

## Programme Requirements for Bachelor of Science with Honours in Science (STEM)

This 3-credit-unit system programme requirements document is applicable to the following student cohorts:

<i>Year of Entry</i>	<i>Admission cohort</i>
<i>Year 1 (BSCHSTEMJ1)</i>	<i>2023/24</i>
<i>Year 2 (BSCHSTEMJ2)</i>	<i>2024/25</i>
<i>Year 3 (BSCHSTEMJ3)</i>	<i>2025/26</i>

### 1. Programme Requirement – Year 1 Entry (BSCHSTEMJ1)

1.1 To be eligible for the award of the degree of Bachelor of Science with Honours in Science (STEM), a student shall:

1.1.1 obtain 120 credit-units\* as prescribed below, of which no more than 30 credit-units shall be at 1000-level, at least 24 credit-units shall be at 3000-level and at least 24 credit-units shall be at 4000-level:

1.1.1.1 24 credit-units of core courses applicable to Year 1 entry from Table 1;

1.1.1.2 12 credit-units of Integrated STEM training in Table 2;

1.1.1.3 63 credit-units of elective courses from Table 3, of which at least 15 credit-units shall be at 3000-level and 18 credit-units shall be at 4000-level;

1.1.1.4 9 credit-units of University Core courses in Table 4;

1.1.1.5 6 credit-units of University English courses in Table 5;

1.1.1.6 6 credit-units of General Education (GE) courses (see [www.hkmu.edu.hk/FT\\_GE](http://www.hkmu.edu.hk/FT_GE) for the updated list of GE courses);

*\*Of the 120 credit-units required for BSCHSTEMJ1 a student shall complete at least 12 credit-units from each area of Science, Technology, Engineering, and Mathematics.*

and

1.1.2 attain the CGPA for graduation as prescribed in the Regulations for the award of undergraduate degrees.

### 2. Programme Requirement – Year 2 Entry (BSCHSTEMJ2)

2.1 To be eligible for the award of the degree of Bachelor of Science with Honours in Science (STEM) through Year 2 Entry, a student shall:

2.1.1 obtain 90 credit-units<sup>#</sup> as prescribed below, of which at least 24 credit-units shall be at 3000-level and at least 24 credit-units shall be at 4000-level:

- 2.1.1.1 12 credit-units of core courses applicable to Year 2 entry from Table 1;
- 2.1.1.2 12 credit-units of Integrated STEM training in Table 2;
- 2.1.1.3 57 credit-units of elective courses from Table 3 of which at least 15 credit-units shall be at 3000-level and 18 credit-units shall be at 4000-level;
- 2.1.1.4 9 credit-units of University Core courses from Table 4

*# Of the 90 credit-units required for BSCHSTEMJ2, a student shall complete at least 9 credit-units from each area of Science, Technology, Engineering, and Mathematics.*

and

- 2.1.2 attain the CGPA for graduation as prescribed in the Regulations for the award of undergraduate degrees.

### 3. Programme Requirement – Year 3 Entry (BSCHSTEMJ3)

- 3.1 To be eligible for the award of the degree of Bachelor of Science with Honours in Science (STEM) through Year 3 Entry, a student shall:

- 3.1.1 obtain 66 credit-units<sup>^</sup> as prescribed below, of which at least 24 credit-units shall be at 3000-level and at least 24 credit-units shall be at 4000-level:

- 3.1.1.1 12 credit-units of Integrated STEM training in Table 2;
- 3.1.1.2 45 credit-units of elective courses from Table 3 of which at least 15 credit-units shall be at 3000-level and 18 credit-units shall be at 4000-level;
- 3.1.1.3 9 credit-units of University Core courses from Table 4

*^ Of the 66 credit-units required for BSCHSTEMJ3 students should complete at least 6 credit-units from each area of Science, Technology, Engineering, and Mathematics.*

and

- 3.1.2 attain the CGPA for graduation as prescribed in the Regulations for the award of undergraduate degrees.

