



XIAMEN UNIVERSITY MALAYSIA

廈門大學 馬來西亞分校

PROGRAMME HANDBOOK

BACHELOR OF SCIENCE IN MATHEMATICS AND APPLIED MATHEMATICS (HONOURS)

ACADEMIC SESSION: 2026/09



Academic Affairs Office

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1. UNIVERSITY VISION AND MISSION

Vision

- Xiamen University Malaysia aspires to become a university with a distinct global outlook, featuring first-class teaching and research, and embracing cultural diversity.

Mission

- To nurture young talents with dignity and wisdom, turning them into fine citizens of the region who will contribute to the prosperity of the people and social progress of Malaysia, China and Southeast Asia.

2. PROGRAMME AIMS

This programme is designed to provide high quality education in the area of mathematics and applied mathematics for those who wish to pursue or further advance their careers in areas that required advanced skills of mathematical sciences. This includes contextual understanding, entrepreneurship and professionalism to perform effectively and ethically and to be culturally sensitive in their specialized areas of mathematical sciences, hence influencing personal achievement and lifelong learning, and industry development.

3. PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The PEOs are to produce graduates who are:

PEO1

Scientific Professionalism – Graduates are able to apply knowledge, practical skills, and critical thinking in mathematical sciences, and exhibit scientific integrity throughout their endeavors.

PEO2

Interdisciplinary Professionalism – Graduates will position themselves as mathematics-oriented professional leaders in their respective careers, and are able to work with, communicate and nurture others from across different disciplines.

PEO3

Continuous Personal and Professional Development – Graduates will engage in lifelong pursuit of knowledge and interdisciplinary learning appropriate for industrial and academic careers.

PEO4

Societal Engagement – Graduates are aware of current social issues and will utilize knowledge in mathematics to actively contribute to the sustainable development and well-being of society.

4. PROGRAMME LEARNING OUTCOMES (PLO)

At the end of the programme, graduates will be able to:

PLO1	Knowledge and Understanding	Describe advanced and comprehensive, theoretical and technical knowledge and skills in the field of mathematical sciences, and relate them to other relevant disciplines.
PLO2	Cognitive Skills	Demonstrate intellectual independence in the application of knowledge within mathematical sciences by applying critical, analytical and evaluation skills; apply knowledge and skill to a range of approaches in the mathematical sciences.
PLO3	Practical Skills	Apply a range of essential methods and procedures to solving a broad range of complex problems in mathematical sciences.
PLO4	Interpersonal Skills	Work together with different people in diverse learning and working communities as well as other groups.
PLO5	Communication Skills	Convey ideas both in written or oral forms using appropriate and different forms of presentation, confidently, accurately and coherently in appropriate context in a well-structured manner to a diversity of audiences.
PLO6	Digital Skills	Use a broad range of information, media and technology applications to support study and work.
PLO7	Numeracy Skills	Use and combine numerical and graphical data for study and work.
PLO8	Leadership, Autonomy and Responsibility	Work autonomously, and show leadership and professionalism in managing responsibilities within broad organizational parameters; undertake significant levels of work related responsibilities of others as well as self; demonstrate decision making capacities and professionalism by working towards pre-determined goals and outcomes.
PLO9	Personal Skills	Engage effectively in self-directed lifelong learning and professional pathways; demonstrate an appreciation of broader socio-political economic and cultural issues at national and regional level.
PLO10	Entrepreneurial Skills	Demonstrate entrepreneurial competency and an appreciation of broader socio-political economic and cultural issues at national and regional level.
PLO11	Ethics and Professionalism	Demonstrate adherence, and ability to identify ethical issues, make decision ethically, and act professionally within the varied social and professional environment and practice; demonstrate a deep familiarity and knowledge of local and global issues relating to science, technology, business, social and environmental issues.

5. EXPECTED AREAS OF GRADUATE EMPLOYMENT

Mathematics graduates can work as a mathematician, lecturer, educator, statistician, data scientist, logistician, actuary, computer scientist, financial analyst, bank manager, etc.

6. CURRICULUM STRUCTURE

The minimum requirement for graduation will be **125** credits, with all the components meeting the minimum credit values specified in Table 1.

