

## Curriculum for BSc in Mathematics - Pure Mathematics Option

### Major Program Requirements

#### Core courses

MATH 102	Multivariable and 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

MATH 151	Differential Equations and Applications	[3-1-0:4]
(1) MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
(1) MATH 311	Algebra I	[3-1-0:4]
(1),(2) MATH 315	Number Theory and Applications	[3-1-0:4]
(1) MATH 320	Euclidean and Non-Euclidean Geometries	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]
(3) PHYS 111	Physics I	[3-1-2:4]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(4) MATH	Mathematics Elective	5	15
(5) FREE	Free Elective	5	15

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 for Undergraduate Students".

Elective types		Minimum no. of courses	Minimum total credits
GEE(ENGG)	Engineering General Education Elective	1	6
(5) GEE(SB&M)	Business and Management General Education Elective	1	
(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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

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

Notes:

- (1) These courses do not have to be taken in the indicated order. However, students are required to take at least two out of the five in the second year.
- (2) This course can be replaced by MATH 312 provided that enrolment quota is available.
- (3) This course can be replaced by PHYS 121 provided that enrolment quota is available.
- (4) MATH electives are recommended to be chosen from MATH 110, MATH 241, MATH 303, MATH 306, MATH 310, MATH 316, MATH 321. At least three MATH electives must be at 300-level or above.
- (5) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as 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 101 credits is required for the BSc program in Mathematics (Pure Mathematics Option). Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Pure Mathematics Option**

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1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E MATH 110, GEE(H&SS)	(Total: 12 credits)
	Spring	C MATH 102, MATH 202 R MATH 151, HLTH 001, LANG 108 E GEE(SB&M), FREE	(Total: 20* credits)
2nd year	Fall	R MATH 301, MATH 311, MATH 315, LANG 208, PHYS 111	(Total: 17 credits)
	Spring	R MATH 304, LANG 209 E MATH 241, MATH 303, GEE(H&SS)	(Total: 16 credits)
3rd year	Fall	R LANG 308 E MATH 306, MATH, GEE(ENGG), GEE(H&SS), FREE	(Total: 18 credits)
	Spring	R MATH 320 E GEE(H&SS), three FREE	(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.

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

## Curriculum for BSc in Mathematics - Pure Mathematics Option - Advanced Stream

### Major Program Requirements

#### Core courses

MATH 203	Analysis I	[3-1-0:4]
MATH 204	Analysis II	[3-1-0:4]
MATH 217	Linear and Abstract Algebra I	[3-1-0:4]
MATH 218	Linear and Abstract Algebra II	[3-1-0:4]
MATH 305	Calculus on Manifolds	[3-1-0:4]

#### Required courses

MATH 151	Differential Equations and Applications	[3-1-0:4]
(1) MATH 303	Theory of Ordinary Differential Equations	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
(1) MATH 315	Number Theory and Applications	[3-1-0:4]
(1) MATH 321	Differential Geometry	[3-1-0:4]
(1) MATH 323	Topology	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]
(2) PHYS 111	Physics I	[3-1-2:4]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(3) MATH	Mathematics Elective	3	9
(4) FREE	Free Elective	4	12

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 for Undergraduate Students".

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

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

(6) HLTH 001	Healthy Life Style	[0 credit]
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Notes:

- (1) These courses do not have to be taken in the indicated order. However, students are required to take at least two out of the five in the second year.
- (2) This course can be replaced by PHYS 121 provided that enrolment quota is available.
- (3) At least two of MATH electives must be 300-level or above.
- (4) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (5) Of these courses, at least one course in Humanities and one in Social Science are required.
- (6) 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 101 credits is required for the BSc program in Mathematics (Pure Mathematics Option - Advanced Stream). Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Pure Mathematics Option - Advanced Stream**

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1st year	Fall	C MATH 203, MATH 217 R COMP 102, HLTH 001, LANG 108 E GEE(H&SS), FREE	(Total: 17 credits)
	Spring	C MATH 204, MATH 218 R MATH 151, HLTH 001, LANG 108 E FREE	(Total: 18* credits)
2nd year	Fall	C MATH 305 R MATH 315, LANG 208, PHYS 111 E GEE(SB&M)	(Total: 16 credits)
	Spring	R MATH 303, MATH 304, MATH 323, LANG 209 E GEE(H&SS)	(Total: 16 credits)
3rd year	Fall	R MATH 321, LANG 308 E MATH, GEE(H&SS), FREE	(Total: 16 credits)
	Spring	E two MATH, GEE(ENGG), GEE(H&SS), FREE	(Total: 18 credits)

\* LANG 108 is a two-semester course. The course credits will be earned on completion of the course at the end of 1st year Spring.

