澳門理工大學
Universidade Politécnica de Macau
Macao Polytechnic University

Macao Polytechnic University
Faculty of Applied Sciences

Four-year Full-time

Bachelor of Science in Computing

Programme Handbook

2025-2026

WELCOME

Welcome to the Computing Programme of Macao Polytechnic University (MPU) and welcome back if you are a returning student.

Please kindly be reminded that the university has the following expectations from our students.

· To pursue their academic studies in an honest, ethical and responsible manner.
· To actively participate in various learning opportunities provided by MPU.
· To provide fair and constructive feedback on relevant aspects of their Faculty/Programme.
· To enhance tolerance in the pursuit of knowledge.
· To attain ethical standards in support of the values and mission of MPU.
· To be aware of and follow the policies, procedures and regulations of MPU.
· To seek and pursue their own learning experiences.
· To engage in opportunities for self-development after their studies in MPU.

This handbook aids in your understanding of the Programme. It depicts the Programme and explains the University's procedures and aspects of the regulations that affect you. Read it carefully and keep it as a source of reference throughout the years. If you lose or mislay it, then you can obtain a copy from your year tutor or the soft copy from the programme website cp.mpu.edu.mo.

If you have questions about anything that you read in the guide, please ask your year tutor. You will be expected to be familiar with and observe the various guidelines, regulations and procedures that are covered in this handbook.

Please kindly be reminded that Student ID card is an important means to identify a student. Students are required to present this card when making use of library check-out service and computing facilities, and for examinations.

Students have the responsibility to provide updated personal details to the Student Affairs Office.

The University and Programme keep you informed about events and changes to teaching and activities in a number of ways: email and a virtual learning environment such as Canvas. We expect you to check these every day.

With best wishes for your time at the Computing Programme

Prof. Lam Chan Tong.
Dean, Faculty of Applied Sciences

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SECTION 1 PRELIMINARY INFORMATION

The *Computing Programme* (formerly *Computer Studies Programme* – CSP) is one of the programmes under the *Faculty of Applied Sciences* (FCA) in the *Macao Polytechnic University* (MPU). The degree is taught and examined entirely in English. Students in the Bachelor of Science in Computing will normally complete the programme in four years on a full-time basis. Students need to take 34 credits in Year 1, 32 credits in Year 2, 33 credits in Year 3 and 27 credits in their Year 4 and a total of 126 credits must be taken in order to obtain their Bachelor Degree. Scheduled teaching contact is timetabled between 9 am and 6 pm Monday to Friday. The three streams of specialisation offered to students are *Business Intelligence*, *Gaming Technology* and *Computer Education*. Since 2012/2013, graduates from our programme with a Grade Point Average (GPA) more than 2.0 partially fulfil the *Institution of Engineering and Technology* (IET) Chartered Engineer (CEng) requirements.

Historical Development of the Programme

The history of the Computing Programme can be dated back to 1982 when the former University of East Asia, (now, University of Macao) started to offer a two-year Diploma Programme in Computer Studies through the College for Continuing Education, which was the first of its kind in the history of Macao. The Computer Studies Programme was later restructured to group under the former Polytechnic College of the University of East Asia. In 1991, the former Polytechnic College of the University of East Asia began to run as an independent higher education institute under the current name Macao Polytechnic University.

Since the inauguration of Macao Polytechnic Institute in 1991, the Computer Studies Programme (CSP) has implemented new curricula in 1993/1994, 1996/1997, 2000/2001, 2009/2010, 2016/2017 and 2023/2024. Initially, CSP only offered day programmes for a 2-year Diploma programme and a 3-year Higher Diploma programme. In 1996/1997, an evening programme was offered to enable the working population to make use of their non-working hours to further their studies. Since 1998/1999, the Diploma programme ceased to accept any applicants. After the launch of the Bachelor of Science in Computer Studies Programme in 2000/2001, the latest Bachelor of Science in Computing Programme was offered in 2009/2010 in response to the general public's demand for a higher level of education, with the most recent update for 2023/2024.

Job Market

The demand of the programme as reflected in the Graduate Survey 2024, the Small and Medium Enterprises have absorbed the largest portion (60.0%) of the employed graduates. See Figure 1 below for more details about the employment sectors.

80.0% of the graduates indicated that their training in MPU was relevant to their work. This affirms the practicality of our programme in relation to career development. All graduates stated that the programme they completed had met or exceeded their expectations. All graduates said they would probably or definitely recommend the Computing Programme of MPU to others.
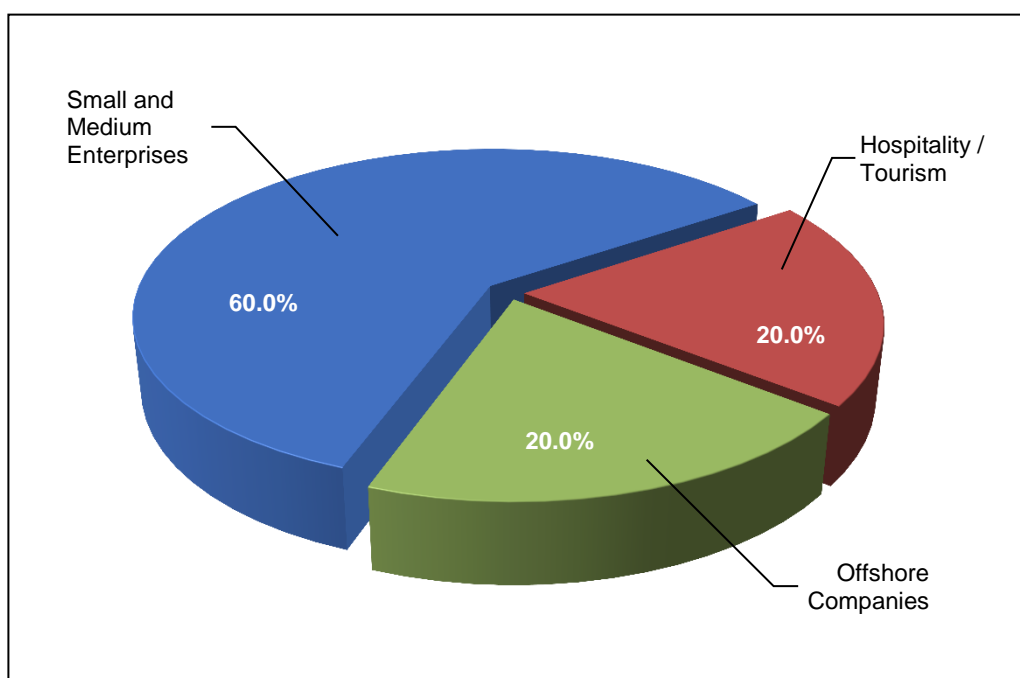
Figure 1 Employment Sectors (2024)

University/Faculty Information

Macao Polytechnic University is a government-funded public university. For over two decades since its inception, the University has grown and prospered into a modern and fully equipped teaching and research tertiary institute with a team of experienced and dedicated academic staff.

The MPU offers both full-time academic programmes of Bachelor Degrees as well as professional training. Its mission is to provide student-centred education and training that combines rigorous learning with the excitement of discovery, promoting academic freedom, integrity and creativity, supporting a diverse research culture in a dynamic environment, and instilling a spirit of service for the betterment of society.

