



XIAMEN UNIVERSITY MALAYSIA

廈門大學 馬來西亞分校

PROGRAMME HANDBOOK

BACHELOR OF SCIENCE IN MARINE BIOTECHNOLOGY (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

The Bachelor of Science in Marine Biotechnology aim is to produce graduate with positive attitudes towards society, knowledgeable, skilled and competent to become professional in the area of marine biotechnology.

3. PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The PEOs are to produce graduates who are:

PEO1

Have comprehensive understanding and practical skills of Marine Biotechnology and their application

PEO2

Possess innovative thinking, analytical skills and problem solving abilities

PEO3

Have professionalism & social responsibility in the practice of marine science and biotechnology field

PEO4

Multicultural life science working environment

PEO5

Are aware of continued life-long learning through professional practice and further graduate education

4. PROGRAMME LEARNING OUTCOMES (PLO)

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

PLO1	Knowledge and Understanding	Demonstrate comprehensive understanding of marine science and biotechnology
PLO2	Cognitive Skills	Analyse, synthesise and integrate knowledge and information to provide solution to address challenges and concerns in marine science and biotechnology
PLO3	Practical Skills	Demonstrate understanding of concepts, functionality and operation of basic marine science and biotechnology equipment with guidance and apply theoretical knowledge and practical skill to conduct guided research to generate reliable valid data and reports
PLO4	Interpersonal Skills	Work together with different people in diverse communities and transdisciplinary professional community locally and internationally
PLO5	Communication Skills	Communicate effectively, both orally and in writing with professional community and society at general
PLO6	Digital Skills	Use digital skills to analyse, interpret and present data
PLO7	Numeracy Skills	Use and combine numerical, graphical and visual data for further study or work in the field of marine science and biotechnology
PLO8	Leadership, Autonomy and Responsibility	Demonstrate problem solving skill individually or working collaboratively as a group member or a leader in a team
PLO9	Personal Skills	Demonstrate self-directed lifelong learning with flexibility and adaptability for further development in professional pathways
PLO10	Entrepreneurial Skills	Demonstrate awareness, adaptability and creativity for further development of business opportunities and entrepreneurship
PLO11	Ethics and Professionalism	Demonstrate an understanding and awareness of biosafety, ethical, legal, commercial and social issues related to marine science and biotechnology field and execute biohazard and occupational safety procedures

5. EXPECTED AREAS OF GRADUATE EMPLOYMENT

Universities as well as other educational settings; natural resources management agencies at the local, national, or international level; environmental consulting; and companies in Marine Biology Science, Aquaculture and Bio-pharming

6. CURRICULUM STRUCTURE

The minimum requirement for graduation will be **149** 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	8.1%
2	Core/Major(s)/Specialisation:		
	• Fundamental	25	16.8%
	• Core	66	44.3%
	• Final Year Project	11	7.4%
3	Optional/elective courses:		
	• Specialisation Elective	17	11.4%
	• General Elective	10	6.7%
4	Industrial training/Practicum	8	5.4%
	Total Credit Value	149	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 Science field can choose courses they are interested in from Group I (Arts), Group II (Business) and Group IV (Artificial Intelligence) as shown in Table 2b. Students in Marine Biotechnology shall achieve at least a total of 10 credits with each group meets the minimum requirement of 1 course.

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

No.	Name of Course	Course Code	Credit Value	Remarks
Group I (Arts)				
	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/ G11XX	2	Minimum 1 course
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	2	Minimum 1 course
Group IV (Artificial Intelligence)				
	Group IV comprises general elective courses in the field of Artificial Intelligence , comprising: • Discipline-based (Compulsory) • General (Optional)	G0404	2	Minimum 1 course
Total Credit Value (General Elective Courses)			10	

*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.*

Fundamental Courses

Fundamental Courses refer to essential courses offered for students to have a solid foundation for science exploration.

