Curriculum for BSc in Mathematics (Mathematics and IT Education)

Two sequences of courses are offered for this program: Sequence A (the COMP 102 and COMP 103 series) for students who may not have much computer background, and Sequence B (the COMP 104 series) for ambitious and capable students who have good programming experience to pursue. Students who desire to go for Sequence B must obtain approval from the MATH Undergraduate Coordinator.

Major Program Requirements

Core courses

	MATH 102	Multivariable Vector Calculus	[2-1-0:4]
	MATH 111	Linear Algebra	[3-1-0:4]
	MATH 202	Introduction to Real Analysis	[2-1-0:4]

Required courses

(1)	MATH 099	Information Technology Practical Training	[0 credit]
	MATH 144	Applied Statistics	[3-1-0:4]
	MATH 151	Differential Equations and Applications	[3-1-0:4]
(2)	MATH 231	Numerical Analysis	[3-1-0:4]
	MATH 241	Probability	[3-1-0:4]
	MATH 301	Real Analysis	[3-1-0:4]
	SCED 213	Foundations and Processes of Learning	[3-0-0:3]
	SCED 214	Managing Diversity in the Classroom	[3-0-0:3]
	SCED 311	Philosophical and Sociological Perspectives in Education	[3-0-0:3]
	SCED 314	Curriculum and Assessment	[3-0-0:3]
	SCED 315	The Professional Teacher in Classroom, School and Community	[3-0-0:3]
	SCED 357	Learning Theories and Curriculum in Mathematics	[3-0-0:3]
	SCED 358	Learning and Teaching of Selected Topics in Mathematics	[3-0-0:3]
	SCED 359	Problem-Solving and Assessment in Mathematics	[3-0-0:3]
	SCED 360	Curriculum and Teaching Methods of Information Technology	[3-0-0:3]
	SCED 361	Learning and Teaching of Selected Topics in Information Technology	[3-0-0:3]
	SCED 362	Supporting Information Technology in Schools	[3-0-0:3]
	SCED 363	Field Experience for Teaching Mathematics and IT (I)	[2 credits]
	SCED 364	Field Experience for Teaching Mathematics and IT (II)	[6 credits]
	COMP 151	Object-Oriented Programming	[3-0-2:3]
	COMP 171	Data Structures and Algorithms	[3-2-0:3]
	COMP 180	Computer Organizations	[3-0-1:3]

For Sequence A:

	COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]
	COMP 103	Computer and Programming Fundamentals II	[2-0-1:2]

For Sequence B:

	COMP 104	Programming Fundamentals and Methodology	[3-1-2:4]

Elective courses

	Elective types		Minimum no. of courses	Minimum total credits
(3)	MATH	Mathematics Elective	4	14
(4)	COMP	Computer Science Electives	2	6
(5)	FREE	Free Electives	2	6

Note: Unless otherwise approved by the Department, zero-level mathematics courses cannot be used to fulfill any MATH or FREE elective requirements.

General Education Requirements

Electives must be selected from amongst those general education courses that are listed under the section “Designated General Education Courses”.

	Elective types		Minimum no. of courses	Minimum total credits
	GEE(ENGG)	Engineering General Education Elective	1	
(5)	GEE(SB&M)	Business and Management General Education Elective	1	6
(6)	GEE(H&SS)	Humanities and Social Science General Education Elective	4	12

Required Courses in English Communication

LANG 108	English for Science Students	[0-2-0:2]
LANG 208	English Communication for Science Students I	[0-2-0:1]
LANG 209	English Communication for Science Students II	[0-2-0:1]
LANG 308	Technical Communication for Science Students III	[0-2-0:1]

Other Requirement

(7) HLTH 001 Healthy Life Style [0 credit]

Notes:
(1) This course will be offered once every two years. Students will take this course either during 1st year Winter or 2nd year Winter, depending on the year when the course will be offered.
(2) Students may take MATH 231 in the first semester of their second or fourth year study.
(3) MATH electives must be chosen from the following courses: MATH 132, MATH 190, MATH 243, MATH 246 and MATH courses at 300-level or above. Students in the COMP 102 and COMP 103 series are recommended to take MATH 132 in the first semester of their first year of study and those in the COMP 104 series in the fall semester of their fourth year study.
(4) COMP 271 and COMP 303 can be replaced by COMP 111 or any COMP courses of 200-level or above.
(5) ISMT 111 cannot be used to satisfy any FREE elective requirement as well as the the GEE(SB&M) requirement.
(6) Of these courses, at least one course in Humanities and one in Social Science are required.
(7) Students are required to take and pass this course in their first year of study. Details of the course and its requirements are announced on the course website *http://www.ab.ust.hk/sao/HLTH001* managed by the Student Affairs Office.