Being one of the six academic faculties offering degree programmes, the Faculty of Applied Sciences, split from the formerly School of Public Administration, is one of the newly established faculties in MPU. The mission of the Faculty of Applied Sciences is to provide up-to-date and market-oriented (practical) education, to advance learning and knowledge, as well as to enable students to obtain the maximum benefits of higher education, in nine programmes, namely Bachelor of Science in Computing, Bachelor of Science in Artificial Intelligence, Master of Science in Big Data and Internet of Things, Master of Science in Environmental Intelligence, Master of Science in Sports Technology and Innovation, Doctor of Philosophy in Computer Applied Technology, Doctor of Philosophy in Artificial Intelligence Driven Drug Discovery, Doctor of Philosophy in Educational Technology and Innovation, and Bachelor of Social Science in Sino-Lusophone Trade Relations.

SECTION 2 PROGRAMME INFORMATION

Programme Aims and Objectives

The design of the Bachelor of Science in Computing Programme aims at providing a sound practical knowledge of computing fundamentals and a thorough understanding of the analytical, design, and planning skills associated with the computing profession, in order to provide students with the means to compete successfully in the job market as well as to develop their academic competences in pursuing further studies. To broaden the participation of students in their communication with the global IT community, the Programme promotes internship, joint student projects with organizations, student activities, and overseas exchanges. Regular seminars, competitions and social gatherings are also held to enhance peer learning among students and further study opportunities.

Three streams of specialisation offered to students are *Business Intelligence*, *Gaming Technology* and *Computer Education*. Students are expected to start their specialisation in the first semester of year 3. Upon completion of the Bachelor of Science in Computing Programme, students should be able to pursue further study and achieve the following (1-13):

1. Select and apply proven methods, tools and techniques to the effective and efficient implementation of information systems on common platforms, including the Internet platform;
2. Acquire essential knowledge in specific fields of computing disciplines including networking, artificial intelligence and security;
3. Apply necessary mathematical techniques to model, analyse and devise solutions to complex problems;
4. Work independently to develop an understanding of, and the knowledge and skills associated with the general support and mitigation of security risks of computer systems and networks;
5. Design and implement relational database, with an emphasis on how to organise, maintain, retrieve and analyse information;
6. Distinguish the fundamental and operational issues of computer systems, with considerations of user, business, ethical, societal and environmental needs;
7. Evaluate, prepare and communicate effectively on technical information to both technical and non-technical audience;
8. Work as an effective member of a team in the analysis, design and development of software systems, with recognition of requirement to support equality, diversity and inclusion;
9. Use project planning, risk management and quality management techniques in solutions to complex problems;
10. Build the capacity and desire for lifelong learning and to learn advanced and emerging technologies on one's own;

For the *Business Intelligence* specialisation,
11. Gain an in-depth knowledge of technologies related to data analysis and management of information to support business processes in enterprises;

For the *Gaming Technology* specialisation,
12. Acquire the general and advanced knowledge of current technologies and operating environment for the development of the gaming and tourism industry;

For the *Computer Education* specialisation,
13. Acquire general and practical knowledge of computer education and its practicing environment in secondary education;

Entry Requirement

There are two different entry routes, one for recruitment done locally in Macao, and one for recruitment from the Mainland of China.

For applicants from Macao: applicants have to be secondary school graduates (Form 6), and attend the University's admission examinations to show that they possess adequate English language and mathematics proficiency. The weighting of assessments is set as:
  A. English written examination – 50%
  B. Mathematics written examination – 50%;

Candidates are selected based on the ranking of the total score of the two examinations. The programme normally takes 20% of all the applicants.

For students from the Mainland of China, applicants must participate in the National College Entrance Examination (NCEE) in China and attain a certain level (admission level 1). This examination is a prerequisite for entrance into almost all higher education institutions at the undergraduate level in China. In addition, the applicants must be a resident of one of the following provinces/municipalities/autonomous regions: Beijing, Tianjin, Shanghai, Chongqing, Guangdong, Fujian, Hainan, Hunan, Jiangsu, Zhejiang, Liaoning, Sichuan, Hubei, Guangxi, Henan, Shandong, Shaanxi, Yunnan, Guizhou, Jiangxi, Jilin, Heilongjiang, Anhui, Hebei, and Shanxi.

Programme Structure and Information

Structure of the Programme

The Computing Programme is aimed at producing graduates with good fundamental computing concepts, sound intellectual and practical skills, and ability to creatively apply computing and related technologies to business, industry and public sectors. Students in the Bachelor of Science in Computing will normally complete the Programme in four years on a full-time basis. 114 credits are for the required modules that include 15 credits in each specialisation, 6 credits for general elective modules and 6 credits for major elective modules. A total of 126 credits are required in order to obtain the Bachelor Degree.

Basically, the modules can be divided into 5 main groups:

Core Modules

Core modules are compulsory and constitute 27 modules (87 credits), each of which is a 3-credit 1-semester module, except for the Constitution and Basic Law, Chinese History and Culture, and Sustainable Development which are 2-credit 1-semester modules, and the Final Year Project which is an annual module of 12 credits.

Specialisation Modules

The Programme provides three specialisations that will give students more in-depth knowledge in either Business Intelligence, Gaming Technology or Computer Education. During their third and fourth year, students have to complete 15 credits within either one of the three specialisations. There are 5 compulsory modules in each specialisation.

Major Elective Modules

Major elective modules are vehicles for the delivery of the fundamental knowledge and skills necessary for career development in Information Technology related areas. 12 modules fall into this category and students have to pass any 2 of them at a total of 6 credits.

General Elective Modules

General elective modules are general education modules not directly related to Information Technology. They provide the students with wider horizons for a well-rounded education, and promote fulfilment of students' technical IT knowledge in the more general context of business and society. 12 modules fall into this category and students have to pass any 2 of them at a total of 6 credits.

English Language Modules

During their first 2 years of study, students have to take 4 English modules, each of which is 3 credits at a total of 12 credits. The English modules aim at improving students' English language skills within an academic framework at the Intermediate and Upper Intermediate levels, with reference to the IELTS Band 5 and Band 6.

Period of Study

The length of study for the Programme is normally 4 academic years. There will be two semesters in each academic year for academic activities. To complete the curriculum, students are required to complete satisfactorily all module requirements.

Students are expected to graduate within the normal study period of 4 academic years. Any approved long leave of absence, including deferment and suspension of study, shall be counted towards the period of study. Students who are not able to complete the Programme within the maximum period of study (7 academic years) shall be deregistered from the University.

Students who wish to extend their period of study beyond the maximum programme duration shall apply in writing to obtain prior approval from the Faculty.

Design of Curriculum

Graduation Requirement

The students are awarded the Bachelor of Science in Computing when they have gained 126 credits, and passed all the required modules, including all the core modules, two major elective modules, two general elective modules, four English language modules, and the five modules in either one of the three specialisations.

Progression Arrangements

The Programme equips the students with the skills needed to work in the industry or pursue postgraduate studies in Macao or abroad.

The first year is the basic or fundamental year for the computing discipline, in which students will learn the fundamental knowledge in the area of problem solving and programming skills, as well as in the relevant supporting disciplines, such as mathematics and English.

