

HONG KONG METROPOLITAN UNIVERSITY

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

To be eligible for the award of the **Bachelor of Science with Honours in Science (STEM)**, a student shall obtain the required number of credits specified below for the Year of entry, in courses prescribed and detailed on the programme tables.

For students admitted via Year 1 entry in or after 2021/22, via Year 2 entry in or after 2022/23 and via Year 3 entry in or after 2023/24, they must complete the four University Core Values Modules, namely Core Value I (Integrity), Core Value II (Fairness), Core Value III (Perseverance), and Core Value IV (Innovation) for graduation.

Year 1 Entry

A student admitted to the programme through Year 1 Entry is required to complete a total of 160 credits as prescribed below, of which no more than 40 credits should be taken at Foundation Level:

1. 10 credits of designated core courses in Science area in Tables 1 and 2;
2. 10 credits of designated core courses in Technology area from Table 3;
3. 10 credits of designated core courses in Mathematics area from Table 4;
4. 10 credits of designated core courses in Engineering area from Table 5;
5. 20 credits of Integrated STEM Training courses in Table 6;
6. 70 credits of electives from Tables 7, 8, 9 and 10, in which at least 10 credits should be taken from each area of Science, Technology, Engineering, and Mathematics, and with at least 30 credits taken at Higher Level in total;
7. 10 credits of English Language Enhancement courses *; and

* Note: Please refer to the updated list of English Language Enhancement courses posted on the University website (www.hkmu.edu.hk/FT_ENGLISH).

8. 20 credits of purpose-designed General Education courses #.

Note: Please refer to the updated list of purpose-designed General Education courses posted on the University website (www.hkmu.edu.hk/FT_GE).

Year 2 Entry

A student admitted to the programme through Year 2 Entry is required to complete a total of 120 credits as prescribed below, of which no more than 20 credits should be taken at Foundation Level:

1. 5 credits of designated core course in Science area in Tables 2;
2. 5 credits of designated core course in Technology area from Table 3;
3. 5 credits of designated core course in Mathematics area from Table 4;
4. 5 credits of designated core course in Engineering area from Table 5;
5. 20 credits of Integrated STEM Training courses in Table 6; and
6. 80 credits of electives from Tables 7, 8, 9 and 10, in which at least 10 credits should be taken from each area of Science, Technology, Engineering, and Mathematics, and with at least 30 credits taken at Higher Level in total.

Year 3 Entry

A student admitted to the programme through Year 3 Entry needs to complete a total of 80 credits as prescribed below:

1. 20 credits of Integrated STEM Training courses in Table 6; and
2. 60 credits of electives from Tables 7, 8, 9 and 10, in which at least 10 credits should be taken from each area of Science, Technology, Engineering, and Mathematics, and with at least 30 credits taken at Higher Level in total.

Table 1: Designated core course in Science area (Foundation Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
SCI S101F	University Science	5	Foundation	Science	-

Table 2: Designated core course in Science area (Foundation Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
SCI S110F	Laboratory Safety and Good Laboratory Practice	5	Foundation	Science	-

Table 3: Designated core courses in Technology area (Foundation and Middle Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
IT S102F	Computing Fundamentals	5	Foundation	Technology	-
IT S103F	Introduction to Internet Application Development	5	Foundation	Technology	-

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
COMP S202F	Java Programming Fundamentals	5	Middle	Technology	b
COMP S208F	Introduction to Computer Programming	5	Middle	Technology	b
ELEC S203F	Computer organization and Microprocessors	5	Middle	Technology	b

Table 4: Designated core courses in Mathematics area (Foundation and Middle Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
MATH S131F	Engineering Mathematics I	5	Foundation	Mathematics	-
MATH S141F	Algebra and Calculus	5	Foundation	Mathematics	-
MATH S215F	Linear Algebra	5	Middle	Mathematics	b
STAT S151F	Probability and Distribution	5	Foundation	Mathematics	-
STAT S251F	Statistical Data Analysis	5	Middle	Mathematics	b

