

Biomedical Engineering
Applicable to students admitted in 2020-21

Major Programme Requirement

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

	Units
1. Faculty Package: ENGG1110/ESTR1002, ENGG1120/ESTR1005, ENGG1130/ ESTR1006	9
2. Foundation Courses:	12
(a) 6 units of Physics Courses: ENGG1310/ESTR1003, PHYS1110[a]	
(b) 3 units of Science Course: CHEM1280, 1380[b], LSCI1001, 1003[c]	
(c) MATH1510[d]	
3. Required Courses:	
(a) BMEG2001/ESTR2201, BMEG2012/ESTR2602, BMEG2210/ ESTR2204, BMEG2300/ESTR2601, BMEG2410, 2602, BMEG3111/ESTR3603, BMEG3320, BMEG3430/ESTR3208, BMEG4010/ESTR4601, SBMS1431, 1432, 1440, STAT3210	33
(b) Research Component Courses[e]: BMEG4998, 4999	6
4. Elective Courses:	15
BIOL2120, BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3130, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 3910, 4103, 4220, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, BMEG5140, 5530, 5610, ELEG3201/ ESTR3200, ELEG5102, 5103, 5104, 5302, MAEG5080, MBTE4320, CSCI courses[f]	

Streams

Students may choose not to specialize in any stream or to specialize in one of the three streams and complete a minimum of 12 units of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999[e], prescribed by the stream.

Medical Instrumentation and Biosensors

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3103, 3130, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 4220, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4520, ELEG3201/ESTR3200, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

Biomedical Imaging, Informatics and Modeling

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3440, 4103, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4520, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

Molecular, Cell and Tissue Engineering

- a) Elective Courses (at least 12 units chosen from the following courses): BIOL2120, BMEG3105/ESTR3605, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3440, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, MBTE4320, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

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[g]

Elective Courses:

15 units of courses[h]:

- 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[i]
- ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level[j]

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. BIOL2120, MAEG5080, MBTE4320, STAT3210, BMEG/CSCI/ELEG/ENGG courses at 2000 and above level as included in the Major Programme Requirement, ESTR2104, 2300, 4300, ESTR4998/4999 and ESTR courses of which the reciprocal departmental courses are BMEG or ELEG courses will be included in the calculation of Major GPA for honours classification, excluding courses in Faculty Package and Foundation courses.
 3. Results of the graduation project as prescribed by BMEG4999/ESTR4999 will be included in the calculation for honours classification.
 4. Students satisfying all the requirements of a stream (except the ELITE Stream, which will be officially recorded on the academic transcript) will be given a certifying letter. For details, please refer to the Programme for information.
- [a]
- i) Students who have attained Level 4 or above in HKDSE Mathematics (Compulsory Part) AND Level 4 or above in Physics or Level 5 or above in Combined Science with Physics Component shall take PHYS1110.
 - ii) Students with HKDSE results but did not attain the academic levels as stated

- in (i) shall take PHYS1003 in advance. PHYS1003 will be counted as a free elective but cannot be used to fulfill the Foundation course requirements.
- iii) Students without HKDSE results shall sit for the placement test arranged by the Department of Physics. Students who pass the placement test shall take PHYS1110. Students who fail or are absent from the placement test shall take PHYS1003 in advance. PHYS1003 will be counted as a free elective but cannot be used to fulfill the Foundation course requirements.
- [b] Students are strongly advised to take any one course from CHEM1280 or 1380 if they have not attained Level 3 or above in HKDSE Chemistry, or other equivalent qualifications.
- [c] Students are strongly advised to take either LSCI1001 or 1003 if they have not attained Level 3 or above in HKDSE Biology, or other equivalent qualifications. LSCI1001 is only for students who have not taken science courses with Biology component in HKDSE.
- [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, ENGG1130, 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 BMEG4998 and 4999.
- [f] Students are allowed to take a maximum of 3 units of CSCI course(s) at 1000 or above level.
- [g] 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.
- [h] Students can use up to 9 units of courses taken to fulfill the requirements of items 1 to 4 above to fulfill the elective requirements of the ELITE Stream. Item 3(b) Research Component Courses will not be included in these 9 units. A full list of ESTR courses is available at the ELITE website.
- [i] 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).
- [j] 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: Major Required: BMEG2001/ESTR2201, CHEM1280/1380/LSCI1001/1003, MATH1510, PHYS1110, SBMS1431 Major Elective(s):	9-12
	2 nd term Faculty Package: ENGG1120/ESTR1005, ENGG1130/ESTR1006 Major Required: CHEM1280/1380/LSCI1001/1003, SBMS1432 Major Elective(s):	6 2-5