The second year is the broadening year, in which students will accumulate more knowledge in computing, at an intermediate level. The Programme is designed to build up students' knowledge base in system design, database design, object oriented design and technique, networking skills, and their language skills.

The third year is designed to strengthen students' skills in system development on a larger scale and on more advanced technology.

The final year is designed to enhance students' theoretical thinking and to cover more advanced computing topics. During their third and fourth year, students will be able to choose modules that he/she likes most that will give in-depth knowledge in either *Business Intelligence, Gaming Technology or Computer Education*.

Contents of the Academic Programme

In Figure 2 below, the modules of the Programme are divided into 11 subject areas, including "Mathematics", "Programming and Development", "Computer Systems and Networks", "Gaming and Multimedia", "IT in Society", "IS Planning, Design, and Control", "Artificial Intelligence", "Computer Education", "Projects", "General Studies" and "Languages".

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                        ┌─────────────────────┐
                        │ Total Credits for BSc in │
                        │    Computing: 126    │
                        └─────────────────────┘
                    ┌───────────────┴───────────────┐
          ┌──────────────────┐            ┌──────────────────┐
          │ General Studies: 27 │          │   Specialty: 99   │
          │       (21%)        │          │       (79%)        │
          └──────────────────┘            └──────────────────┘
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General Studies: 27 (21%)

Compulsory Foundation Modules: 21

- English I, II, III, IV: 12
- Chinese History and Culture: 2
- Constitution and Basic Law: 2
- Sustainable Development: 2
- Science Communications: 3

General Electives: 6

- Introduction to Psychology: 3
- Introduction to Sociology: 3
- Introduction to Economics and Finance: 3
- Introduction to Public Administration: 3
- Introduction to Marketing: 3
- Human Resources Management: 3
- Interpersonal Relations: 3
- Accounting: 3
- Risk Management in Business: 3
- E-Government: 3
- Special Topics I: 3
- Special Topics II: 3

Specialty: 99 (79%)

Compulsory Foundation Modules: 45

- Introduction to Computer Science & Its Application: 3
- Introduction to Programming: 3
- Advanced Programming: 3
- Computer Organization: 3
- Web Design & Development: 3
- Data Structures and Algorithms: 3
- Linear Algebra: 3
- Calculus: 3
- Discrete Mathematics: 3
- Database Design: 3
- Operating Systems: 3
- Computer Networks: 3
- Statistics: 3
- Introduction to e-Business: 3
- Ethics & Professional Issues in Computing: 3

Advanced Modules: 54

Core: 33

- Software Engineering: 3
- Project Management: 3
- Human Factors & User Interfaces: 3
- Information System Project: 3
- Computer Security: 3
- Artificial Intelligence: 3
- Advanced Web Development: 3
- Final Year Project: 12

Specialisation: 15

- Data Driven Business Management: 3
- Analytical Data Design & Applications: 3
- Data Science and Business Analytics: 3
- Enterprise System & Application Development: 3
- Strategic Planning for Information Systems: 3
- Principles of Gaming Technology: 3
- Gaming Systems & Technical Standards: 3
- Computer Game Design & Development: 3
- Selected Topics in Smart Tourism: 3
- Introduction to Education: 3
- Educational Psychology & Counselling: 3
- Curriculum & Teaching Methods: 3
- Teaching Practice I, II: 6

Major Electives: 6

- Digital Image & Multimedia Processing: 3
- Digital Forensics: 3
- IP Routing: 3
- Mobile Computing & Wireless Networks: 3
- Natural Language Processing: 3
- Machine Translation: 3
- Iot Fundamentals for Stem: 3
- Performance Evaluation: 3
- Database Management Systems: 3
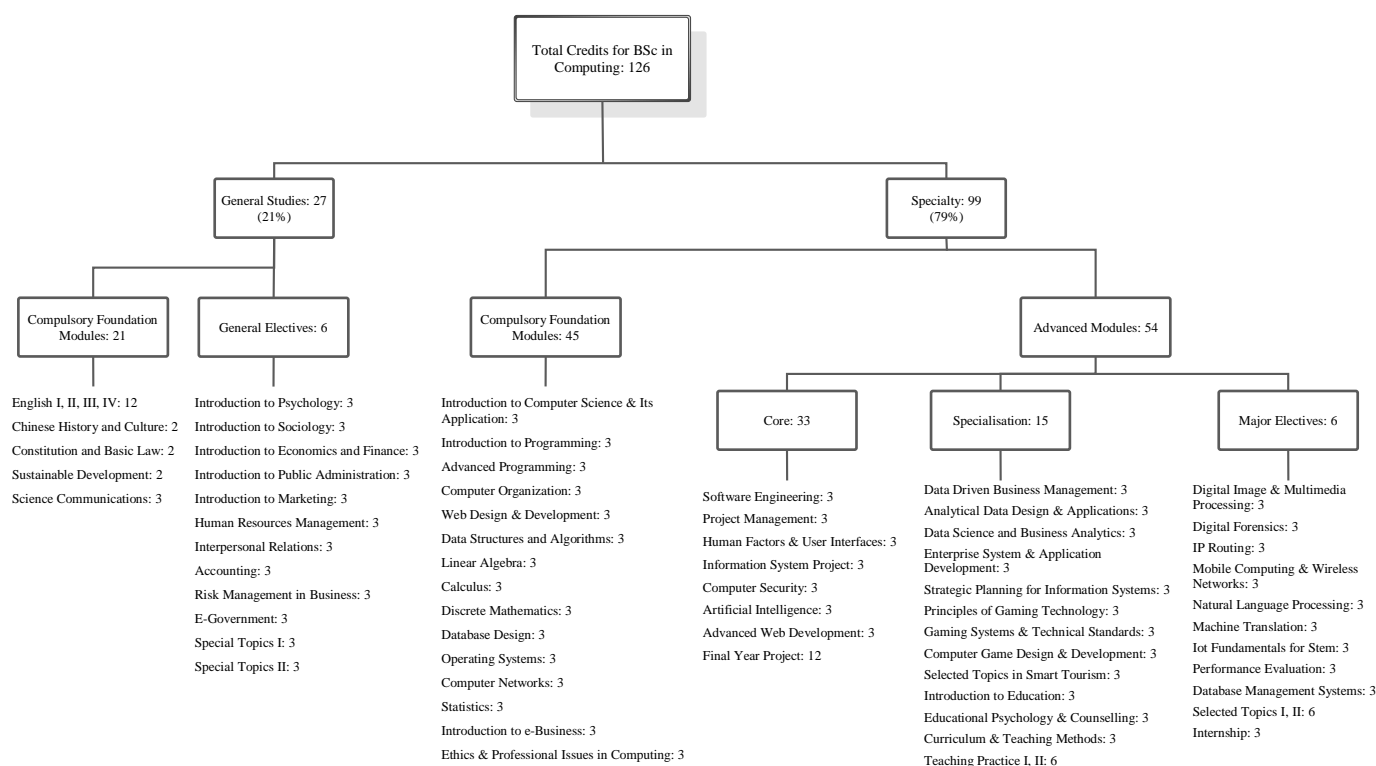- Selected Topics I, II: 6
- Internship: 3

Figure 2 Module Structure of the Computing Programme

International Academic Recognition

The Bachelor of Science in Computing Programme has successfully achieved higher education academic accreditation granted by the Institution of Engineering and Technology (IET) in 2011, 2016, and 2020. Qualified graduate of the Programme partially fulfils the Chartered Engineer (CEng) educational requirement internationally.