Table 1: Components of the Programme and its Value

	Course Classification	Credit Value	Percentage (%)
1	Compulsory Courses/Modules	12	9.6%
2	Core/Major(s)/Specialisation:		
	• Major Core	43	34.4%
	• Projects/Thesis /Dissertation	4	3.2%
	• Common Core	13	10.4%
3	Optional/Elective courses:		
	• Major Elective	36	28.8%
	• General Elective	13	10.4%
4	Minor courses (if applicable)		
5	Industrial training/Practicum	4	3.2%
6	Others (specify):		
	Total Credit Value	125	100.0%

Compulsory Courses

Compulsory Courses refer to *Mata Pelajaran Pengajian Umum (MPU)*, or General Studies, which is a compulsory component of undergraduate education in Malaysia as mandated by the Ministry of Higher Education (MoHE), as shown in Table 2a below.

MPU aims to develop well-rounded graduates by complementing academic studies with broader knowledge, essential skills, ethical values, and social responsibility. Through courses that promote critical thinking, effective communication, integrity, and community engagement, MPU prepares students to become responsible citizens and lifelong learners in an increasingly interconnected world.

Table 2a: Components of the **Compulsory** Courses and its Value

No.	Name of Course	Course Code	Credit Value	International	Malaysian
U1 (3 courses @ 2 credits per course) Philosophy, Values & History Appreciation					
1	Bahasa Melayu Komunikasi 2	MPU1012	2	√	-
2	Integriti dan Antirasuah (Integrity and Anti-Corruption)	MPU1022	2	√	√
3	Aspirasi Negara Bangsa (Malaysian Nation-State Aspiration)	MPU1032	2	-	√
4	Falsafah dan Cabaran Semasa	MPU1042	2	-	√
5	Citra Malaysia (Malaysian Citra)	MPU1052	2	√	-
U2 (1 course @ 2 credits) Soft Skills					
6	Bahasa Kebangsaan A	MPU2012	2	-	1. Fail Bahasa Melayu SPM OR 2. Scored below C/ without credit in Bahasa Melayu SPM
7	Writing for Professional Purposes	MPU2022	2	√	1. Malaysian students with a credit in BM at SPM OR 2. Took and Passed Bahasa Kebangsaan A in diploma level MUST take Writing for Professional Purposes.
U3 (1 course @ 2 credits) Knowledge About Malaysia					
8	Artificial Intelligence and Malaysia's Digital Economy	MPU3012	2	√	√
U4 (1 course @ 2 credits) Practical Course (Community Service, Motivational, Co-curriculum)					
9	Community Service	MPU4012	2	√	√
Total Credit Value (Compulsory Courses)			12		

General Elective Courses

General Elective Courses refer to courses designed to give students options beyond their major-related courses in order to diversify their scope of knowledge.

Students in Mathematics and Applied Mathematics shall achieve at least a total of **13** credits. Students in Mathematics and Applied Mathematics can choose courses they are interested in from Group I (Arts), Group II (Business), Group III (Science) and Group IV (Artificial Intelligence) as shown in Table 2b, **except for those courses that are major related**.

Table 2b: Components of the **General Elective** Courses and its Value

No.	Name of Course	Course Code	Credit Value	Remarks
Group I (Arts)			10	
	Group I comprises general elective courses in the field of Arts such as <i>Art Appreciation, Basic Korean Language, and Communication Skills for Job Search.</i>	G01XX/ G1XXX		
Group II (Business)				
	Group II comprises general elective courses in the field of Business such as <i>Introduction to Finance, Entrepreneurship and Sustainable Development, and Introduction to International Business</i>	G02XX		
Group III (Science)				
	Group III comprises general elective courses in the field of Science such as <i>Environmental Problems and Environmental Awareness, A Brief History of Astronomy, and Introduction to Chinese Medicine.</i>	G03XX		
Group IV (Artificial Intelligence)			3	
	Group IV comprises general elective courses in the field of Artificial Intelligence , comprising: General (Optional)	G04XX		
	Group IV comprises general elective courses in the field of Artificial Intelligence , comprising: Discipline-based (Compulsory): G0409 AI for Mathematics.	G0409	3	
Total Credit Value (General Elective Courses)			13	

*Note: The courses listed are provided as examples for reference only. The actual general elective courses offered may vary each semester. Students should refer to the **General Elective Course Library** for the list of general elective courses available in a particular semester.*

Students taking SEM107 Microeconomics or/and SEM108 Macroeconomics as Major Electives cannot take Principles of Economics as General Elective. **In general, students should not take courses that have significant overlapping of contents.**

Common Core Courses

Common Core Courses refer to essential courses offered for students in different majors but in the same field according to disciplinary development rules.