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

## Curriculum for BSc in Mathematics - Mathematics and Physics Option

### Major Program Requirements

#### Core courses

MATH 101	Multivariable Calculus	[3-1-0:4]
MATH 111	Linear Algebra	[3-1-0:4]
PHYS 121	Fundamentals of Physics	[3-1-2:4]
PHYS 126	Introduction to Modern Physics	[3-1-0:3]
PHYS 221	Intermediate Classical Mechanics	[3-1-0:4]
PHYS 223	Intermediate Electricity and Magnetism I	[3-1-0:4]
PHYS 234	Elementary Quantum Mechanics I	[3-1-0:4]

#### Required courses

MATH 151	Differential Equations and Applications	[3-1-0:4]
MATH 201	Introduction to Analysis	[3-1-0:4]
(1) MATH 301	Real Analysis	[3-1-0:4]
(2) MATH 304	Complex Analysis	[3-1-0:4]
MATH 306	Partial Differential Equations	[3-1-0:4]
PHYS 127	Introduction to Modern Physics Laboratory	[0-0-3:1]
PHYS 321	Thermodynamics and Statistical Physics	[4-0-0:4]
(3) PHYS 331	Elementary Quantum Mechanics II	[4-0-0:4]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(4) MATH	Mathematics Elective	3	12
(5) FREE	Free Elective	4	13 or 14

### General Education Requirements

Electives must be selected from amongst those general education courses that are listed under the section "Designated General Education Courses for Undergraduate Students".

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

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

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

Notes:

- (1) MATH 301 can be replaced by MATH 311 or MATH 321 provided that enrolment quota of these courses is available.
- (2) MATH 304 can be replaced by MATH 321 provided that enrolment quota is available.
- (3) PHYS 331 can be replaced by PHYS 224 provided that enrolment quota is available.
- (4) For Mathematics elective courses, one must be of 200-level or above and the rest must be of 300-level or above.
- (5) Students are not permitted to take more than 8 credits of 000-level courses as free elective. Free electives must be at 200-level or higher if physics courses are chosen with the exception of PHYS 140 and PHYS 180, and at 100-level or higher if mathematics courses are chosen. For those who opt for PHYS 331, the minimum total credits for free electives will be 13 and for those who opt for PHYS 224, the minimum total credits for free electives will be 14.
- (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 103 credits is required for the BSc program in Mathematics – Mathematics and Physics Option.

**Recommended Pattern of Study for BSc in Mathematics - Mathematics and Physics Option**

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1st year	Fall	C MATH 101, MATH 111, PHYS 121 R HLTH 001, LANG 108 E GEE(ENGG)	(Total: 15 credits)
	Spring	C PHYS 126 R PHYS 127, HLTH 001, LANG 108, MATH 151, MATH 201 E GEE(H&SS)	(Total: 17* credits)
2nd year	Fall	C PHYS 221, PHYS 223 R MATH 301, MATH 306, LANG 208	(Total: 17 credits)
	Spring	C PHYS 234 R PHYS 321, LANG 209, MATH 304 E GEE(H&SS), FREE	(Total 19 credits)
3rd year	Fall	R LANG 308, PHYS 331 E MATH, FREE, GEE(SB&M), GEE(H&SS)	(Total 18 credits)
	Spring	E GEE(H&SS), two MATH, two FREE	(Total: 17 credits)

\* LANG 108 is a two-semester course. The course credits will be earned on completion of the course at the end of 1st year Spring.

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

## Curriculum for BSc in Mathematics - Mathematical Sciences Option in Business and Management

### 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

MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
ACCT 101	Introduction to Accounting	[4-0-0:4]
ACCT 220	Management Accounting I	[4-0-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]
(2) ECON 111	Microeconomics	[3-1-0:4]
ECON 112	Macroeconomics	[3-1-0:4]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(3) MATH	Mathematics Elective	5	15
(4) FREE	Free Elective	2	6
(5) SB&M	Business and Management Elective	5	15

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 for Undergraduate Students".