Renowned universities abroad such as the University of Bologna, Italy, and Victoria University, Australia have articulation agreements with the Macao Polytechnic University. Graduates of the Bachelor of Science in Computing Programme of MPU can transfer to these universities for further studies.

In 2009, the Memorandum of Understanding between the University and the University of California, Los Angeles (UCLA) Henry Samueli School of Engineering and Applied Science, was renewed, with a new item for better student exchange programme. The abovementioned agreements should provide our students with more opportunities for further studies abroad.

SECTION 3 MODULE INFORMATION

Table 1 – The Study Plan

Code	Module	Period of Study	Type	Hour	Credit
Year 1					
COMP1121	Introduction to Computer Science and its Application	1st semester	Compulsory	45	3
COMP1122	Introduction to Programming	1st semester	Compulsory	45	3
MATH1111	Linear Algebra	1st semester	Compulsory	45	3
MATH1112	Calculus	1st semester	Compulsory	45	3
MENG1111	English I	1st semester	Compulsory	45	3
LLAW1120	Constitution and Basic Law	1st semester	Compulsory	30	2
COMP1123	Computer Organization	2nd semester	Compulsory	45	3
COMP1124	Advanced Programming	2nd semester	Compulsory	45	3
COMP1125	Introduction to E-Business	2nd semester	Compulsory	45	3
MATH1113	Discrete Mathematics	2nd semester	Compulsory	45	3
MENG1112	English II	2nd semester	Compulsory	45	3
HIST1110	Chinese History and Culture	2nd semester	Compulsory	30	2
Year 2					
COMP2111	Database Design	1st semester	Compulsory	45	3
COMP2112	Data Structures and Algorithms	1st semester	Compulsory	45	3
COMP2113	Operating Systems	1st semester	Compulsory	45	3
MATH2111	Statistics	1st semester	Compulsory	45	3
MENG2111	English III	1st semester	Compulsory	45	3
SOCI1112	Sustainable Development	1st semester	Compulsory	30	2
COMP2114	Ethics and Professional Issues in Computing	2nd semester	Compulsory	45	3
COMP2115	Web Design and Development	2nd semester	Compulsory	45	3
COMP2116	Software Engineering	2nd semester	Compulsory	45	3
COMP2117	Computer Networks	2nd semester	Compulsory	45	3
MENG2112	English IV	2nd semester	Compulsory	45	3
Year 3					
COMP3112	Project Management	1st semester	Compulsory	45	3
COMP3113	Artificial Intelligence	1st semester	Compulsory	45	3
COMP3122	Advanced Web Development	1st semester	Compulsory	45	3
MENG3111	Science Communications	1st semester	Compulsory	45	3
	Specialisation Module (Table 3 (a))	1st semester	Compulsory	45	3
	General Elective (I) (Table 2)	1st semester	Optional	45	3
COMP3114	Information System Project	2nd semester	Compulsory	45	3
COMP3115	Human Factors and User Interfaces	2nd semester	Compulsory	45	3
	Specialisation Module (Table 3 (b))	2nd semester	Compulsory	45	3
	Specialisation Module (Table 3 (c))	2nd semester	Compulsory	45	3
	General Elective (II) (Table 2)	2nd semester	Optional	45	3

Code	Module	Period of Study	Type	Hour	Credit
Year 4					
COMP4111	Computer Security	1st semester	Compulsory	45	3
	Specialisation Module (Table 3 (d))	1st semester	Compulsory	45	3
	Major Elective (I) (Table 4)	1st semester	Optional	45	3
	Specialisation Module (Table 3 (e))	2nd semester	Compulsory	45	3
	Major Elective (II) (Table 4)	2nd semester	Optional	45	3
COMP4299	Final Year Project	1st & 2nd semester	Compulsory	90	12

Table 2 – General Elective Module List

Code	Module	Type	Hour	Credit
MSEL3101	Introduction to Psychology	Optional	45	3
MSEL3102	Introduction to Sociology	Optional	45	3
MSEL3103	Introduction to Economics and Finance	Optional	45	3
MSEL3104	Introduction to Public Administration	Optional	45	3
MSEL3105	Introduction to Marketing	Optional	45	3
MSEL3106	Human Resources Management	Optional	45	3
MSEL3107	Interpersonal Relations	Optional	45	3
MSEL3108	Accounting	Optional	45	3
MSEL3109	Risk Management in Business	Optional	45	3
MSEL3110	E-Government	Optional	45	3
MSEL3111	Special Topics I	Optional	45	3
MSEL3112	Special Topics II	Optional	45	3

Table 3 – Specialisation Module List

Each student must choose one of the following areas of specialisation.

Code	Module	Type	Hour	Credit
Business Intelligence				
COMP3116	(a) Data Driven Business Management	Compulsory	45	3
COMP3117	(b) Analytical Data Design and Applications	Compulsory	45	3
COMP3118	(c) Data Science and Business Analytics	Compulsory	45	3
COMP4112	(d) Enterprise System and Application Development	Compulsory	45	3
COMP4113	(e) Strategic Planning for Information Systems	Compulsory	45	3
Gaming Technology				
COMP3119	(a) Principles of Gaming Technology	Compulsory	45	3
COMP3121	(b) Gaming Systems and Technical Standards	Compulsory	45	3
COMP3118	(c) Data Science and Business Analytics	Compulsory	45	3
COMP4114	(d) Computer Game Design and Development	Compulsory	45	3
COMP4115	(e) Selected Topics in Smart Tourism	Compulsory	45	3
Computer Education				
EDUC3111	(a) Introduction to Education	Compulsory	45	3
EDUC3112	(b) Educational Psychology and Counselling	Compulsory	45	3
EDUC3113	(c) Curriculum and Teaching Methods (IT in Secondary Education)	Compulsory	45	3
EDUC4111	(d) Teaching Practice I	Compulsory	45	3
EDUC4112	(e) Teaching Practice II	Compulsory	45	3

Table 4 – Major Elective Module List

Code	Module	Type	Hour	Credit
COMP4116	Digital Image and Multimedia Processing	Optional	45	3
COMP4117	Digital Forensics	Optional	45	3
COMP4118	IP Routing	Optional	45	3
COMP4119	Mobile Computing and Wireless Networks	Optional	45	3
COMP4120	Natural Language Processing	Optional	45	3
COMP4121	Machine Translation	Optional	45	3
COMP4122	IoT Fundamentals for STEM	Optional	45	3
COMP4123	Performance Evaluation	Optional	45	3
COMP4124	Database Management Systems	Optional	45	3
COMP4125	Selected Topics I	Optional	45	3
COMP4126	Selected Topics II	Optional	45	3
COMP4127	Internship	Optional	45	3