	Summer Session Major Required: BMEG2602	1
Second Year of Attendance	1 st term Faculty Package: ENGG1110/ESTR1002 Major Required: BMEG2210/ESTR2204, BMEG2410 Major Elective(s):	3 6
	2 nd term Faculty Package: Major Required: BMEG2012/ESTR2602, BMEG2300/ESTR2601, ENGG1310/ESTR1003, SBMS1440, STAT3210 Major Elective(s):	13
Third Year of Attendance	1 st term Major Required: BMEG3111/ESTR3603, BMEG3320, BMEG3430/ ESTR3208 Major Elective(s): 1 course	8 3
	2 nd term Major Required: BMEG4010/ESTR4601 Major Elective(s): 2 courses	3 6
	1 st term Major Required: BMEG4998 Major Elective(s): 1 course	3 3
	2 nd term Major Required: BMEG4999 Major Elective(s): 1 course	3 3
Total (including Faculty Package):		75

Major Programme Requirement (for Associate Degree holders admitted to senior-year places)

Students are required to complete a minimum of 54 units of courses as follows:

	Units
1. Faculty Package: ENGG1120/ESTR1005	3
2. Required Courses:	
(a) BMEG2001/ESTR2201, BMEG2011/ESTR2203, BMEG2210/ ESTR2204, BMEG2300/ESTR2601, BMEG2410, BMEG3101/ ESTR3601, BMEG3320, BMEG3430/ESTR3208, BMEG4010/ ESTR4601, SBMS1431, 1432, 1440	30
(b) Research Component Courses[a]: BMEG4998, 4999	6
3. Elective Courses:	15
BIOL2120, BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3130, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440 3910, 4103, 4220, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ ESTR4214, BMEG5140, 5530, 5610, ELEG3201/ESTR3200, ELEG5102, 5103, 5104, 5302, MAEG5080, MBTE4320, CSCI courses[b]	

Streams

Students may choose not to specialize in any stream or to specialize in one of the three streams and complete a minimum of 12 units of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999[a], prescribed by the stream.

Medical Instrumentation and Biosensors

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3103, 3130, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 4220, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4520, ELEG3201/ESTR3200, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

Biomedical Imaging, Informatics and Modeling

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3440, 4103, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4520, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

Molecular, Cell and Tissue Engineering

- a) Elective Courses (at least 12 units chosen from the following courses): BIOL2120, BMEG3105/ESTR3605, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3440, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, MBTE4320, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

Total: 54

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. BIOL2120, MAEG5080, MBTE4320, BMEG/CSCI/ELEG/ENGG courses at 2000 and above level as included in the Major Programme Requirement, ESTR2104, 2300, 4300, ESTR4998/4999 and ESTR courses of which the reciprocal departmental courses are BMEG or ELEG courses will be included in the calculation of Major GPA for honours classification, excluding courses in Faculty Package.
2. Results of the graduation project as prescribed by BMEG4999/ESTR4999 will be included in the calculation for honours classification.
3. Students satisfying all the requirements of a stream (except the ELITE Stream, which

will be officially recorded on the academic transcript) will be given a certifying letter. For details, please refer to the Programme for information.

- [a] Students who have declared to specialize in the ELITE Stream will be required to complete 6 units of ESTR4998 and 4999 to substitute for BMEG4998 and 4999.
- [b] Students are allowed to take a maximum of 3 units of CSCI course(s) at 1000 or above level.
- [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). 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.
- [d] Students can use up to 9 units of courses taken to fulfill the requirements of items 1 to 3 above to fulfill the elective requirements of the ELITE Stream. Item 2(b) Research Component Courses will not be included in these 9 units. 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 holders admitted to senior-year places)	Units
First Year of Attendance	1 st term Faculty Package: Major Required: BMEG2001/ESTR2201, BMEG2210/ESTR2204, BMEG2410, BMEG3101/ESTR3601, SBMS1431 Major Elective(s):	12
	2 nd term Faculty Package: ENGG1120/ESTR1005 Major Required: BMEG2011/ESTR2203, BMEG2300/ESTR2601, SBMS1432, 1440 Major Elective(s): 1 course	3 9 3
	Second Year of Attendance	
	1 st term Major Required: BMEG3320, BMEG3430/ESTR3208, BMEG4998 Major Elective(s): 2 courses	9 6
	2 nd term Major Required: BMEG4010/ESTR4601, BMEG4999 Major Elective(s): 2 courses	6 6
Total (including Faculty Package):		54