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

No.	Name of Course	Course Code	Credit Value
1	Basic Biology and Laboratory	FSC114	5
2	General Chemistry and Laboratory	FSC115	5
3	Calculus I B	BSC122	3
4	General Physics	FSC112	4
5	General Physics Experiments: Mechanics, Thermodynamics, Electromagnetism, and Optics	FSC110	2
6	Python Programming Language	BSC135	3
7	Principles of Artificial Intelligence	SOF106	3
Total Credit Value (Fundamental Courses)			25

Core Courses

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

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

No.	Name of Course	Course Code	Credit Value
1	Basic Genetics	MBT102	2
2	Organic Chemistry and Laboratory	MBT104	5
3	Probability and Statistics B	BSC126	2
4	Introduction to Marine Science	MBT101	2
5	Descriptive Oceanography	MBT201	2
6	Protection of Innovation	MBT211	2
7	Marine Phycology and Laboratory	MBT212	3
8	Marine Ecology and Laboratory	MBT213	5
9	Biochemistry and Laboratory	MBT214	3
10	Marine Animal Biology and Laboratory	MBT216	4
11	Marine Microbiology and Laboratory	MBT217	5
12	Marine Animal Physiology	MBT303	3
13	Field Experience in Marine Sciences	MBT307	2
14	Marine Ecosystems	MBT311	4
15	Cell Biology and Laboratory	MBT313	6
16	Molecular Biology and Laboratory	MBT314	5
17	Mariculture and Laboratory	MBT317	5
18	Scientific Communication	MBT318	2
19	Marine Natural Product and Drug	MBT405	4
Total Credit Value (Core Courses)			66

Table 2e: Components of the **Projects / Thesis / Dissertation**

No.	Name of Course	Course Code	Credit Value
1	Final Year Project I	MBT414	3
2	Final Year Project II	MBT415	8
Total Credit Value (Projects / Thesis / Dissertation)			11

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

No.	Name of Course	Course Code	Credit Value
1	Industrial Training	MBT412	8
Total Credit Value (Industrial Training)			8

Specialisation Elective Courses (courses marked with asterisk*)

Specialisation 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 specialisation elective courses, students are required to choose designated courses based on table below:

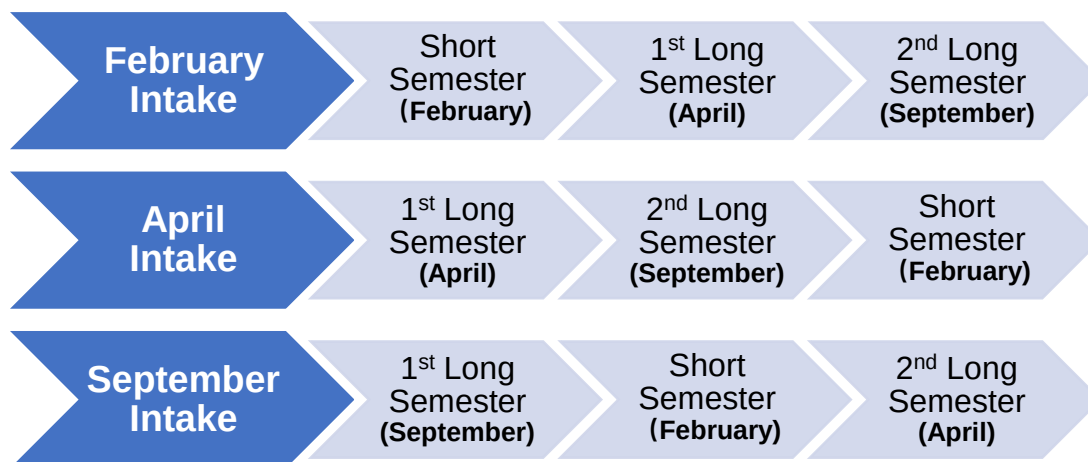
Table 2g: Components of the **Specialisation Elective** Courses and its Value