Table 5 – Pre-requisite Module List

Module Code and Title		Pre-requisite(s)	
Year 1			
COMP1124	Advanced Programming	COMP1122	Introduction to Programming
MENG1112	English II	MENG1111	English I
Year 2			
COMP2112	Data Structures and Algorithms	MATH1113	Discrete Mathematics
MENG2111	English III	MENG1112	English II
MENG2112	English IV	MENG2111	English III
Year 3			
COMP3114	Information System Project	COMP1122 COMP2111	Introduction to Programming Database Design
COMP3117	Analytical Data Design and Applications	COMP2111	Database Design
COMP3121	Gaming Systems and Technical Standards	COMP3119	Principles of Gaming Technology
COMP3122	Advanced Web Development	COMP1122 COMP2115	Introduction to Programming Web design and Development
MENG3111	Science Communications	MENG2112	English IV
Year 4			
COMP4111	Computer Security	MATH1113	Discrete Mathematics
COMP4112	Enterprise System and Application Development	COMP1124	Advanced Programming
COMP4118	IP Routing	COMP2117	Computer Networks
COMP4119	Mobile Computing & Wireless Networks	COMP2117	Computer Networks
COMP4120	Natural Language Processing	MATH2111	Statistics
COMP4124	Database Management Systems	COMP2111	Database Design
COMP4127	Internship	COMP2114	Ethics and Professional Issues in Computing
COMP4299	Final Year Project	COMP2116 COMP3114	Software Engineering Information System Project

For modules with pre-requisites, students must pass the pre-requisites first before taking them.

Module Descriptions

Year 1

COMP1121 Introduction to Computer Science and its Application (3 credits; 45 hours; Pre-requisite: nil)
This module will introduce: 1) fundamental electronic data processing concepts and associated terminologies; 2) the development of computers and computer applications; 3) network security, malware, security software and the use of encryption and decryption for secure data communication; 4) programming languages; and 5) concepts of algorithms, data structures, resource management. Furthermore, computer science related fields such as AI and its applications will be introduced and discussed.

COMP1122 Introduction to Programming (3 credits; 45 hours; Pre-requisite: nil)
This module introduces fundamental programming techniques and principles using the popular Python Programming language. It aims to build fundamental software development skills including the use of the Python programming language and tools, debugging, testing and fundamentals of good programming practice, style and design.

MATH1111 Linear Algebra (3 credits; 45 hours; Pre-requisite: nil)
This learning module introduces basic concepts and techniques from linear algebra that will be required in later computer science areas such as machine learning and computer graphics. Topics include systems of linear equations, matrices, determinants, vectors and vector spaces, linear in(dependence), multi-dimensional linear transformations, eigenvalues and eigenvectors.

MATH1112 Calculus (3 credits; 45 hours; Pre-requisite: nil)
This module introduces the basic concepts of differential and integral calculus. Topics include functions, limits and continuity, techniques of differentiation, applications of differentiation to practical problems, curve sketching, definite and indefinite integration, and applications of integral calculus.

MENG1111 English I (3 credits; 45 hours; Pre-requisite: nil)
This module aims to develop students' general English language proficiency at the intermediate level. Emphasis is placed on the development of vocabulary and fundamental grammatical conventions, general and academic reading, and writing skills. Students' speaking and listening skills are developed through communicative practice activities.

LLAW1120 Constitution and Basic Law (2 credits; 30 hours; Pre-requisite: nil)
This module introduces the general principles, the state system, the state organs, and the fundamental rights and duties of citizens stated in the Constitution of the People's Republic of China (the Chinese Constitution). It also covers the formulation of the "One Country, Two Systems" policy and the Basic Law of the Macao Special Administrative Region of the People's Republic of China (the Macao Basic Law) and such sections in the Macao Basic Law as the relationship between the Central Government and the Macao Special Administrative Region (SAR), the political structure of the Macao SAR, and the fundamental rights of Macao residents. The module is aimed at assisting the students to establish a correct understanding about the Chinese Constitution and the Macao Basic Law, and to identify the basic concept of the legal protection of people's rights and freedoms.

COMP1123 Computer Organization (3 credits; 45 hours; Pre-requisite: nil)
This module is concerned with the study of the structures and behaviour of computers. It traces the evolution of computers and considers the functional organization of a computer. Major components of a computer are discussed in this module and an overview of microcomputer technologies is provided.

COMP1124 Advanced Programming (3 credits; 45 hours; Pre-requisite: COMP1122)
This module covers the principles of object-oriented programming using the Java language. Fundamental programming skills and methods related to object-oriented approaches are discussed. Topics include: objects and classes, encapsulation, inheritance and polymorphism, abstract classes and interfaces, generics and container classes, exception handling, and functional programming.

COMP1125 Introduction to E-Business (3 credits; 45 hours; Pre-requisite: nil)
The goals of this module are to provide students with an overview of key concepts in business, and to develop an understanding of E-Business. This module will expose the students to the basic principles of running businesses, and to provide students with the knowledge of various modern e-commerce related concepts and terminologies, including topics on web technologies, payment and security, marketing, legal issues, and environmental and social behaviors.

MATH1113 Discrete Mathematics (3 credits; 45 hours; Pre-requisite: nil)
This module is designed for computing programme students to enhance their training in logical thinking through a variety of mathematical topics. Topics include set theory, logic and proof, combinatorial mathematics, relations and functions, groups, graphs, Boolean algebra and logic gates.

MENG1112 English II (3 credits; 45 hours; Pre-requisite: MENG1111)
This module aims to refine students' general English language proficiency at the intermediate level. Emphasis is placed on the development of vocabulary and grammatical conventions, general and academic reading, and writing skills. Students' speaking and listening skills are developed through communicative practice activities.

HIST1110 Chinese History and Culture (2 credits; 30 hours; Pre-requisite: nil)
This course aims to give an overview of the History and Culture of China and to give students knowledge about the political, economic and cultural development of ancient and modern China. On the other hand, it is intended to show, generically, political and economic relations between China and the rest of the world. The history of Macau, as an important part of the exchange between China and the western world since the 16th century, will also be presented.

Year 2

COMP2111 Database Design (3 credits; 45 hours; Pre-requisite: nil)

This module is designed to provide students with an understanding of the principles of relational database design and the ability to apply these principles in the design and development of database projects. Principles of good design and modelling, how to structure queries using SQL will be the focus.

COMP2112 Data Structures and Algorithms (3 credits; 45 hours; Pre-requisite: MATH1113)

This learning module provides an introduction to data structures. The module begins with an introduction to concrete and abstract linear structures: linked lists, stacks and queues. Next, the fundamentals of algorithm analysis are covered. Recursive algorithms are introduced with mathematical induction to show the elementary reasoning about algorithms. Trees are discussed with the applications in heaps and search trees. Hashing and various sorting algorithms are explained and analyzed. Finally, the module concludes with some advanced algorithms on graphs.

COMP2113 Operating Systems (3 credits; 45 hours; Pre-requisite: nil)

This learning module aims to help students to understand important concepts and algorithms in operating systems. Major components discussed are process management, virtual memory, I/O and file systems. Topics include process description and control, process scheduling, threads, SMP, mutual exclusion and synchronization, partitioning, paging, segmentation, memory management algorithms, disk scheduling and file systems.

MATH2111 Statistics (3 credits; 45 hours; Pre-requisite: nil)

This is a foundation module in statistical methods with the necessary probability included. Topics cover basic statistical theory, construction of charts, descriptive statistics and probability theory basics. Presentation of probability distributions, confidence intervals, correlation and regression analyses are also dealt with.