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

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

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

Notes:

- (1) The course can be replaced by MATH 303, MATH 311 or MATH 321 provided that enrolment quota of these courses is available.
- (2) Students entering with AL Economics take ECON 111; however, those with grade B or above in HKAL Economics will take ECON 191. All other students without AL Economics background, including those entering with AL Business and Economics, take ECON 110.
- (3) MATH electives must include MATH 144, MATH 151 and two others of 300-level or above.
- (4) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (5) Students should seek departmental advice as to the choice of SB&M electives. Detailed sample programs will be provided by the departmental academic advisors.
- (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 101 credits is required for the BSc program in Mathematics - Mathematical Sciences Option in Business and Management. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Mathematical Sciences Option in Business and Management**

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1st year	Fall	C MATH 102, MATH 111, MATH 202 R ACCT 101, COMP 102, HLTH 001, LANG 108	(Total: 11 credits)
	Spring	C MATH 102, MATH 202 R ECON 111, HLTH 001, LANG 108 E MATH 144, MATH 151	(Total: 22* credits)
2nd year	Fall	R MATH 301, ACCT 220, ECON 112, LANG 208 E SB&M, GEE(H&SS)	(Total: 19 credits)
	Spring	R MATH 304, LANG 209 E two SB&M, GEE(ENGG), GEE(H&SS)	(Total: 17 credits)
3rd year	Fall	R LANG 308 E two MATH, SB&M, GEE(H&SS), GEE(SB&M)	(Total: 17 credits)
	Spring	E MATH, SB&M, GEE(H&SS), two FREE	(Total: 15 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.

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



## Curriculum for BSc in Mathematics - Mathematical Sciences Option in Computer Science

### 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

MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]
COMP 103	Computer and Programming Fundamentals II	[2-0-1:2]
COMP 151	Object-Oriented Programming	[3-0-2:3]
COMP 171	Data Structures and Algorithms	[3-2-0:3]
COMP 180	Computer Organization	[3-0-1:3]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(2) MATH	Mathematics Elective	5	15
(3) COMP	Computer Science Elective	4	12
(4) FREE	Free Elective	4	12

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 for Undergraduate Students".

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

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

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

Notes:

- (1) The course can be replaced by MATH 303 or MATH 321 provided that enrolment quota of these courses is available.
- (2) MATH electives must include MATH 132, MATH 231, MATH 311 and one other of 300-level or above.
- (3) Students must select one of the following groups of study:  
*Group 1:* COMP 221, COMP 271, COMP, COMP of 300-level or above  
*Group 2:* COMP 231, COMP 271, COMP, COMP of 300-level or above  
*Group 3:* COMP 251, COMP 252, COMP 271, COMP of 300-level or above  
 Subject to departmental approval, these courses may be replaced by other COMP electives.
- (4) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (5) Of these courses, at least one course in Humanities and one in Social Science are required.
- (6) 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 101 credits is required for the BSc program in Mathematics - Mathematical Sciences Option in Computer Science. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Mathematical Sciences Option in Computer Science**

1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E MATH 132	(Total: 11 credits)
	Spring	C MATH 102, MATH 202 R COMP 103, COMP 180, HLTH 001, LANG 108 E GEE(H&SS), FREE	(Total: 21* credits)
2nd year	Fall	R MATH 301, COMP 151, COMP 171, LANG 208 E MATH 231, GEE(H&SS)	(Total: 18 credits)
	Spring	R MATH 304, LANG 209 E MATH, COMP 221/231/271, GEE(SB&M), GEE(H&SS)	(Total: 18 credits)
3rd year	Fall	R LANG 308 E MATH 311, COMP 251/271, COMP 252/COMP, GEE(ENGG), FREE	(Total: 17 credits)
	Spring	E MATH, COMP, GEE(H&SS), two FREE	(Total: 16 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.

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

**Curriculum for BSc in Mathematics - Mathematical Sciences  
Option in Physical and Engineering Science**

**Major Program Requirements**

Core courses

MATH 102	Multivariable and 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

MATH 151	Differential Equations and Applications	[3-1-0:4]
MATH 231	Numerical Analysis	[3-1-0:4]
MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]

Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(2) MATH	Mathematics Elective	3	9
(3) FREE	Free Elective	4	12
(4) SCI/ENGG	Science/Engineering Elective	7	22

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 for Undergraduate Students”.

Elective types		Minimum no. of courses	Minimum total credits
(3) GEE(ENGG)	Engineering General Education Elective	1	6
(3) GEE(SB&M)	Business and Management General Education Elective	1	
(5) 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

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

Notes:

- (1) This course can be replaced by MATH 303, MATH 311 or MATH 321 provided that enrolment quota of these courses is available.
- (2) MATH electives must include MATH 144, MATH 306 and MATH 308. MATH 306 and MATH 308 can be replaced only by 300-level or higher mathematics courses.
- (3) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (4) SCI/ENGG electives must include PHYS 002, PHYS 111/121, PHYS 112/126 and MECH 131/221. The course identified as Science or Engineering elective (SCI/ENGG) will be selected in consultation with the student’s academic advisor.
- (5) Of these courses, at least one course in Humanities and one in Social Science are required.
- (6) 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 101 credits is required for the BSc program in Mathematics - Mathematical Sciences Option in Physical and Engineering Science. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Mathematical Sciences Option in Physical and Engineering Science**