No.	Name of Course	Course Code	Credit Value	Remarks
1	Fish Resources and Fishery	MBT209*	2	Minimum 8 credits
2	Mariculture Water Chemistry and Laboratory	MBT215*	2	
3	Marine Biological Resources and Utilization	MBT319*	3	
4	Basic Immunology of Aquatic Animals	MBT309*	3	
5	Climate Change and Sustainable Development	MBT315*	2	
6	Marine Data Analysis	MBT316*	2	
7	Chemical Oceanography and Laboratory	MES206*	5	
8	Environmental Management System	MES311*	3	
9	Calculus II	BSC123*	5	
10	Agri-Aquaculture Digital Modelling	MBT320*	3	
11	Aquatic Animal Nutrition and Formula Food	MBT403*	3	Minimum 9 credits
12	Aquatic Animal Diseases and Prevention	MBT404*	3	
13	Integrated Coastal Zone Management (ICZM)	MBT406*	3	
14	Aquatic Food Processing	MBT407*	3	
15	Fermentation and Bioprocess Engineering	MBT413*	3	
Total Credit Value (Specialisation Elective Courses)			17	

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

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	Basic Biology and Laboratory	FSC114	Fundamental	5
		General Chemistry and Laboratory	FSC115	Fundamental	5
		Calculus I B	BSC122	Fundamental	3
		Python Programming Language	BSC135	Fundamental	3
		Introduction to Marine Science	MBT101	Core	2
		Total Credit Value			
	2 nd Long Semester	Basic Genetics	MBT102	Core	2
		Marine Ecology and Laboratory	MBT213	Core	5
		Biochemistry and Laboratory	MBT214	Core	3
		Marine Animal Biology and Laboratory	MBT216	Core	4
		Marine Microbiology and Laboratory	MBT217	Core	5
		Total Credit Value			

Year	Semester	Course Name	Course Code	Classification	Credit
Year 2	Short Semester	Bahasa Melayu Komunikasi 2 (U1)	MPU1012	Compulsory	2
		Aspirasi Negara Bangsa (Malaysian Nation-State Aspiration) (U1)	MPU1032	Compulsory	
		Falsafah dan Cabaran Semasa (U1)	MPU1042	Compulsory	2
		Citra Malaysia (Malaysian Citra) (U1)	MPU1052	Compulsory	
		Protection of Innovation	MBT211	Core	2
		Total Credit Value			6
	1 st Long Semester	Organic Chemistry and Laboratory	MBT104	Core	5
		General Physics	FSC112	Fundamental	4
		General Physics Experiments: Mechanics, Thermodynamics, Electromagnetism, and Optics	FSC110	Fundamental	2
		Principles of Artificial Intelligence	SOF106	Fundamental	3
		Probability and Statistics B	BSC126	Core	2
		Integriti dan Antirasuah (Integrity and Anti-Corruption) (U1)	MPU1022	Compulsory	2
		Total Credit Value			18
	2 nd Long Semester	Field Experience in Marine Sciences	MBT307	Core	2
		Marine Ecosystems	MBT311	Core	4
		Molecular Biology and Laboratory	MBT314	Core	5
		*Students can choose from the specialisation elective courses to fulfill the required 8 credits:			
		Calculus II	BSC123*	Specialisation Elective	5
		Fish Resources and Fishery	MBT209*	Specialisation Elective	2
		Mariculture Water Chemistry and Laboratory	MBT215*	Specialisation Elective	2
		Marine Biological Resources and Utilization	MBT319*	Specialisation Elective	3
		Basic Immunology of Aquatic Animals	MBT309*	Specialisation Elective	3
		Climate Change and Sustainable Development	MBT315*	Specialisation Elective	2
		Marine Data Analysis	MBT316*	Specialisation Elective	2
		Chemical Oceanography and Laboratory	MES206*	Specialisation Elective	5
		Environmental Management System	MES311*	Specialisation Elective	3
		Agri-Aquaculture Digital Modelling	MBT320*	Specialisation Elective	3
		Total Credit Value			19
	Short Semester	Bahasa Kebangsaan A (U2)	MPU2012	Compulsory	2
		Writing for Professional Purposes (U2)	MPU2022	Compulsory	
		Introduction to GIS and GeoAI Application	G0404	General Elective	2
		Select from Table 2b	Gxxxx	General Elective	2
		Total Credit Value			6