Table 5: Designated core courses in Engineering area (Foundation and Middle Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
ELEC S100F	Introduction to Computer Engineering	5	Foundation	Engineering	-
ENGG S101F	Engineering Mechanics	5	Foundation	Engineering	-
TC S120F	Computer Applications For Test Engineers	5	Foundation	Engineering	-
TC S280F	Principles of Product Design and Manufacturing Process Management	5	Middle	Engineering	b

Table 6: Integrated STEM Training courses (Higher Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
SCI S300F	Research Methodology and Pedagogy on STEM	5	Higher	-	a
SCI S390F	Professional Training and Workplace Attachment	5	Higher	-	-
SCI S490F	STEM in Practice	10	Higher	-	a

Table 7: Electives in Science area (Middle and Higher Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
BIOL S103F	Essential Biology	5	Foundation	Science	-
BIOL S235F	Biochemistry and Microbiology	5	Middle	Science	b
BIOL S236F	Cellular and Molecular Biology	5	Middle	Science	b
BIOL S301F	Conservation and Biodiversity	5	Higher	Science	a or b
BIOL S302F	Animal and Plant Physiology	5	Higher	Science	a or b
BIOL S312F	Human Physiology	5	Higher	Science	a or b
BIOL S337F	Practical Skills in Ecology	5	Higher	Science	a or b
BIOL S351F	Microbiology and Toxicology	5	Higher	Science	a or b
BIOL S356F	Biochemical and DNA Technologies	5	Higher	Science	a or b
BIOL S401F	Contemporary Biology Development	5	Higher	Science	a or b
BIOL S402F	Medical Genetics and Immunology	5	Higher	Science	a or b
BIOL S406F	Tools and Techniques In Biotechnology	5	Higher	Science	a or b
CHEM S201F	Nutrition and Food Chemistry	5	Middle	Science	b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
CHEM S234F	Physical and Organic Chemistry	5	Middle	Science	b
CHEM S350F	Analytical Chemistry	5	Higher	Science	a or b
ENVR S236F	Environmental Pollution and Control	5	Middle	Science	b
ENVR S307F	Environmental Pollution and Global Climate Changes	5	Higher	Science	a or b
ENVR S328F	Advances in Environmental Impact Assessment	5	Higher	Science	a or b
ENVR S374F	Green Environmental Monitoring in Practice	5	Higher	Science	a or b
SCI S291F	Laboratory Techniques in Practice	5	Middle	Science	-
SCI S330F	Scientific Research Methods	5	Higher	Science	a or b
SCI S352F	Chemical & Microbiological Analytical Techniques	5	Higher	Science	a or b
SCI S364F	Emerging Technologies in Food Analysis	5	Higher	Science	a or b
SCI S404F	Advanced Topics in Food and Health Sciences	5	Higher	Science	a or b
TC S311F	Conformity Assessment and Laboratory Accreditation	5	Higher	Science	a or b
TC S351F	Microbiology and Toxicology	5	Higher	Science	a or b
TC S365F	Food Analysis	5	Higher	Science	a or b
TC S380F	Principles of Good Manufacturing Practice	5	Higher	Science	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
TC S420F	Professional Practice and Ethics	5	Higher	Science	a or b
TC S426F	Audit, Inspection and Certification	5	Higher	Science	a or b
TC S462F	Food Safety Management System: Audit and Certification	5	Higher	Science	a or b
TC S463F	Selected Topics in Food Safety	5	Higher	Science	a or b