MENG2111 English III (3 credits; 45 hours; Pre-requisite: MENG1112)

This module aims to develop students' general English language proficiency at the upper intermediate level. Emphasis is placed on the understanding of vocabulary and the parts of speech, as well as advanced grammatical conventions. Emphasis is placed on business and academic communications with focus on presentation and writing skills. Students' speaking and listening skills are developed through communicative practice activities.

SOCI1112 Sustainable Development (2 credits; 30 hours; Pre-requisite: nil)

The learning module aims to enable students to understand global developments and relevant trends as well as concepts of sustainable development in relation to promoting economic growth, protecting the environment and addressing community needs in education, health and social security. Students will be able to identify and recognize factors contributing to sustainable development in the environmental, socio-economic and other domains with a strong sense of global citizenship.

COMP2114 Ethnics and Professional Issues in Computing (3 credits; 45 hours; Pre-requisite: nil)

This module provides an overview of ethical theories and problems encountered by IT professionals in today's computing environments. Stimulating ethical issues in machine learning, deep learning, social networking, government surveillance, and intellectual property from different views are discussed. This module challenges students to think critically and draw their own conclusions, which ultimately prepare them to become responsible, ethical users of computing technologies.

COMP2115 Web Design and Development (3 credits; 45 hours; Pre-requisite: nil)

This module is an introduction to server-side web programming. It provides the principles of web application development, and arms students with the skills for developing web-oriented applications. Topics include HTML, CSS, web request handling, state management, and database manipulation.

COMP2116 Software Engineering (3 credits; 45 hours; Pre-requisite: nil)

This module introduces the concepts of software development. Emphasis will be put on understanding the processes, techniques and methods used to develop application software. Besides, students are exposed to various software development approaches. Upon completion, students will be able to understand the major software development methodologies and techniques, appreciate their relative merits and their limitations.

COMP2117 Computer Networks (3 credits; 45 hours; Pre-requisite: nil)

This is an introductory course in Data Communications and computer networks. It familiarizes the students with the basics of data communications, technologies used in modern computer networking from the top layer to the bottom layer of the Internet protocol stack. Topics include data transmission, network services and applications, layered Internet architecture and protocols, routing and switching, etc.

MENG2112 English IV (3 credits; 45 hours; Pre-requisite: MENG2111)

This module aims to refine students' general English language proficiency at the upper intermediate level. Emphasis is placed on the understanding of vocabulary and the parts of speech, as well as advanced grammatical conventions. Emphasis is placed on business and academic communications with focus on presentation and writing skills. Students' speaking and listening skills are developed through communicative practice activities.

Year 3

COMP3112 Project Management (3 credits; 45 hours; Pre-requisite: nil)

The objective of this module is to study the concepts and issues related with management of information technology projects. Topics include introduction to projects and their management, project planning and development processes, project selection methods, work breakdown structures, network diagrams & critical path analysis, resource estimation, and project control, project organization structures, and various project management models.

COMP3113 Artificial Intelligence (3 credits; 45 hours; Pre-requisite: nil)

The learning module introduces both the theoretical and the practical aspects of artificial intelligence (AI), including the fundamental mathematical models and the state-of-the-art tools for AI problem solving. The topics include mathematical logic, searching heuristics, Bayesian inference, machine learning and prolog programming language. These topics cover a wide range of key topics in modern AI, from deterministic reasoning to reasoning with uncertainty, from rule-based systems to learning-based systems, etc.

COMP3114 Information System Project (3 credits; 45 hours; Pre-requisites: COMP1122, COMP2111)

This module aims to develop students' abilities to apply their information systems development skills and to work in a group to develop an application project and produce written reports. The students should focus on demonstrating sound skills in integrating systems analysis, systems design, problem solving, implementation and testing to complete the process of information system implementation. The module also prepares the students for taking the Final Year Project.

COMP3115 Human Factors and User Interfaces (3 credits; 45 hours; Pre-requisite: nil)

This module applies the basic principles of human-computer interaction to the design of computer interfaces. It also looks at the analysis of interface design and system integration problems. Comparison of standard graphical user interfaces (GUI) and the application of guidelines for windows, menus, and other dialogue techniques is dealt with. Students will evaluate the usability of the program interfaces and compare interface design methodologies.

COMP3122 Advanced Web Development (3 credits; 45 hours; Pre-requisite: COMP1122, COMP2115)

Recent advances in Web standards and their wide support by mainstream browsers have enabled development of sophisticated Web applications that are accessible on desktop and mobile devices. This course examines important concepts and technologies required to develop state-of-the-art Web applications. Topics include the architecture and protocol of the Web, the JavaScript language, development of interactive user interfaces and scalable backend of Web applications, and the design and implementation of Web APIs.

MENG3111 Science Communications (3 credits; 45 hours; Pre-requisite: MENG2112)

The module develops the students' abilities to communicate science information effectively to both technical and non-technical audience. It covers strategies for preparing and communicating technical content in both written and spoken settings, and addressing challenges in dealing with complex research topics. It cultivates practical communication skills in science-related topics.

Year 4

COMP4111 Computer Security (3 credits; 45 hours; Pre-requisite: MATH1113)

This module explains the theoretical foundations, and current state, of modern cryptographic algorithms and trusted computers used to provide various computer security services. Cryptographic encryption algorithms, including DES, RSA, and Diffie-Hellman, are discussed. Additional topics are classical ciphers, modern private key block ciphers, public key ciphers, authentication and integrity, key management and modern application systems.

COMP4299 Final Year Project (12 credits; 90 hours; Pre-requisites: COMP2116, COMP3114)

The final year project (FYP) aims to allow students to tackle a real problem and to complete the specification / design / implementation / documentation / testing / evaluation processes. Students are required to develop software projects and / or carry out research project in a relevant area. The FYP is an individual project. The students are required to explore an area of information technologies in considerable depth, demonstrating sound problem solving and analytical skills.

Specialization Modules: Business Intelligence

COMP3116 Data Driven Business Management (3 credits; 45 hours; Pre-requisite: nil)

This module is an interdisciplinary course on operations management and data sciences with a broad focus on processes and products with data science driven methodologies. The Data Driven Business Operations (D2BO) is designed to give computer sciences and/or business management majored sophomore students in the fundamental components of business management. The highlights of D2BO are data driven Operations Research, Project Management, Supply Chain Management that can be adapted to other components in running of the business.

COMP3117 Analytical Data Design and Applications (3 credits; 45 hours; Pre-requisite: COMP2111)

This module discusses the principles and practices of designing databases for analytical purposes and provides students with knowledge in the design, implementation and utilization of solutions in business analytics, such as data warehouses, online analytical processing (OLAP) and data mining. In addition, this module also examines the role of data-driven analytical techniques in enterprise applications.

COMP3118 Data Science and Business Analytics (3 credits; 45 hours; Pre-requisite: nil)

In this module, students will undertake in-depth topics about the interrelation between Big Data, information science, statistics, business and other information-related phenomena in the world. Upon completing the module, students will be able to identify and access the interdisciplinary issues in data sciences with respect to smart applications, and to situate studies of technological innovation in a broad social and Region-specific context.