Table 2c: Components of the **Common Core** Courses and its Value

No.	Name of Course	Course Code	Credit Value
1	Calculus I	MAT102	5
2	Calculus II	MAT103	5
3	Python Programming Language	BSC135	3
Total Credit Value (Common Core Courses)			13

Major Core Courses

Major Core Courses refer to courses designed to meet the core educational objectives; each major has its own features.

Table 2d: Components of the **Major Core** Courses and its Value

No.	Name of Course	Course Code	Credit Value
1	Algebra and Analytic Geometry	MAT101	3
2	Linear Algebra I	MAT104	3
3	Linear Algebra II	MAT105	3
4	Discrete Mathematics	MAT106	4
5	Probability Theory	MAT107	4
6	Ordinary Differential Equations	MAT109	4
7	Mathematical Analysis I	MAT201	5
8	Mathematical Analysis II	MAT202	5
9	Statistics	MAT203	4
10	Abstract Algebra I	MAT211	4
11	Complex Analysis I	MAT206	4
12	Final Year Project	MAT320	4
Total Credit Value (Major Core Courses)			47

Table 2e: Components of the **Industrial Training** and its Value

No.	Name of Course	Course Code	Credit Value
1	Industrial Training	MAT325	4
Total Credit Value (Industrial Training)			4

Major Elective Courses

Major Elective Courses refer to courses designed to help students to identify their interested field or direction within the major, which enable them to be better prepared for their careers pathways.

For major elective courses, students are required to choose designated courses based on table below:

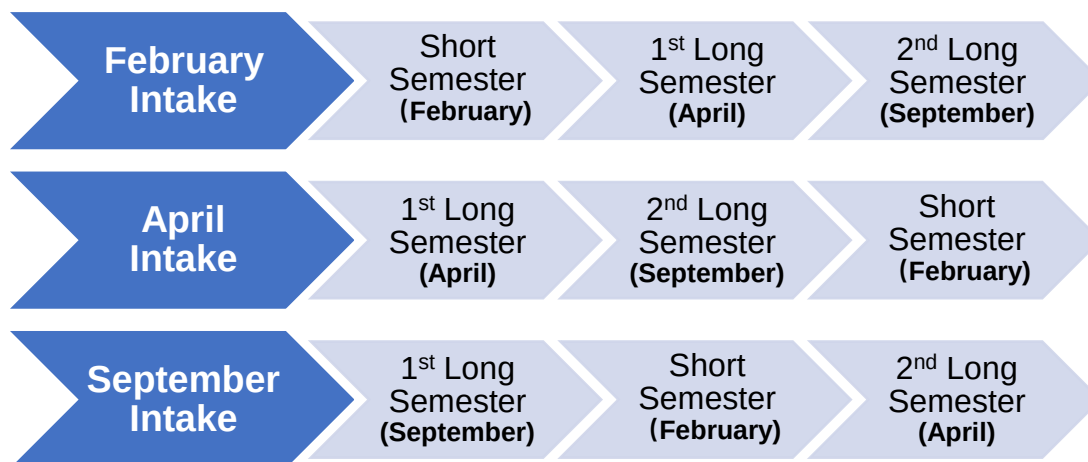
Table 2f: Components of the **Major Elective** Courses and its Value

No.	Name of Course	Course Code	Credit Value	Remarks
Group 1				
1	Problem Solving Skills I	MAT110	2	Minimum 16 credits
2	Abstract Algebra II	MAT205	4	
3	Advanced Linear Algebra	MAT207	4	
4	General Topology	MAT208	4	
5	Combinatorics	MAT209	4	
6	Financial Mathematics I	MAT210	4	
7	Undergraduate Research	MAT212	4	
8	Problem Solving Skills II	MAT213	2	
9	Data Analysis	MAT214	4	
10	Partial Differential Equations	MAT301	4	
11	Numerical Analysis	MAT302	4	
12	Differential Geometry of Curves and Surfaces	MAT303	4	
13	Real Analysis	MAT304	4	
14	Complex Analysis II	MAT305	4	
15	Differentiable Manifolds	MAT306	4	
16	Algebraic and Geometric Topology	MAT307	4	
17	Matrix Groups	MAT308	4	
18	Matrix Theory	MAT309	4	
19	Analytic Number Theory	MAT310	4	
20	Algebraic Number Theory	MAT311	4	
21	Dynamical Systems	MAT312	4	
22	Stochastic Processes	MAT313	4	
23	Regression Analysis	MAT314	4	
24	Time Series	MAT315	4	
25	Financial Mathematics II	MAT317	4	
26	Financial Mathematics III	MAT318	4	
27	Computational Physics	MAT321	4	
28	Problem Solving Skills III	MAT322	2	
29	Bayesian Statistics	MAT323	3	
30	Multivariate Statistical Analysis	MAT324	3	