Table 8: Electives in Technology area (Middle and Higher Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
COMP S202F	Java Programming Fundamentals	5	Middle	Technology	b
COMP S203F	Intermediate Java Programming and User Interface Design	5	Middle	Technology	b
COMP S208F	Introduction to Computer Programming	5	Middle	Technology	b
COMP S209F	Data Structures, Algorithms and Problem Solving	5	Middle	Technology	b
COMP S266F	Computer Architecture	5	Middle	Technology	b
COMP S312F	Java Application Development	5	Higher	Technology	a or b
COMP S313F	Mobile Application Programming	5	Higher	Technology	a or b
COMP S320F	Database Management	5	Higher	Technology	a or b
COMP S321F	Advanced Database and Data Warehousing	5	Higher	Technology	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
COMP S333F	Advanced Programming and AI Algorithms	5	Higher	Technology	a or b
COMP S350F	Software Engineering	5	Higher	Technology	a or b
COMP S351F	Software Project Management	5	Higher	Technology	a or b
COMP S362F	Concurrent and Network Programming	5	Higher	Technology	a or b
COMP S363F	Distributed Systems and Parallel Computing	5	Higher	Technology	a or b
COMP S380F	Web Applications: Design and Development	5	Higher	Technology	a or b
COMP S381F	Server-side Technologies and Cloud Computing	5	Higher	Technology	a or b
COMP S382F	Data Mining and Analytics	5	Higher	Technology	a or b
COMP S390F	Creative Programming for Games	5	Higher	Technology	a or b
COMP S413F	Application Design and Development for Mobile Devices	5	Higher	Technology	a or b
COMP S460F	Advanced Topics in Data Mining	5	Higher	Technology	a or b
COMP S492F	Machine Learning	5	Higher	Technology	a or b
ELEC S205F	Signals and Systems	5	Middle	Technology	b
ELEC S304F	Communication Systems	5	Higher	Technology	a or b
ELEC S305F	Computer Networking	5	Higher	Technology	a or b
ELEC S306F	Wireless Networks	5	Higher	Technology	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
ELEC S315F	Routing and Switching Technologies	5	Higher	Technology	a or b
ELEC S337F	Digital Signal Processing	5	Higher	Technology	a or b
ELEC S347F	Multimedia Technologies	5	Higher	Technology	a or b
ELEC S348F	IOT Security	5	Higher	Technology	a or b
ELEC S363F	Advanced Computer Design	5	Higher	Technology	a or b
ELEC S365F	Ethical Hacking Techniques	5	Higher	Technology	a or b
ENGG S205F	Electrical Technology	5	Middle	Technology	b
ENGG S401F	Lighting Technology	5	Higher	Technology	a or b
IT S103F	Introduction to Internet Application Development	5	Foundation	Technology	-
IT S290F	Human Computer Interaction & User Experience Design	5	Middle	Technology	b

Table 9: Electives in Engineering area (Middle and Higher Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
ELEC S100F	Introduction to Computer Engineering	5	Foundation	Engineering	-
ELEC S201F	Basic Electronics	5	Middle	Engineering	b
ELEC S241F	Electronic Circuit Design	5	Middle	Engineering	b
ELEC S420F	Biomedical Instrumentation and Sensors	5	Higher	Engineering	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
ELEC S421F	Biomedical Informatics	5	Higher	Engineering	a or b
ENGG S201F	Foundation Engineering	5	Middle	Engineering	b
ENGG S202F	Fluid Mechanics	5	Middle	Engineering	b
ENGG S203F	Thermodynamics	5	Middle	Engineering	b
ENGG S204F	Piped and Fire Services	5	Middle	Engineering	b
ENGG S205F	Electrical Technology	5	Middle	Engineering	b
ENGG S206F	HVAC	5	Middle	Engineering	b
ENGG S207F	Water and Wastewater Treatment Techniques for Civil Engineering	5	Middle	Engineering	b
ENGG S208F	Structural Analysis	5	Middle	Engineering	b
ENGG S209F	Engineering Geology and Soil Mechanics	5	Middle	Engineering	b
ENGG S260F	Introduction to Material Science	5	Middle	Engineering	b
ENGG S301F	Project Management for Engineering	5	Higher	Engineering	a or b
ENGG S400F	Advanced HVAC&R and Electrical Installation	5	Higher	Engineering	a or b
ENGG S401F	Lighting Technology	5	Higher	Engineering	a or b
ENGG S402F	Advanced Piped and Fire Services	5	Higher	Engineering	a or b
ENGG S403F	Construction Information Technology	5	Higher	Engineering	a or b
ENGG S404F	Commissioning of Facilities	5	Higher	Engineering	a or b
ENGG S405F	Reinforced Concrete and Structural Steel Design	5	Higher	Engineering	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
ENGG S406F	Geotechnical Design	5	Higher	Engineering	a or b
ENGG S407F	Highway and Traffic Engineering	5	Higher	Engineering	a or b
ENGG S408F	Hydraulics and Hydrology	5	Higher	Engineering	a or b
ENVR S308F	Design and Management for Green Buildings and Facilities	5	Higher	Engineering	a or b
ENVR S311F	Energy Resources and Sustainable Energy Strategies	5	Higher	Engineering	a or b
SCI S100F	Basic Sciences for Engineers	5	Foundation	Engineering	-
TC S319F	Quality Management for Science and Technology	5	Higher	Engineering	a or b
TC S330F	Physical and Mechanical Behaviour of Materials	5	Higher	Engineering	a or b
TC S331F	Principles of Physical and Mechanical Materials Testing	5	Higher	Engineering	a or b
TC S332F	Materials Characterization and Testing	5	Higher	Engineering	a or b
TC S341F	Electrical Safety and Energy Efficiency	5	Higher	Engineering	a or b
TC S342F	EMC Measurement and Control	5	Higher	Engineering	a or b
TC S409F	Safety and Reliability for Science and Technology	5	Higher	Engineering	a or b