COMP4112 Enterprise System and Application Development (3 credits; 45 hours; Pre-requisite: COMP1124)

This module provides the knowledge required to build the enterprise systems and accordingly to develop applications in Java EE. It will focus on the current enterprise system and application development practices such as server-side resource management, high-performance database manipulation, software design pattern and architecture, framework implementation, and system security.

COMP4113 Strategic Planning for Information Systems (3 credits; 45 hours; Pre-requisite: nil)

This module aims to provide students with an overall understanding of the strategic role of information systems, and the strategic planning and management of them within a modern organization. Within this scope the emphasis is on student knowledge of the range of established strategic analysis and planning tools and how they can be applied.

Specialization Modules: Gaming Technology

COMP3118 Data Science and Business Analytics (3 credits; 45 hours; Pre-requisite: nil)

In this module, students will undertake in-depth topics about the interrelation between Big Data, information science, statistics, business and other information-related phenomena in the world. Upon completing the module, students will be able to identify and access the interdisciplinary issues in data sciences with respect to smart applications, and to situate studies of technological innovation in a broad social and Region-specific context.

COMP3119 Principles of Gaming Technology (3 credits; 45 hours; Pre-requisite: nil)

This module covers the general knowledge of the current technologies applied in the gaming industry. The purpose of this module is to enable students to gain a full picture of the overall gaming environment worldwide with regard to technologies employed and to develop an understanding of the underpinning concepts behind the technologies utilised now and in future. In particular, the students will be introduced to the historical background of gaming, classification of the games, the compliance of slot machines and other peripherals used in table games.

COMP3121 Gaming Systems and Technical Standards (3 credits; 45 hours; Pre-requisite: COMP3119)

This module explains the highly regulated electronic gaming machines and the main gaming information systems from a technical perspective. Gaming information systems such as progressives, accounting system, bonusing system and configuration system will be discussed. Topics covered include electronic gaming machines, design and architecture of the gaming floor network and systems, and testing, standards and certification.

COMP4114 Computer Game Design and Development (3 credits; 45 hours; Pre-requisite: nil)

This module provides an introduction to the theory and practice of game design and development. The module covers several major areas: the theories and concepts of game design, the architecture of a game engine, the rendering engine, 3D pipeline programming and physics engine. In practice, a number of game development techniques are covered with Unity game engine.

COMP4115 Selected Topics in Smart Tourism (3 credits; 45 hours; Pre-requisite: nil)

This module covers state-of-the-art topics about smart tourism, which is highly relevant to the sustainable development of Macao's economy. Students will be introduced to technical topics such as artificial intelligence-based applications, robotics, the Internet of Things (IoT), etc., and their applications in the hospitality and tourism industries. These key concepts will be interrelated to areas of management and information systems for explaining how information technologies can be utilized to improve the services in these industries and the experience of tourists.

Specialization Modules: Computer Education

EDUC3111 Introduction to Education (3 credits; 45 hours; Pre-requisite: nil)

This module is an introductory and compulsory module for students who are considering teaching as a profession and who are seeking a better understanding about the complexity and importance of secondary education. This module will provide students with theories in the field of classroom instruction and learning, focus primarily on the nature and importance of the teaching profession, and discuss the current challenges and requirements for the profession. This module will lay a foundation for learning other professional educational modules.

EDUC3112 Educational Psychology and Counselling (3 credits; 45 hours; Pre-requisite: nil)

Educational psychology and counselling is an introductory module designed to be useful to students who plan to explore the teaching profession. This module intends to provide an overview of learning and motivational theories with a focus on their application to the field of classroom instructions and task design. This module also focuses on understanding the theories and processes of effective counselling and wellness programs for individual students and groups of students.

EDUC3113 Curriculum and Teaching Methods (IT in Secondary Education) (3 credits; 45 hours; Pre-requisite: nil)

Curriculum and teaching methods are essential for student success in achieving educational goals at secondary school level. This module intends to develop student's understanding and basic skills in desigining, analysing, reflecting and applying curriculum and teaching principles particularly appropriate to information technology in secondary schools. Topics relating to curriculum theory and development, technology-enhanced teaching and learning, a plenary discussion on the types of educational technology and the principle involved in using each media will be covered.

EDUC4111 Teaching Practice I (3 credits; 90 hours; Pre-requisite: nil)

This module aims to support student teachers in developing their teaching skills in information technology and prepare them for a successful teaching experience. This will be achieved through engagement in pedagogical issues and the application of practical teaching skills. The module requires significant personal involvement and time. Student teachers will observe school classes, design and engage in classroom teaching of information technology, and also carry out reflective writing on their observation and teaching.

EDUC4112 Teaching Practice II (3 credits; 90 hours; Pre-requisite: nil)

This module is a continuation of Teaching Practice I and aims to deepen the different perspectives of the teaching of Information Technology. Student teachers repeat the arrangement for Teaching Practice I but at an advanced level that helps them further improve their teaching skills based on the reflective writings on their observation and

teaching from Teaching Practice I. Student teachers will continue to observe school classes, design and engage in classroom teaching, and also undertake reflective writing on their observation and teaching.

General Elective Modules

MSEL3101 Introduction to Psychology
(3 credits; 45 hours; Pre-requisite: nil)

The module is designed to introduce students to the study of psychology. It is intended to provide broad coverage of the field by presenting basic theories, research, and applied use of psychology. It will give students a background from which to either pursue more advanced psychology courses, or to retain the information as a basic knowledge of psychology in general. Areas that will be covered include: research methods, human development, consciousness, learning, intelligence, motivation, personality, health psychology, psychological disorders, social psychology, and psychology of gaming. These areas will be approached from both theoretical and applied perspectives.

MSEL3102 Introduction to Sociology
(3 credits; 45 hours; Pre-requisite: nil)

This module attempts to introduce to students the basic concepts in the discipline of sociology. This will include the study of the major sociological theories; procedures and objectives of sociological research; the sociological perspective used to analyse self and society in general. This course intends to prepare students the interpersonal skills necessary in their personal and work life.

MSEL3103 Introduction to Economics and Finance
(3 credits; 45 hours; Pre-requisite: nil)

This module aims at providing a fundamental knowledge of Economics to students who never study it in a tertiary level. Students should demonstrate a sound understanding in both microeconomics and macroeconomics. Students become familiar with some important microeconomics topics, such as the economic problem, how markets work in terms of demand and supply, households' choice and market failure and government. Other macroeconomics topic, such as the macroeconomic policy and the economy in the short and long run will be investigated. Besides, this course will also look into the advantages given by the present resource of Macau economic environment. This course will also let the students understand the fundamental theories and applications of economics in both micro and macro perspectives.

MSEL3104 Introduction to Public Administration
(3 credits; 45 hours; Pre-requisite: nil)

This module provides a solid introduction to the fundamental areas of public administration, blending theory with practice in a way that helps students apply theoretical models to the real world. The complexities and breadth of the field and discipline of public administration are thoroughly covered, including the history of the discipline, bureaucracy, organizational theory and behaviour, public budgeting, personnel administration, public policy, and ethics.