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

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

- | | | |
|----|---------------------------------------|-------|
| | | Units |
| 1. | Faculty Package:
ENGG1120/ESTR1005 | 3 |

2.	Required Courses:	
(a)	BMEG2001/ESTR2201, BMEG2011/ESTR2203, BMEG2210/ESTR2204, BMEG2300/ESTR2601, BMEG2410, BMEG3101/ESTR3601, BMEG3320, BMEG3430/ESTR3208, BMEG4010/ESTR4601, SBMS1431, 1432, 1440	30
(b)	Research Component Courses[a]: BMEG4998, 4999	6
3.	Elective Courses:	12
	BIOL2120, BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3130, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 3910, 4103, 4220, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, BMEG5140, 5530, 5610, ELEG3201/ESTR3200, ELEG5102, 5103, 5104, 5302, MAEG5080, MBTE4320, CSCI courses[b]	

Streams

Students may choose not to specialize in any stream or to specialize in one of the three streams and complete a minimum of 12 units of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999[a], prescribed by the stream.

Medical Instrumentation and Biosensors

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3103, 3130, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 4220, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4520, ELEG3201/ESTR3200, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

Biomedical Imaging, Informatics and Modeling

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3440, 4103, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4520, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

Molecular, Cell and Tissue Engineering

- a) Elective Courses (at least 12 units chosen from the following courses): BIOL2120, BMEG3105/ESTR3605, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3440, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, MBTE4320, CSCI courses[b]
- b) BMEG4998 and 4999[a] in an approved topic relevant to the Stream

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. BIOL2120, MAEG5080, MBTE4320, BMEG/CSCI/ELEG/ENGG courses at 2000 and above level as included in the Major Programme Requirement, ESTR2104, 2300, 4300, ESTR4998/4999 and ESTR courses of which the reciprocal departmental courses are BMEG or ELEG courses will be included in the calculation of Major GPA for honours classification, excluding courses in Faculty Package.
 2. Results of the graduation project as prescribed by BMEG4999/ESTR4999 will be included in the calculation for honours classification.
 3. Students satisfying all the requirements of a stream (except the ELITE Stream, which will be officially recorded on the academic transcript) will be given a certifying letter. For details, please refer to the Programme for information.
- [a] Students who have declared to specialize in the ELITE Stream will be required to complete 6 units of ESTR4998 and 4999 to substitute for BMEG4998 and 4999.
- [b] Students are allowed to take a maximum of 3 units of CSCI course(s) at 1000 or above level.
- [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). 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.
- [d] Students can use up to 9 units of courses taken to fulfill the requirements of items 1 to 3 above to fulfill the elective requirements of the ELITE Stream. Item 2(b) Research Component Courses will not be included in these 9 units. 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 Higher Diploma holders admitted to senior-year places)	Units
First Year of Attendance	1 st term Faculty Package: Major Required: BMEG2001/ESTR2201, BMEG2210/ESTR2204, BMEG2410, BMEG3101/ESTR3601, SBMS1431 Major Elective(s):	12
	2 nd term Faculty Package: ENGG1120/ESTR1005 Major Required: BMEG2011/ESTR2203, BMEG2210/ESTR2204, BMEG2300/ESTR2601, SBMS1432, 1440	3 9

	Major Elective(s): 1 course	3
Second Year of Attendance	1 st term	
	Major Required: BMEG3320, BMEG3430/ESTR3208, BMEG4998	9
	Major Elective(s): 2 courses	6
	2 nd term	
	Major Required: BMEG4010/ESTR4601, BMEG4999	6
	Major Elective(s): 1 course	3
Total (including Faculty Package):		51

