analytics

Required Courses:

CSCI3320, STAT2006

Elective Course 1:

Choose at least 6 units from the following:

CSCI3170, 3220, CSCI4180/ESTR4106, CSCI4190, 4230, 5020, 5030, 5050, 5070, 5120, 5150, CSCI5180/ENGG5103, CSCI5510/ENGG5108, CSCI5550, 5570, 5580, IERG4230, IERG4330/ESTR4316

Elective Course 2:

Choose at least 3 units from the following:

RMSC4002, STAT3004, 4002, 4003, 4006

Remaining units can be chosen from the following:

CENG/CSCI courses at 2000 or above level, (ENGG3802 and 3803), ENGG4030/ESTR4300, STAT2003, 2004

Total: 51

In addition to fulfilling the above Major Programme Requirement, students may also challenge themselves by taking the following stream offered by the Faculty:

Engineering Leadership, Innovation, Technology and Entrepreneurship (ELITE) Stream[c]

Elective Courses:

15 units of courses[d]:

- i) 12 units of ESTR courses of which at most 6 units of courses at 1000 or 2000 level and at least 6 units of courses at 3000 or 4000 level[e]
- ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level[f]

Explanatory Notes:

1. BMEG/CENG/CSCI/EEEN/ELEG/ENER/ENGG/ESTR/IERG/MAEG/SEEM courses at 2000 and above level will be included in the calculation of Major GPA for honours classification, excluding courses in Faculty Package, Foundation Science courses and Foundation Mathematics courses.
 2. Students from SYSU 2+2 programme are encouraged to exempt the Foundation Mathematics Courses. Students can choose any course at 3000 or above level within the Faculty of Engineering for substitution.
- [a] ENGG2440/ESTR2004 is equivalent to CSCI2110.
- [b] Students who have declared to specialize in the ELITE Stream will be required to complete 6 units of ESTR4998 and 4999 to substitute for CSCI4998 and 4999.
- [c] Details of the entrance and coursework requirements, and declaration procedures for the ELITE Stream can be found at the ELITE website (www.erg.cuhk.edu.hk/elite).
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- [d] Students can use up to 9 units of courses which have been taken to fulfill the requirements of items 1 to 4 above (excluding item 3(b) Research Component Courses) to fulfill the elective requirements of the ELITE Stream. A full list of ESTR courses is available at the ELITE website.
- [e] Students can use BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level to substitute for ESTR courses at 3000 or 4000 level, subject to the approval of the Stream Director and the Associate Dean (Education).
- [f] The requirement of at least 3 units of Engineering courses at 5000 level is a requirement for the ELITE Stream only. It should not be interpreted as a requirement of the Major Programme.

	Recommended Course Pattern (for Associate Degree or Higher Diploma holders admitted to senior-year places)	Units
First Year of Attendance	1 st term Faculty Package: Major Required: CSCI3130, CSCI3150/ESTR3102, ENGG2440/ ESTR2004	9
	Major Elective(s): 3 units from stream required course / major elective courses	3
	2 nd term Faculty Package: ENGG1410/ESTR1004 Major Required: CSCI3100, CSCI3180/ESTR3106, CSCI3250, 3251, ENGG2430/ESTR2002 Major Elective(s):	3 12
Second Year of Attendance	1 st term Major Required: CSCI3160/ESTR3104, CSCI4998	6
	Major Elective(s): 6 units from stream required courses / major elective courses	6
	2 nd term Major Required: CSCI4999	3
	Major Elective(s): 9 units from stream required courses / major elective courses	9
Total (including Faculty Package):		51