Table 1: Core courses

Course Code	Course Title	Credit-units	Area	Year of Entry	
				1	2
SCI 1001SEF	University Science	3	Science	✓	
SCI 1010SEF	Laboratory Safety & Good Laboratory Practice	3	Science	✓	✓
TC 2080SEF	Principles of Production Design & Manufacturing Process Management	3	Engineering	✓	✓
<b>Designated 1000-level courses in Technology area</b>					
COMP 1080SEF	Introduction to Computer Programming	3	Technology	1 out of 3 courses	
IT 1020SEF	Computing Fundamentals	3	Technology		
IT 1030SEF	Introduction to Internet Application Development	3	Technology		
<b>Designated 2000-level courses in Technology area</b>					
COMP 2020SEF	Java Programming Fundamentals	3	Technology	1 out of 3 courses	1 out of 3 courses
COMP 2660SEF	Computer Architecture	3	Technology		
IT 2900SEF	Human Computer Interface and User Experience Design	3	Technology		
<b>Designated 1000-level courses in Engineering area</b>					
ELEC 1010SEF	Digital Logic Design	3	Technology	1 out of 3 courses	
ENGG 1001SEF	Engineering Mechanics	3	Technology		
ST 1020SEF	Automated Applications for Test Engineering	3	Technology		
<b>Designated 1000-level courses in Mathematics area</b>					
MATH 1410SEF	Algebra and Calculus	3	Mathematics	1 out of 2 courses	
STAT 1510SEF	Probability and Distributions	3	Mathematics		
<b>Designated 2000-level courses in Mathematics area</b>					
MATH 2150SEF	Linear Algebra	3	Mathematics	1 out of 3 courses	1 out of 3 courses
STAT 2510SEF	Statistical Data Analysis	3	Mathematics		
STAT 2520SEF	Applied Statistical Methods	3	Mathematics		

Table 2: Integrated STEM Training

Course Code	Course Title	Credit-units
SCI 3000SEF	Research Methodology and pedagogy on STEM	3
SCI 3090SEF	Professional Training & Workplace Attachment	3
SCI 4090SEF	STEM in Practice	6

Table 3: Elective courses

Course code	Course title	Credit-units
<b>SCIENCE</b>		
BIOL 1003SEF	Essential Biology	3
BIOL 2002SEF	Human Anatomy	3
BIOL 2006SEF	Cells in Health and Disease	3
BIOL 2012SEF	Human Physiology	3
BIOL 2035SEF	Biochemistry & Microbiology	3
BIOL 2036SEF	Cellular & Molecular Biology	3
BIOL 3001SEF	Conservation & Biodiversity	3
BIOL 3002SEF	Animal & Plant Physiology	3
BIOL 3004SEF	Pathophysiology	3
BIOL 3015SEF	Medical Immunology	3
BIOL 3037SEF	Practical Skills in Ecology	3
BIOL 3051SEF	Microbiology & Toxicology	3
BIOL 3056SEF	Biochemical & DNA Technologies	3
BIOL 4006SEF	Tools and Techniques in Biotechnology	3
BIOL 4008SEF	Pharmaceutical Biotechnology and Traditional Chinese Medicine	3
BIOL 4012SEF	Medical Genetics	3
CHEM 1002SEF	Essential Chemistry	3
CHEM 2001SEF	Food & Nutrient Chemistry	3
CHEM 2034SEF	Physical & Organic Chemistry	3
CHEM 3050SEF	Analytical Chemistry	3
CHEM 4006SEF	Advanced Environmental Analysis	3
ENVR 2036SEF	Environmental Pollution & Control	3
ENVR 3041SEF	Environmental Management Systems and Sustainable Product Life Cycle	3
ENVR 3042SEF	Environmental Regulations and Resources Management	3
ENVR 4007SEF	Global Climate Change and Greenhouse Gas Control	3
ENVR 4028SEF	Advances in Environmental Impact Assessment	3
ENVR 4043SEF	Environmental Social Governance and Green Finance	3
ENVR 4074SEF	Green Environmental Monitoring in Practice	3
MLS 4011SEF	Bioinformatics	3
SCI 1100SEF	General Chemistry Laboratory Training	3
SCI 1101SEF	General Biology Laboratory Training	3
SCI 2005SEF	Public health and Infectious Control	3
SCI 2006SEF	Pharmacology & Toxicology	3
SCI 2100SEF	Microbiology Laboratory Training I	3
SCI 2101SEF	Chemical Analysis Laboratory Training I	3
SCI 2102SEF	DNA & Biochemical Analysis Laboratory Training I	3
SCI 2103SEF	Environmental Analysis and Practical Training I	3
SCI 3030SEF	Scientific Research Methods	3
SCI 3064SEF	Emerging Technologies in Food Analysis	3
SCI 3100SEF	Microbiology Laboratory Training II	3
SCI 3101SEF	Chemical Analysis Laboratory Training II	3
SCI 3102SEF	DNA & Biochemical Analysis Laboratory Training II	3
SCI 3103SEF	Environmental Analysis and Practical Training II	3
SCI 4004SEF	Advanced Topics in Food & Health Sciences	3
TC 3011SEF	Conformity Assessment and Laboratory Accreditation	3