No.	Name of Course	Course Code	Credit Value	Remarks
31	Algebraic Topology	MAT326	4	
32	Analysis and Manifolds	MAT327	4	
33	Classical Algebraic Geometry	MAT328	4	
Group 2				
34	Data Structures	CST204	4	Students from China need to take PHY101 Mechanics
35	Design and Analysis of Algorithms	CST207	4	
36	Monetary Policy and Financial Supervision	FIN209	4	
37	Risk Management	FIN303	4	
38	Global Logistics and Supply Chain Management	IBU304	4	
39	Mechanics	PHY101	4	
40	Thermal Physics	PHY102	4	
41	Electromagnetism	PHY103	4	
42	Modern Physics	PHY104	4	
43	Theoretical Mechanics	PHY201	4	
44	Quantum Mechanics I	PHY202	4	
45	Electrodynamics I	PHY204	4	
46	Thermodynamics and Statistical Physics	PHY301	4	
47	Electrodynamics II	PHY305	4	
48	Solid State Physics	PHY306	4	
49	Astrophysics	PHY307	4	
50	Quantum Mechanics II	PHY310	4	
51	Cosmology	PHY402	4	
52	Nuclear and Particle Physics	PHY403	4	
53	Relativity	PHY405	4	
54	C and C++ Programming	SOF103	4	
55	Principles of Artificial Intelligence	SOF106	3	
56	Computer Architecture	SOF108	3	
57	Operating Systems	SOF201	4	
58	Database	SOF202	4	
59	Big Data Analytics	SWE404	3	
60	Principles of Accounting	SEM103	4	
61	Microeconomics	SEM107	4	
62	Macroeconomics	SEM108	4	
63	Principles of Finance	SEM202	4	
Total Credit Value (Major Elective Courses)			36	

7. LIST OF COURSES OFFERED FOR EACH ACADEMIC YEAR

There are three (3) semesters in each academic year: two (2) long semesters and one (1) short semester. The sequence of course registration varies according to the intake:



Students should be aware that the total number of credits shall not exceed **20** for long semester and **7** for a short semester.

It is important to note that the arrangement of courses for each academic year listed below is subject to change based on programme needs or institutional requirements.

Year	Semester	Course Name	Course Code	Classification	Credit
Year 1	1 st Long Semester	Algebra and Analytic Geometry	MAT101	Major Core	3
		Calculus I	MAT102	Common Core	5
		Linear Algebra I	MAT104	Major Core	3
		Discrete Mathematics	MAT106	Major Core	4
		Python Programming Language	BSC135	Common Core	3
		Bahasa Melayu Komunikasi 2	MPU1012	Compulsory	2
		Aspirasi Negara Bangsa (Malaysian Nation-State Aspiration)	MPU1032	Compulsory	
		Total Credit Value			20
	2 nd Long Semester	Calculus II	MAT103	Common Core	5
		Linear Algebra II	MAT105	Major Core	3
		Probability Theory	MAT107	Major Core	4
		Ordinary Differential Equations	MAT109	Major Core	4
		Integriti dan Antirasuah (Integrity and Anti-Corruption)	MPU1022	Compulsory	2
		Falsafah dan Cabaran Semasa	MPU1042	Compulsory	2
		Citra Malaysia (Malaysian Citra)	MPU1052	Compulsory	
		Total Credit Value			20