A minimum of 139 credits is required for the BSc program in Mathematics (Mathematics and IT Education). Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 139 credits.

Recommended Pattern of Study for BSc in Mathematics (Mathematics and IT Education) - Sequence A

1st year	Fall	C	MATH 102, MATH 111, MATH 202	
		R	COMP 102, LANG 108	
		E	MATH 132, GEE(ENGG)	
		O	HLTH 001	(Total: 14 credits)
	Winter	R	MATH 099	(Total: 0 credit)
	Spring	C	MATH 102, MATH 202	
		R	MATH 151, COMP 103, COMP 180, LANG 108	
		E	GEE(H&SS)	
		O	HLTH 001	(Total: 22* credits)
2nd year	Fall	R	MATH 231, MATH 301, SCED 213, SCED 214, LANG 208	
		E	FREE	(Total: 18 credits)
	Winter	R	MATH 099	(Total: 0 credit)
	Spring	R	MATH 144, COMP 151, COMP 171, LANG 209	
		E	GEE(H&SS), FREE	(Total: 17 credits)
3rd year	Fall	R	SCED 311, SCED 357, SCED 358, SCED 360, SCED 361, SCED 363	(Total: 17 credits)
	Spring	R	MATH 241	
		E	MATH, COMP 271, GEE(H&SS), FREE	(Total: 17 credits)
4th year	Fall	R	LANG 308	
		E	two MATH, COMP 303, GEE(SB&M), GEE(H&SS)	(Total: 16 credits)
	Winter	R	SCED 314, SCED 315, SCED 359, SCED 362	(Total: 12# credits)
	Spring	R	SCED 314, SCED 315, SCED 359, SCED 362, SCED 364	(Total: 18# credits)

* *LANG 108, MATH 102 and MATH 202 are two-semester courses. The course credits will be earned on completion of the courses at the end of 1st year Spring.*

\# *Work in SCED 314, SCED 315, SCED 359 and SCED 362 commence in 4th year Winter. The course credits will be earned on completion of the course at the end of 4th year Spring.*

C = core course; R = required course; E = elective course

Recommended Pattern of Study for BSc in Mathematics (Mathematics and IT Education) - Sequence B

1st year	Fall	C	MATH 102, MATH 111, MATH 202	
		R	COMP 104, LANG 108	
		E	GEE(ENGG)	
		O	HLTH 001	(Total: 11 credits)
	Winter	R	MATH 099	(Total: 0 credit)
	Spring	C	MATH 102, MATH 202	
		R	COMP 151, COMP 171, COMP 180, LANG 108	
		E	GEE(H&SS)	
		O	HLTH 001	(Total: 22* credits)
2nd year	Fall	R	MATH 231, MATH 301, SCED 213, SCED 214, LANG 208	
		E	GEE(H&SS)	(Total: 18 credits)
	Winter	R	MATH 099	(Total: 0 credit)
	Spring	R	MATH 144, MATH 151, LANG 209	
		E	MATH, COMP 271, FREE	(Total: 19 credits)
3rd year	Fall	R	SCED 311, SCED 357, SCED 358, SCED 360, SCED 361, SCED 363	(Total: 17 credits)
	Spring	R	MATH 241	
		E	MATH, GEE(SB&M), GEE(H&SS), FREE	(Total: 18 credits)
4th year	Fall	R	LANG 308	
		E	MATH 132, MATH, COMP 303, GEE(H&SS), FREE	(Total: 16 credits)
	Winter	R	SCED 314, SCED 315, SCED 359, SCED 362	(Total: 12# credits)
	Spring	R	SCED 314, SCED 315, SCED 359, SCED 362, SCED 364	(Total: 18# credits)

* *LANG 108, MATH 102 and MATH 202 are two-semester courses. The course credits will be earned on completion of the courses at the end of 1st year Spring.*

\# *Work in SCED 314, SCED 315, SCED 359 and SCED 362 commence in 4th year Winter. The course credits will be earned on completion of the course at the end of 4th year Spring.*

C = core course; R = required course; E = elective course