Course code	Course title	Credit-units
TC 3065SEF	Food Analysis	3
TC 3080SEF	Principles of Good Manufacturing Practice	3
TC 4020SEF	Professional Practice and Ethics	3
TC 4026SEF	Audit, Inspection & Certification	3
TC 4062SEF	Food Safety Management System: Audit & Certification	3
TC 4063SEF	Selected Topics in Food Safety	3
<b>TECHNOLOGY</b>		
COMP 1080SEF	Introduction to Computer Programming	3
COMP 2020SEF	Java Programming Fundamentals	3
COMP 2030SEF	Intermediate Java Programming and User Interface Design	3
COMP 2090SEF	Data Structures, Algorithms, and Problem Solving	3
COMP 2650SEF	Design and Analysis of Algorithms	3
COMP 2660SEF	Computer Architecture	3
COMP 2670SEF	Operating Systems	3
COMP 3120SEF	Java Application Development	3
COMP 3130SEF	Mobile Application Programming	3
COMP 3200SEF	Database Management	3
COMP 3500SEF	Software Engineering	3
COMP 3510SEF	Software Project Management	3
COMP 3800SEF	Web Applications: Design and Development	3
COMP 3810SEF	Server-side Technologies and Cloud Computing	3
COMP 3920SEF	Machine Learning	3
COMP 4210SEF	Advanced Database and Data Warehousing	3
COMP 4330SEF	Advanced Programming and AI Algorithms	3
COMP 4620SEF	Concurrent and Network Programming	3
COMP 4630SEF	Distributed Systems and Parallel Computing	3
COMP 4820SEF	Data Mining and Analytics	3
COMP 4900SEF	Creative Programming for Games	3
COMP 4930SEF	Deep Learning	3
ELEC 2050SEF	Signals and Systems	3
ELEC 2100SEF	Integrated Project	3
ELEC 2620SEF	Information System Administration	3
ELEC 3040SEF	Communication Systems	3
ELEC 3050SEF	Computer Networking	3
ELEC 3150SEF	Routing and Switching technologies	3
ELEC 3250SEF	Computer and Network Security	3
ELEC 3470SEF	Multimedia Technologies	3
ELEC 3630SEF	Advanced Computer Design	3
ELEC 3650SEF	Ethical Hacking Techniques	3
ELEC 4060SEF	Wireless Networks	3
ELEC 4310SEF	Blockchain Technologies	3
ELEC 4370SEF	Digital Signal Processing	3
ELEC 4380SEF	Digital Communications	3
ELEC 4480SEF	IoT Security	3
ELEC 4710SEF	Digital Forensics	3
IT 1020SEF	Computing Fundamentals	3
IT 1030SEF	Introduction to Internet Application Development	3

Course code	Course title	Credit-units
IT 2090SEF	Human Computer Interaction & User Experience Design	3
<b>ENGINEERING</b>		
ELEC 1010SEF	Digital Logic Design	3
ELEC 2010SEF	Basic Electronics	3
ELEC 2410SEF	Electric Circuit Design	3
ELEC 4200SEF	Biomedical Instrumentation and Sensor	3
ELEC 4210SEF	Biomedical Informatics	3
ENGG 1001SEF	Engineering mechanics	3
ENGG 2001SEF	Foundation Engineering	3
ENGG 2002SEF	Fluid Mechanics	3
ENGG 2003SEF	Thermodynamics	3
ENGG 2004SEF	Piped and Fire Services	3
ENGG 2005SEF	Electrical Technology	3
ENGG 2006SEF	HVAC	3
ENGG 2007SEF	Water and Wastewater Treatment Techniques for Civil Engineering	3
ENGG 2008SEF	Structural Analysis	3
ENGG 2009SEF	Engineering Geology and Soil Mechanics	3
ENGG 2021SEF	Electrical Science	3
ENGG 2060SEF	Introduction to Material Science	3
ENGG 3001SEF	Project Management for Engineering	3
ENGG 3021SEF	Lighting Technology	3
ENGG 3041SEF	Non-Linear Analysis of Structures	3
ENGG 3042SEF	Construction Materials	3
ENGG 3043SEF	Steel Structures	3
ENGG 4000SEF	Advanced HVAC&R Installation	3
ENGG 4002SEF	Advanced Piped and Fire Services	3
ENGG 4003SEF	Construction Information Technology	3
ENGG 4004SEF	Commissioning of Facilities	3
ENGG 4005SEF	Reinforced Concrete Design	3
ENGG 4006SEF	Geotechnical Design	3
ENGG 4007SEF	Highway and Traffic Engineering	3
ENGG 4008SEF	Hydraulics and Hydrology	3
ENGG 4021SEF	Advanced Electrical Installation	3
ENVR 3008SEF	Design and Manufacturing for Green Buildings and Facilities	3
ENVR 4011SEF	Energy Resources and Sustainable Energy Strategies	3
SCI 1000SEF	Basic Sciences for Engineers	3
SCI 4011SEF	Environmental Health and Safety	3
ST 1020SEF	Computer Applications for Test Engineers	3
TC 2000SEF	Basic Electrical Product Safety and Energy Efficiency	3
TC 3030SEF	Physical & Mechanical Behavior of Materials	3
TC 3031SEF	Principles of Physical & Mechanical Testing	3
TC 3032SEF	Materials Characterization & Testing	3
TC 3041SEF	Electrical Safety & Energy Efficiency	3
TC 3042SEF	Electromagnetic Compatibility Measurement & Measurement & Control	3
TC 4009SEF	Safety and Reliability for Science and Technology	3