Year	Semester	Course Name	Course Code	Classification	Credit	
	Short Semester	Select from Table 2b	Gxxxx	General Elective	2	
		Select from Table 2b	Gxxxx	General Elective	2	
		Select from Table 2b	Gxxxx	General Elective	2	
		Total Credit Value			6	
Year 2	1 st Long Semester	Mathematical Analysis I	MAT201	Major Core	5	
		Statistics	MAT203	Major Core	4	
		Abstract Algebra I	MAT211	Major Core	4	
		Select from Table 2f		Major Elective	4	
		Bahasa Kebangsaan A	MPU2012	Compulsory	2	
		Writing for Professional Purposes	MPU2022	Compulsory		
		Total Credit Value			19	
	2 nd Long Semester	Mathematical Analysis II	MAT202	Major Core	5	
		Complex Analysis I	MAT206	Major Core	4	
		Select from Table 2f		Major Elective	4	
		Select from Table 2f		Major Elective	4	
		Community Service	MPU4012	Compulsory	2	
		Total Credit Value			19	
	Short Semester	Select from Table 2b	Gxxxx	General Elective	2	
		Select from Table 2b	Gxxxx	General Elective	2	
		Total Credit Value			4	
	Year 3	1 st Long Semester	Select from Table 2f		Major Elective	4
			Select from Table 2f		Major Elective	4
			Select from Table 2f		Major Elective	4
AI for Mathematics			G0409	General Elective	3	
Final Year Project			MAT320	Major Core		
Total Credit Value			15			
2 nd Long Semester		Select from Table 2f		Major Elective	4	
		Select from Table 2f		Major Elective	4	
		Select from Table 2f		Major Elective	4	
		Final Year Project	MAT320	Major Core	4	
		Artificial Intelligence and Malaysia's Digital Economy	MPU3012	Compulsory	2	
		Total Credit Value			18	
Short Semester		Industrial Training	MAT325	Major Core	4	
		Total Credit Value			4	
Grand Total					125	

8. PREREQUISITE COURSES

A prerequisite is a course that must be completed before taking a more advanced course.

Course Code	Course Name	Prerequisites
CST204	Data Structures	SOF103 C and C++ Programming
CST207	Design and Analysis of Algorithms	CST204 Data Structures, MAT106 Discrete Mathematics
FIN209	Monetary Policy and Financial Supervision	SEM202 Principles of Finance / MAT210 Financial Mathematics I
FIN303	Risk Management	MAT203 Statistics
IBU304	Global Logistics and Supply Chain Management	G0206 Principles of Management
MAT103	Calculus II	MAT102 Calculus I
MAT105	Linear Algebra II	MAT104 Linear Algebra I
MAT107	Probability Theory	MAT102 Calculus I
MAT202	Mathematical Analysis II	MAT201 Mathematical Analysis I
MAT203	Statistics	MAT107 Probability Theory
MAT205	Abstract Algebra II	MAT211 Abstract Algebra I
MAT311	Algebraic Number Theory	MAT104 Linear Algebra I, MAT211 Abstract Algebra I
MAT320	Final Year Project	Students must have successfully completed a minimum of 75 credit hours before the first long semester.
MAT323	Bayesian Statistics	MAT203 Statistics
MAT324	Multivariate Statistical Analysis	MAT203 Statistics, MAT314 Regression Analysis
MAT325	Industrial Training	Students must have successfully completed a minimum of 60 credit hours before applying for an industrial training.
MAT328	Classical Algebraic Geometry	MAT211 Abstract Algebra I
PHY305	Electrodynamics II	PHY204 Electrodynamics I
PHY310	Quantum Mechanics II	PHY202 Quantum Mechanics I
SOF106	Principles of Artificial Intelligence	SOF103 C and C++ Programming, CST204 Data Structures
SOF201	Operating Systems	SOF108 Computer Architecture
SOF202	Database	CST204 Data Structures
SWE404	Big Data Analytics	SOF108 Computer Architecture, SOF201 Operating Systems

9. IMPORTANT NOTE

Threshold Requirement

A grade threshold refers to the minimum number of marks that a student needs to obtain in a particular component of the course.

Mathematics and Applied Mathematics students must obtain a threshold mark of 40 in all assessment components, including the final examination, and an overall mark of 55 or above to pass a core / major / elective course.

Note: The above information is subject to change as new information becomes available in accordance with the guiding standards and requirements set by relevant authorities.

Additional Requirement

China students of September 2017 intake and onward need to complete their 4-year studies for the following programmes:

- Bachelor of Economics in Finance (Honours)
- Bachelor of Management in Accounting (Honours)
- Bachelor of Management in International Business (Honours)
- Bachelor of Management in E-commerce (Honours)
- Bachelor of Management in Hospitality Management (Honours)
- Bachelor of Arts in Advertising (Honours)
- Bachelor of Arts in Journalism (Honours)
- Bachelor of Arts in Communication (Honours)
- Bachelor of Arts in Chinese Studies (Honours)
- Bachelor of Arts (Honours) in English Language and Literature
- Bachelor of Science in Mathematics and Applied Mathematics (Honours)