Bachelor of Engineering (Biomedical Engineering) and Bachelor of Business Administration (Integrated BBA Programme) Double Degree Option

1st degree: Bachelor of Engineering (Biomedical Engineering)

Major Programme Requirement

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

	Units
1. Faculty Package: ENGG1110/ESTR1002, ENGG1120/ESTR1005, ENGG1130/ ESTR1006	9
2. Foundation Courses:	12
(a) 6 units of Physics Courses: ENGG1310/ESTR1003, PHYS1110[a]	
(b) 3 units of Science Course: CHEM1280, 1380[b], LSCI1001, 1003[c]	
(c) MATH1510[d]	
3. Required Courses:	33
(a) BMEG2001/ESTR2201, BMEG2012/ESTR2602, BMEG2210/ ESTR2204, BMEG2300/ESTR2601, BMEG2410, 2602, BMEG3111/ESTR3603, BMEG3320, BMEG3430/ESTR3208, BMEG4010/ESTR4601, SBMS1431, 1432, 1440, STAT3210	
(b) Research Component Courses[e]: BMEG4998, 4999	6
4. Elective Courses:	15
BIOL2120, BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3130, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 3910, 4103, 4220, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ ESTR4214, BMEG5140, 5530, 5610, ELEG3201/ESTR3200, ELEG5102, 5103, 5104, 5302, MAEG5080, MBTE4320, CSCI courses[f]	

Streams

Students may choose not to specialize in any stream or to specialize in one of the three streams and complete a minimum of 12 units of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999[e], prescribed by the stream.

Medical Instrumentation and Biosensors

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3103, 3130, BMEG3210/ESTR3212, BMEG3330/ESTR3602, BMEG3420, 3440, 4220, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4520, ELEG3201/ESTR3200, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

Biomedical Imaging, Informatics and Modeling

- a) Elective Courses (at least 12 units chosen from the following courses): BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3120, 3440, 4103, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4520, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

Molecular, Cell and Tissue Engineering

- a) Elective Courses (at least 12 units chosen from the following courses): BIOL2120, BMEG3105/ESTR3605, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3440, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, MBTE4320, CSCI courses[f]
- b) BMEG4998 and 4999[e] in an approved topic relevant to the Stream

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[g]

Elective Courses:

15 units of courses[h]:

- 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[i]
- ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level[j]

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. BIOL2120, MAEG5080, MBTE4320, STAT3210, BMEG/CSCI/ELEG/ENGG courses at 2000 and above level as included in the Major Programme Requirement, ESTR2104, 2300, 4300, ESTR4998/4999 and ESTR courses of which the reciprocal departmental courses are BMEG or ELEG courses will be included in the calculation

- of Major GPA for honours classification, excluding courses in Faculty Package and Foundation courses.
3. Results of the graduation project as prescribed by BMEG4999/ESTR4999 will be included in the calculation for honours classification.
 4. Students are advised to take some courses of the University Core Requirements or Major courses in summer sessions to reduce their course load in regular terms.
 5. Students satisfying all the requirements of a stream (except the ELITE Stream, which will be officially recorded on the academic transcript) will be given a certifying letter. For details, please refer to the Programme for information.
- [a] i) Students who have attained Level 4 or above in HKDSE Mathematics (Compulsory Part) AND Level 4 or above in Physics or Level 5 or above in Combined Science with Physics Component shall take PHYS1110.
- ii) Students with HKDSE results but did not attain the academic levels as stated in (i) shall take PHYS1003 in advance. PHYS1003 will be counted as a free elective but cannot be used to fulfill the Foundation course requirements.
- iii) Students without HKDSE results shall sit for the placement test arranged by the Department of Physics. Students who pass the placement test shall take PHYS1110. Students who fail or are absent from the placement test shall take PHYS1003 in advance. PHYS1003 will be counted as a free elective but cannot be used to fulfill the Foundation course requirements.
- [b] Students are strongly advised to take any one course from CHEM1280 or 1380 if they have not attained Level 3 or above in HKDSE Chemistry, or other equivalent qualifications.
- [c] Students are strongly advised to take either LSCI1001 or 1003 if they have not attained Level 3 or above in HKDSE Biology, or other equivalent qualifications. LSCI1001 is only for students who have not taken science courses with Biology component in HKDSE.
- [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, ENGG1130, 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 BMEG4998 and 4999.
- [f] Students are allowed to take a maximum of 3 units of CSCI course(s) at 1000 or above level.
- [g] 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.
- [h] Students can use up to 9 units of courses taken to fulfill the requirements of items 1 to 4 above to fulfill the elective requirements of the ELITE Stream. Item 3(b) Research Component Courses will not be included in these 9 units. A full list of ESTR courses is available at the ELITE website.
- [i] 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).
- [j] 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.