Year 3	1 st Long Semester	Descriptive Oceanography	MBT201	Core	2	
		Marine Phycology and Laboratory	MBT212	Core	3	
		Marine Animal Physiology	MBT303	Core	3	
		Cell Biology and Laboratory	MBT313	Core	6	
		Mariculture and Laboratory	MBT317	Core	5	
		Total Credit Value			19	
	2 nd Long Semester	Industrial Training	MBT412	Core (Industrial Training)	8	
		Total Credit Value			8	
	Short Semester	Artificial Intelligence and Malaysia's Digital Economy (U3)	MPU3012	Compulsory	2	
		Community Service (U4)	MPU4012	Compulsory	2	
		Select from Table 2b	Gxxxx	General Elective	2	
		Total Credit Value			6	
Year 4	1 st Long Semester	Scientific Communication	MBT318	Core	2	
		Marine Natural Product and Drug	MBT405	Core	4	
		Final Year Project I	MBT414	Core (Final Year Project)	3	
		*Students can choose from the specialisation elective courses to fulfill the required 9 credits:				
		Aquatic Animal Nutrition and Formula Food	MBT403*	Specialisation Elective	3	
		Aquatic Animal Diseases and Prevention	MBT404*	Specialisation Elective	3	
		Integrated Coastal Zone Management (ICZM)	MBT406*	Specialisation Elective	3	
		Aquatic Food Processing	MBT407*	Specialisation Elective	3	
		Fermentation and Bioprocess Engineering	MBT413*	Specialisation Elective	3	
		Total Credit Value			18	
	2 nd Long Semester	Final Year Project II	MBT415	Core (Final Year Project)	8	
		Total Credit Value			8	
	Short Semester	Select from Table 2b	Gxxxx	General Elective	4	
		Total Credit Value			4	
	Grand Total					149

8. PREREQUISITE COURSES

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

Course Code	Course Name	Prerequisites
SOF106	Principles of Artificial Intelligence	BSC135 Python Programming Language
MBT102	Basic Genetics	FSC114 Basic Biology and Laboratory
MBT214	Biochemistry and Laboratory	FSC114 Basic Biology and Laboratory
MBT217	Marine Microbiology and Laboratory	FSC114 Basic Biology and Laboratory
MBT313	Cell Biology and Laboratory	FSC114 Basic Biology and Laboratory
MBT317	Mariculture and Laboratory	FSC114 Basic Biology and Laboratory
MBT311	Marine Ecosystems	FSC114 Basic Biology and Laboratory
BSC123*	Calculus II	BSC122 Calculus I B
MBT209*	Fish Resources and Fishery	FSC114 Basic Biology and Laboratory
MBT215*	Mariculture Water Chemistry and Laboratory	FSC115 General Chemistry and Laboratory
MBT319*	Marine Biological Resources and Utilization	FSC114 Basic Biology and Laboratory
MBT309*	Basic Immunology of Aquatic Animals	FSC114 Basic Biology and Laboratory
MBT316*	Marine Data Analysis	BSC126 Probability and Statistics
MBT405	Marine Natural Product and Drug	MBT104 Organic Chemistry and Laboratory
MBT403*	Aquatic Animal Nutrition and Formula Food	MBT214 Biochemistry and Laboratory
MBT404*	Aquatic Animal Diseases and Prevention	MBT217 Marine Microbiology and Laboratory
MBT407*	Aquatic Food Processing	FSC114 Basic Biology and Laboratory
MBT413*	Fermentation and Bioprocess Engineering	MBT214 Biochemistry and Laboratory
MBT414	Final Year Project I	Complete 100 credits
MBT415	Final Year Project II	Complete MBT414 Final Year Project I
MBT412	Industrial Training	Complete 90 credits