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1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E PHYS 002, PHYS 111	(Total: 14 credits)
	Spring	C MATH 102, MATH 202 R MATH 151, HLTH 001, LANG 108 E PHYS 112, SCI/ENGG, GEE(H&SS)	(Total: 23* credits)
2nd year	Fall	R MATH 231, MATH 301, LANG 208 E MATH 306, GEE(ENGG)	(Total: 16 credits)
	Spring	R MATH 304, LANG 209 E MATH 144, MECH 131/221 GEE(H&SS)	(Total: 15 credits)
3rd year	Fall	R LANG 308 E MATH 308, FREE, SCI/ENGG, GEE(SB&M), GEE(H&SS)	(Total: 17 credits)
	Spring	E SCI/ENGG, GEE(H&SS), three FREE	(Total: 16 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.

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

## Curriculum for BSc in Mathematics - Applied Mathematics Option

### 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

MATH 144	Applied Statistics	[3-1-0:4]
MATH 151	Differential Equations and Applications	[3-1-0:4]
MATH 231	Numerical Analysis	[3-1-0:4]
MATH 301	Real Analysis	[3-1-0:4]
MATH 304	Complex Analysis	[3-1-0:4]
MATH 306	Partial Differential Equations	[3-1-0:4]
(1) MATH 308	Introduction to Fluid Dynamics	[3-1-0:4]
(2) COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(3) MATH	Mathematics Elective	2	6
(4) FREE	Free Elective	5	15
(3) PHYS	Physics Elective	1	3

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

### General Education Requirements

Electives must be selected from amongst those general education courses that are listed under the section "Designated General Education Courses for Undergraduate Students".

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

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

(6) HLTH 001	Healthy Life Style	[0 credit]
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Notes:

- (1) The course can be replaced by MATH 331, MATH 361, MATH 365 or MATH 399 provided that enrolment quota of these courses is available.
- (2) This course can be replaced by COMP 104 provided that enrolment quota is available.
- (3) PHYS 111 is recommended; however, it may be replaced by another PHYS course of 100-level or above except PHYS 180, PHYS 280 and PHYS 380. Other recommended electives are determined by the specific concentration a student elects to follow. There are four concentrations: scientific computation, financial mathematics, atmospheric & astrophysical sciences, and mathematical biology.
- (4) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (5) Of these courses, at least one course in Humanities and one in Social Science are required.
- (6) 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 101 credits is required for the BSc program in Mathematics - Applied Mathematics Option. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Applied Mathematics Option**

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1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E PHYS 111, GEE(SB&M)	(Total: 14 credits)
	Spring	C MATH 102, MATH 202 R MATH 144, MATH 151, HLTH 001, LANG 108 E GEE(ENGG)	(Total: 21* credits)
2nd year	Fall	R MATH 231, MATH 301, MATH 306, LANG 208 E GEE(H&SS)	(Total: 16 credits)
	Spring	R MATH 304, LANG 209 E GEE(H&SS), three FREE	(Total: 17 credits)
3rd year	Fall	R MATH 308, LANG 308 E MATH, GEE(H&SS), two FREE	(Total: 17 credits)
	Spring	E MATH, GEE(H&SS), three FREE	(Total: 16 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.

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

## Curriculum for BSc in Mathematics - Statistics Option

### 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

MATH 241	Probability	[3-1-0:4]
MATH 243	Statistical Inference	[3-1-0:4]
MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 311	Algebra I	[3-1-0:4]
MATH 341	Stochastic Modeling	[3-1-0:4]
MATH 342	Regression Analysis	[3-1-0:4]
MATH 343	Data Analysis	[3-1-0:4]
MATH 347	Multivariate Analysis	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(2) MATH	Mathematics Elective	4	12
(3) FREE	Free Elective	2	6
(5) SB&M	Business and Management Elective	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 for Undergraduate Students". Credits earned from a general education course that is listed under the Pilot Program for Developmental and Learning Skills can be counted towards any one type of the general education electives specified below.