Requirements for admission to the 2nd degree programme

1. Admission to the second degree programme is guaranteed if students have:
 - i. fulfilled all graduation requirements of the first degree programme;
 - ii. Major GPA of at least 3.0 upon completion of studies of the first degree programme (ERG); and
 - iii. taken at least 30 relevant units, of which includes ELTU2014, ELTU3014 and mutually recognized courses by both the Engineering and Business Administration Faculties. In addition, students should have achieved a GPA of at least 3.0 in these courses while pursuing the first degree programme. For details of the mutually recognized courses, please refer to the explanatory notes on mutual recognition or exclusion.

Students who do not satisfy the above requirements may still apply for admission to the second degree programme which has discretion to judge the suitability of the students for studying for the second degree through assessments like conducting interview, considering the recommendation from the first degree programme etc.

Upon fulfillment of the requirements of the first degree programme, students can still choose to or not to pursue the second degree programme. If a student decides not to pursue the second degree programme but has fulfilled the requirements of a relevant BBA minor programme, a minor of that BBA programme would be awarded.

2nd Degree: Bachelor of Business Administration (Integrated BBA Programme)

Major Programme Requirement

Students are required to complete a minimum of 56 units of courses as follows:

	Units
1. Faculty Package: DSME1030, 1040, MGNT1020	9
2. Required Courses: ACCT2111, 2121, 2151 or 3151[a], DSME2011, 2030, 2051, FINA2010, IBBA3040, MGNT2511, 2512, 2611, 4010, MKTG2010	32-33
3. Elective Courses (Concentration): Students must choose at least one concentration and take five or six courses among the courses prescribed under respective concentration area as follows:	15-18
(a) Business Economics	
(i) DSME2021, 4110;	
(ii) two courses selected from: DSME3000, 3011, 3030, 3050, 3080, 3090, 4040, 4080; and	
(iii) one DSME course at 3000 or above level, excluding the courses taken for fulfillment of requirement (i) or (ii)	
(b) Business Analytics	
(i) DSME2021, 2040, 4020;	
(ii) one course selected from: DSME4070, 4240, 4260; and	
(iii) one course selected from: DSME3030, 4030, 4110, 4220, 4280, MKTG4120	
(c) Finance	

- (i) DSME2021 or FINA2020; and
- (ii) 15 units of FINA courses at 3000 or above level, with no more than three 1-unit FINA courses
- (d) Entrepreneurship
 - (i) MGNT1070, 2070, 3070, 4170; and
 - (ii) two courses selected from: MGNT4070, 4090, 4130, 4270, 4570
- (e) Management of International Business
 - (i) MGNT3080, 3580, 4150; and
 - (ii) three courses selected from: MGNT3010, 3100, 4080, 4090, 4130, 4140, 4510, 4530, 4540, 4550, 4570, 4600, 4620
- (f) Human Resource Management
 - (i) MGNT2040, 3010, 3090; and
 - (ii) three courses selected from: MGNT3040, 3060, 3100, 4050, 4060, 4080, 4110, 4130, 4140, 4620
- (g) Marketing
 - (i) MKTG3010, 3020, 3030, 4040; and
 - (ii) two courses selected from: MKTG3040, 3050, 4010, 4020, 4030, 4050, 4070, 4080, 4090, 4110, 4160
- (h) Big Data and Quantitative Marketing
 - (i) MKTG3010, 3060, 4080, 4120; and
 - (ii) two courses selected from: MKTG3020, 4030, 4050, 4070, 4090, 4150, 4160, 4170, 4180, 4190
- (i) General Business
 - (i) 3 units of DSME/FINA/MGNT/MKTG courses at 2000 or above level; and
 - (ii) 12 units of DSME/FINA/MGNT/MKTG courses at 3000 or above level, excluding the courses taken for fulfillment of requirement (i), with no more than three 1-unit FINA courses