Course code	Course title	Credit-units
TC 4015SEF	General Testing & Certification in Practice	3
TC 4019SEF	Quality Management for Science and Technology	3
MATHEMATICS		
COMP 2640SEF	Discrete Mathematics	3
COMP 4600SEF	Advanced Topics in Data Mining	3
MATH 1410SEF	Algebra and Calculus	3
MATH 2150SEF	Linear Algebra	3
MATH 2850SEF	Multivariable Calculus	3
SCI 3031SEF	Biostatistics	3
STAT 1510SEF	Probability and Distributions	3
STAT 2510SEF	Statistical Data Analysis	3
STAT 2520SEF	Applied Statistical Methods	3
STAT 2610SEF	Data Analytics with Applications	3
STAT 2630SEF	Big Data Analytics with Applications	3
STAT 3110SEF	Time Series Analysis & Forecasting	3
STAT 3660SEF	SAS Programming	3
TC 2020SEF	Metrology and Calibration	3
TC 3020SEF	Measurement Uncertainty & Test Method Development	3

**Table 4: University Core Courses**

Course Code	Course Title	Credit-units
UNI 1002ABW	University Core Values	2
UNI 1012ABW	Social Responsibilities	1
UNI 2002BEW	Effective Communication and Teamwork	3
UNI 3002BEW	Entrepreneurial Mindset and Leadership for Sustainability	3

**Table 5: University English Courses**

Course Code	Course Title	Credit-units
ENGL 1101AEF	University English: Reading and Writing	3
ENGL 1202EEF	University English: Listening and Speaking	3

**Table 6: Advisory prerequisite requirement of elective courses list**

Course code	Advisory prerequisite requirement
ELEC 2001SEF	SCI 1000SEF
ELEC 2003SEF	ELEC 1000SEF
ELEC 2041SEF	ELEC 2001SEF
ELEC 3004SEF	ELEC 2005SEF
ELEC 3063SEF	ELEC 2003SEF and ELEC 2041SEF
ELEC 3047SEF	ELEC 3037SEF
ELEC 3006SEF	ELEC 3004SEF
ELEC 3015SEF	ELEC 3005SEF

Course code	Advisory prerequisite requirement
ELEC 3037SEF	ELEC 2005SEF
ELEC 3038SEF	ELEC 3037SEF
ELEC 4020SEF	ELEC 2041SEF
ELEC 4021SEF	ELEC 2005SEF
ELEC 4025SEF	ELEC 1000SEF
COMP 2002SEF	IT 1003SEF
COMP 2008SEF	IT 1003SEF
COMP 2009SEF	IT 1003SEF
COMP 3012SEF	COMP 2002SEF
COMP 3013SEF	COMP 2008SEF
COMP 3020SEF	COMP 2009SEF
COMP 3021SEF	COMP 2009SEF
COMP 3051SEF	COMP 2008SEF
COMP 3062SEF	COMP 2009SEF
COMP 3063SEF	COMP 2008SEF
COMP 3080SEF	COMP 2008SEF
COMP 3081SEF	COMP 2008SEF
COMP 3090SEF	COMP 2008SEF
COMP 4013SEF	COMP 2008SEF
COMP 4092SEF	COMP 2008SEF
COMP 3082SEF	COMP 2009SEF
BIOL 3001SEF	BIOL 2035SEF
BIOL 3002SEF	BIOL 2036SEF
BIOL 3056SEF	BIOL 3001SEF
BIOL 4001SEF	BIOL 3002SEF
BIOL 4002SEF	BIOL 4001SEF
BIOL 4006SEF	BIOL 3001SEF
TC 3019SEF	STAT 1510SEF
TC 3030SEF	ENGG 1001SEF
TC 3031SEF	ENGG 1001SEF
TC 3032SEF	ENGG 1001SEF
TC 3041SEF	MATH 1410SEF
TC 3042SEF	MATH 1410SEF
MATH 2150SEF	MATH 1410SEF
STAT 2051SEF	STAT 1510SEF