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
TC S415F	Standards and Practices for Testing & Certification	5	Higher	Engineering	a or b

Table 10: Electives in Mathematics area (Middle and Higher Level)

Course Code	Course Title	Credits	Course Level	Area	Course Group for Honours Classification
COMP S264F	Discrete Mathematics	5	Middle	Mathematics	b
MATH S131F	Engineering Mathematics I	5	Foundation	Mathematics	-
MATH S232F	Engineering Mathematics II	5	Middle	Mathematics	b
MATH S233F	Engineering Mathematics III	5	Middle	Mathematics	b
MATH S262F	Linear Algebra	5	Middle	Mathematics	b
STAT S261F	Data Analytics with Applications	5	Middle	Mathematics	b
STAT S263F	Big Data Analytics and Applications	5	Middle	Mathematics	b
STAT S313F	High Dimensional Data Analysis	5	Higher	Mathematics	a or b
STAT S366F	SAS Programming	5	Higher	Mathematics	a or b
STAT S460F	Advanced Topics in Data Mining	5	Higher	Mathematics	a or b
TC S220F	Metrology and Calibration	5	Middle	Mathematics	b
TC S320F	Measurement Uncertainty, Method Validation And Automation	5	Higher	Mathematics	a or b

Note:

1. If students wish to retake counterpart course(s) in e-learning mode, they should seek Programme Leader's approval, with due consideration of factors such as clash of timetabling and availability of distance learning counterparts, etc.

Honours Classification

For the purpose of honours classification of the **Bachelor of Science with Honours in Science (STEM)** programme, relevant courses are categorized as Group (a) and Group (b) as shown in Tables 3 to 10 above.

- (1) Group (a) courses shall consist of SCI S490F (10 credits) and the best 30 credits from the other Higher level courses listed in Tables 6, 7, 8, 9 and 10.
- (2) Group (b) courses:
 - (a) For Year 1 and Year 2 Entry, Group (b) courses consist of the best 40 credits from the courses at Middle or Higher level listed in Tables 3, 4, 5, 6, 7, 8, 9 and 10, where such credits are not taken into account in Group (a) courses;
 - (b) For Year 3 Entry, group (b) courses shall consist of the best 35 credits from the courses at Middle or Higher level listed in Tables 6, 7, 8, 9 and 10, where such credits are not taken into account in Group (a) courses.
- (3) Group (a) is weighted the same as Group (b).

Last update: March 2023