Total: 56-60

Explanatory Notes:

1. ACCT/DSME/FINA/IBBA/MGNT/MKTG courses at 2000 and above level (excluding ACCT2111, 2121, IBBA3040, MGNT2511 and 2512) will be included in the calculation of Major GPA for honours classification.
 2. Double concentrations in Marketing and Big Data and Quantitative Marketing are not allowed.
 3. DSME2021 and the associated units can be used to satisfy concentration requirements of double concentrations within (a) to (c)
MGNT3010 and the associated units can be used to satisfy concentration requirements of double concentrations within (e) and (f).
 4. Courses taken for the concentration requirements of General Business Concentration cannot be counted towards the requirements of concentrations (a) to (h).
 5. Students claiming Entrepreneurship Concentration are not allowed to declare Minor in Entrepreneurship and Innovation.
- [a] ACCT2151 and ACCT3151 are mutually exclusive. Students who would like to pursue a career in accounting profession are advised to take ACCT3151 instead of ACCT2151.

Explanatory Notes on Mutual Recognition or Exclusion:

1. DSME2011 and the associated units can be exempted from the requirement of the second degree by successfully completing ENGG2450/ESTR2005 OR ENGG2760/ESTR2018 and ENGG2780/ESTR2020.

Recommended Course Pattern				
	1st degree: Bachelor of Engineering (Biomedical Engineering)	Units	2nd degree: Bachelor of Business Administration (Integrated BBA Programme)	Units
First Year of Attendance	1 st term Faculty Package: Major Required: BMEG2001/ ESTR2201, CHEM1280/ 1380/LSCI1001/1003, MATH1510, PHYS1110, SBMS1431 Major Elective(s):	9-12	1 st term Faculty Package: Major Required: Major Elective(s):	
	2 nd term Faculty Package: ENGG1120/ ESTR1005, ENGG1130/ ESTR1006 Major Required: CHEM1280/ 1380/LSCI1001/1003, SBMS1432 Major Elective(s):	6 2-5	2 nd term Faculty Package: MGNT1020 Major Required: Major Elective(s):	3
	Summer Session Major Required: BMEG2602	1		
Second Year of Attendance	1 st term Faculty Package: ENGG1110/ ESTR1002 Major Required: BMEG2210/ ESTR2204, BMEG2410 Major Elective(s):	3 6	1 st term Faculty Package: DSME1030/ 1040 Major Required: Major Elective(s):	3
	2 nd term Faculty Package: Major Required: BMEG2012/ ESTR2602, BMEG2300/ ESTR2601, ENGG1310/ ESTR1003, SBMS1440, STAT3210 Major Elective(s):	13	2 nd term Major Required: Major Elective(s):	
			Summer session Faculty Package: DSME1030/ 1040	3
Third Year of Attendance	1 st term Major Required: BMEG3111/ ESTR3603, BMEG3320, BMEG3430/ESTR3208 Major Elective(s): 1 course	8 3	1 st term Major Required: Major Elective(s):	
	2 nd term Major Required: BMEG4010/ ESTR4601 Major Elective(s): 2 courses	3 6	2 nd term Major Required/Major Elective(s):	6
Fourth Year of Attendance	1 st term Major Required: BMEG4998 Major Elective(s): 1 course	3 3	1 st term Major Required/Major Elective(s):	9
	2 nd term Major Required: BMEG4999 Major Elective(s): 1 course	3 3	2 nd term Major Required/Major Elective(s):	6

Fifth Year of Attendance		1 st term Major Required/Major Elective(s):	12-15
		2 nd term Major Required/ Major Elective(s):	14-15
Total (including Faculty Package):		75	Total (including Faculty Package): 56-60

Minor Programme Title

Biomedical Engineering

Minor Programme Requirement

Students are required to complete a minimum of 18 units of courses as follows:

1.	Required Courses: BMEG2001/ESTR2201, BMEG2012/ESTR2602	Units 3
2.	Elective Courses: BMEG2210/ESTR2204, BMEG2300/ESTR2601, BMEG3102, 3103, BMEG3105/ESTR3605, BMEG3111/ESTR3603, BMEG3120, 3130, BMEG3140/ESTR3604, BMEG3210/ESTR3212, BMEG3320, BMEG3330/ESTR3602, BMEG3420, BMEG3430/ESTR3208, BMEG3440, 3910, BMEG4010/ESTR4601, BMEG4103, 4220, BMEG4320/ESTR4200, BMEG4330/ESTR4201, BMEG4410/ESTR4203, BMEG4450/ESTR4202, BMEG4510/ESTR4204, BMEG4520, BMEG4530/ESTR4214, BMEG5140, 5530, 5610	15
Total:		18

Course List

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
BMEG2001	Introduction to Biomedical Engineering	1
BMEG2011	Biomedical Engineering Laboratory and Hospital Experience	2
BMEG2012	Biomedical Engineering Laboratory	2
BMEG2210	Orthopaedic Biomechanics and Musculoskeletal Injury	3
BMEG2300	Circuits and Signals for Biomedical Engineering	3
BMEG2410	Complex Analysis and Differential Equations	3
BMEG2602	Hospital Experience and Engineering Practicum	1
BMEG3101	Medical Instrumentation and Design	3
BMEG3102	Bioinformatics	3
BMEG3103	Big Data in HealthCare	3
BMEG3105	Data Analytics for Personalized Genomics and Precision Medicine	3
BMEG3111	Medical Instrumentation and Design	2
BMEG3120	Database and Security for Biomedical Engineering	3
BMEG3130	Tele-Medicine and Mobile Healthcare	3
BMEG3140	Molecular and Cellular Engineering Laboratory	3
BMEG3210	Biofluids	3
BMEG3320	Biomedical Imaging	3

BMEG3330	Neuroengineering	3
BMEG3420	Medical Robotics	3
BMEG3430	Biomaterials and Tissue Engineering	3
BMEG3440	Global Engineering Medical Innovation	3
BMEG3910	Undergraduate Research in Biomedical Engineering	3
BMEG4010	Global Medical Device Regulatory Affairs	3
BMEG4103	Biomedical Modelling	3
BMEG4220	Wearable Biomedical Devices and IoT in Healthcare	3
BMEG4320	AI & Imaging for Biomedical Engineering	3
BMEG4330	Advanced Imaging and Spectroscopy Techniques in Biomedicine	3
BMEG4410	BioMEMS	3
BMEG4450	Bionanotechnology	3
BMEG4510	Biomolecular Engineering	3
BMEG4520	Cardiovascular Engineering	3
BMEG4530	Musculoskeletal Tissue Engineering	3
BMEG4998	Final Year Project I	3
BMEG4999	Final Year Project II	3
BMEG5140	Gerontechnology and Rehabilitation Engineering	3
BMEG5530	Tissue Engineering	3
BMEG5610	Research Methods in Biomedical Engineering	3
ENGG1310	Engineering Physics: Electromagnetics, Optics and Modern Physics	3
ESTR1003	Engineering Physics: Electromagnetics, Optics and Modern Physics	3
ESTR2201	Introduction to Biomedical Engineering	1
ESTR2203	Biomedical Engineering Laboratory and Hospital Experience	2
ESTR2204	Orthopaedic Biomechanics and Musculoskeletal Injury	3
ESTR2601	Circuits and Signals for Biomedical Engineering	3
ESTR2602	Biomedical Engineering Laboratory	2
ESTR3208	Biomaterials and Tissue Engineering	3
ESTR3212	Biofluids	3
ESTR3601	Medical Instrumentation and Design	3
ESTR3602	Neuroengineering	3
ESTR3603	Medical Instrumentation and Design	2
ESTR3604	Molecular and Cellular Engineering Laboratory	3
ESTR3605	Data Analytics for Personalized Genomics and Precision Medicine	3
ESTR4200	AI & Imaging for Biomedical Engineering	3
ESTR4201	Advanced Imaging and Spectroscopy Techniques in Biomedicine	3
ESTR4202	Bionanotechnology	3
ESTR4203	BioMEMS	3
ESTR4204	Biomolecular Engineering	3
ESTR4214	Musculoskeletal Tissue Engineering	3
ESTR4601	Global Medical Device Regulatory Affairs	3