Elective types		Minimum no. of courses	Minimum total credits
GEE(ENGG)	Engineering General Education Elective	1	6
(3,4) GEE(SB&M)	Business and Management General Education Elective	1	
(5) GEE(H&SS)	Humanities and Social Science General Education Elective	4	

### 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	English Communication for Science Students III	[0-2-0:1]

**Other Requirement**

(6) HLTH 001	Healthy Life Style	[0 credit]
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Notes:

- (1) The course can be replaced by MATH 303, MATH 304 or MATH 321 provided that enrolment quota of these courses is available.
- (2) MATH 144, MATH 345, MATH 346 and MATH 348 can be replaced by MATH 306, MATH 310, MATH 361, MATH 362, MATH 393, ISOM 352, ISOM 355, ISOM 359, ISOM 386 provided that enrolment quota of these courses is available.
- (3) Free electives must include MATH 151. ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (4) ECON 110/111/191 and ECON 112 are recommended electives. Students entering with AL Economics take ECON 111; however, those with grade B or above in HKAL Economics will take ECON 191. All other students without AL Economics background, including those entering with AL Business and Economics, take ECON 110. These recommended ECON electives may be replaced by SB&M courses that are listed as designated general education courses in the year the student was first admitted. However, the credits earned from these SB&M courses cannot be used to also count toward the GEE(SB&M) requirement.
- (5) Of these courses, at least one course in Humanities and one in Social Science are required.
- (6) 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.usst.hk/sao/HLTH001> managed by the Student Affairs Office.

A minimum of 101 credits is required for the BSc program in Mathematics - Statistics Option. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - Statistics Option**

1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E MATH 144	(Total: 11 credits)
	Spring	C MATH 102, MATH 202 R MATH 241, HLTH 001, LANG 108 E ECON 110, GEE(H&SS)	(Total: 21* credits)
2nd year	Fall	R MATH 243, MATH 301, LANG 208 E MATH 345, ECON 112, GEE(H&SS)	(Total: 20 credits)
	Spring	R MATH 341, MATH 342, LANG 209 E MATH 151, MATH 346, GEE(ENGG)	(Total: 20 credits)
3rd year	Fall	R MATH 311, MATH 343, MATH 347, LANG 308 E GEE(H&SS)	(Total: 16 credits)
	Spring	E MATH 348, GEE(H&SS), GEE(SB&M), FREE	(Total: 13 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.

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



## Curriculum for BSc in Mathematics - General Mathematics Option

### 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

MATH 301	Real Analysis	[3-1-0:4]
(1) MATH 304	Complex Analysis	[3-1-0:4]
COMP 102	Computer and Programming Fundamentals I	[3-0-2:3]

#### Elective courses

Elective types		Minimum no. of courses	Minimum total credits
(2) MATH	Mathematics Elective	5	15
(3) FREE	Free Elective	11	33

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 for Undergraduate Students".

Elective types		Minimum no. of courses	Minimum total credits
GEE(ENGG)	Engineering General Education Elective	1	6
(3) GEE(SB&M)	Business and Management General Education Elective	1	
(4) 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	English Communication for Science Students III	[0-2-0:1]

### Other Requirement

(5) HLTH 001	Healthy Life Style	[0 credit]
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Notes:

- (1) This course can be replaced by MATH 303, MATH 311 or MATH 321 provided that enrolment quota of these courses is available.
- (2) MATH electives must include MATH 110, MATH 144, MATH 151 and two others of 300-level or above. MATH 144 can be replaced by MATH 241 or MATH 243 provided that enrolment quota of these courses is available.
- (3) ISOM 111 cannot be used to satisfy any FREE elective requirement as well as the GEE(SB&M) requirement.
- (4) Of these courses, at least one course in Humanities and one in Social Science are required.
- (5) 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 101 credits is required for the BSc program in Mathematics - General Mathematics Option. Students must take additional course(s) and/or elective(s) of higher-than-required credit value to meet this minimum total of 101 credits.

**Recommended Pattern of Study for BSc in Mathematics - General Mathematics Option**

1st year	Fall	C MATH 102, MATH 111, MATH 202 R COMP 102, HLTH 001, LANG 108 E MATH 110, GEE(H&SS)	(Total: 12 credits)
	Spring	C MATH 102, MATH 202 R HLTH 001, LANG 108 E MATH 151, GEE(SB&M), FREE	(Total: 20* credits)
2nd year	Fall	R MATH 301, LANG 208 E MATH 144, MATH, GEE(ENGG)	(Total: 16 credits)
	Spring	R MATH 304, LANG 209 E GEE(H&SS), three FREE	(Total: 18 credits)
3rd year	Fall	R LANG 308 E MATH, GEE(H&SS), three FREE	(Total: 18 credits)
	Spring	E GEE(H&SS), four FREE	(Total: 17 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.

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