MSEL3105 Introduction to Marketing
(3 credits; 45 hours; Pre-requisite: nil)

This module aims at providing a fundamental knowledge of Marketing to students who never study it in a tertiary level. Students should demonstrate a sound understanding in Marketing and become familiar with some important topics, such as Marketing Mix, Marketing Strategies, Segmentation and Positioning, Product Banding, Customer Relationship Management, Global Markets and International Marketing, Consumer Buying Behaviour, and Business Markets and Buying Behaviour, etc. Besides, this module will also look into the advantages given by the present resource of social system. This module will also let the students understand the fundamental theories and applications of marketing in micro and macro perspectives.

MSEL3106 Human Resources Management
(3 credits; 45 hours; Pre-requisite: nil)

This module covers the study of recruitment, selection and placement, job analysis, job description, job evaluation, compensation and appraisal plans, employment benefit programs, training and educational programs, labour relations, personnel planning and evaluation, and related theories of individual and group motivation and behaviour.

MSEL3107 Interpersonal Relations
(3 credits; 45 hours; Pre-requisite: nil)

In today's service-oriented, information-based global economy, strong interpersonal skills are essential. This module focuses on various topics of interpersonal communications. Its goal is to introduce theories and practices to help understand and develop one's intrapersonal and interpersonal effectiveness. Group dynamics theory and leadership skills are introduced to develop clear and effective team communications.

MSEL3108 Accounting
(3 credits; 45 hours; Pre-requisite: nil)

This introductory module in accounting provides students with an understanding of: the principles of accrual accounting; financial statement analysis; double-entry systems; the accounting cycle; and basic managerial accounting concepts.

MSEL3109 Risk Management in Business
(3 credits; 45 hours; Pre-requisite: nil)

In this module, students will be introduced to the different types of business and financial risks, their origins, and the modeling of risks. This module will also provide an overview of the evolution of risks, the risk management process, as well as risk evaluation and control. By completing this module, students will have the essential knowledge to measure, evaluate and manage risks in the business context.

MSEL3110 E-Government
(3 credits; 45 hours; Pre-requisite: nil)

Governments are increasingly moving their functions to the online world, and public services are being delivered through websites, apps and digital channels gradually. This module will give an overview of key concepts in e-government, such as smart governance, citizen engagement, law and regulations, as well as the choices of implementation. In addition, students will be introduced to different types of e-government applications and their implications. They will be encouraged to explore the technological, ethical and policy tensions that emerged when government services are being digitalized.

MSEL3111 Special Topics I (3 credits; 45 hours; Pre-requisite: nil)
This module is designed to provide students an understanding of introductory topics in non-IT technical fields, broadening their view and knowledgebase for the design of information systems.

MSEL3112 Special Topics II (3 credits; 45 hours; Pre-requisite: nil)
This module is designed to provide students an understanding of introductory topics in non-IT technical fields, broadening their view and knowledgebase for the design of information systems.

Major Elective Modules

COMP4116 Digital Image and Multimedia Processing (3 credits; 45 hours; Pre-requisite: nil)
The module introduces the different elements and the key perspectives in digital multimedia processing to students. It aims to equip the students with the background of developing image and multimedia processing tools and applications. The topics include: 1) the fundamental theories and mathematical models in digital image and multimedia processing; 2) the practical algorithms in digital image and multimedia processing; 3) the relevant mainstream standards in engineering and applications; 4) the development of image and multimedia processing applications in practice.

COMP4117 Digital Forensics (3 credits; 45 hours; Pre-requisite: nil)
Digital forensics is the application of computer investigation and analysis techniques in the interests of determining potential legal evidence. Evidence might be sought in a wide range of computer crime or misuse, including but not limited to theft of trade secrets, theft of or destruction of intellectual property, and fraud. This course enables students to draw on an array of methods for discovering and analysing data that resides in a computer system, or recovering deleted, encrypted, or damaged file information. This course will also provide students with the necessary skills to identify an intruder's footprints and to properly gather the necessary evidence.

COMP4118 IP Routing (3 credits; 45 hours; Pre-requisite: COMP2117)
This module delivers the concept of IP routing and the associated routing protocols that can be utilized to route within and between autonomous systems. Common routing protocols such as RIP, OSPF, and IGRP will be discussed. Switching network will also be discussed. Topics covered include network devices, router components, router configuration, IOS images, TCP/IP, routing protocols, network troubleshooting, switching, and VLAN. The module will provide hands-on labs using real networking equipment.

COMP4119 Mobile Computing and Wireless Networks (3 credits; 45 hours; Pre-requisite: COMP2117)
This learning module covers the fundamental principles of mobile computing and wireless networks. Topics include wireless communication systems, radio propagation, wireless media access, mobile IP, mobile applications and services, wireless LANs, wireless network security and next generation of wireless networks.

COMP4120 Natural Language Processing (3 credits; 45 hours; Pre-requisite: MATH2111)
Much data is stored in the form of text in today's environment. Some examples include web pages, social media posts, instant messaging, legal documents, etc. Such unstructured text creates many challenges in understanding and harnessing knowledge within. In this module, students will learn basic knowledge of natural languages and computational approaches for working with text. Students will also develop an understanding of the main algorithms of natural language processing and their various applications, such as sentiment analysis, text mining, machine translation and topic modelling.

COMP4121 Machine Translation (3 credits; 45 hours; Pre-requisite: nil)
This module will introduce: 1) Genres, development and schools of machine translation; 2) Challenges and assessment of machine translation; 3) Pre-translation editing and post-translation editing processing; 4) Impact of machine translation on society; 5) Limitations and future of machine translation.

COMP4122 IoT Fundamentals for STEM (3 credits; 45 hours; Pre-requisite: nil)
This module introduces the IoT fundamentals emphasizing raspberry pi and Arduino device programming, wireless sensor networks, machine to machine communications and cloud computing. It also brought in the concepts of STEM (Science, Technology, Engineering, Mathematics) education applied in secondary schools. Hand-on experience on designing and building IoT systems will be covered for students to get in-depth understanding on providing IoT solutions for the purpose of support STEM education.

COMP4123 Performance Evaluation (3 credits; 45 hours; Pre-requisite: nil)
The aim of this module is to provide students with the main concepts and techniques needed to study the performance of computer systems, plan the capacity of computer systems, predict their future performance under different configurations, and design new applications that meet performance requirements. The module is mainly based on the use of analytic queuing network models of computer systems.

COMP4124 Database Management Systems (3 credits; 45 hours; Pre-requisite: COMP2111)
This module introduces the advanced topics in the design and management of database systems. Topics include query processing, relational algebra, transaction management, concurrency control, database recovery, distributed database management systems, privacy and security. Data definition language and the features of Oracle databases will also be introduced in the module.

COMP4125 Selected Topics I (3 credits; 45 hours; Pre-requisite: nil)
This module covers advanced state-of-art topics that enables students to quickly gain the knowledge and adapt to design and development of practical systems in such topics.

COMP4126 Selected Topics II (3 credits; 45 hours; Pre-requisite: nil)

This module covers advanced state-of-art topics that enables students to quickly gain the knowledge and adapt to design and development of practical systems in such topics.

COMP4127 Internship (3 credits; 45 hours; Pre-requisite: COMP2114)

This module is to provide practical experience in a professional setting for students. Students will have an opportunity to exercise their IT knowledge and the skills they have acquired in a supervised environment, demonstrating competence in obtaining employment relevant to the academic learning through activities such as creating a CV, researching the market/industry, networking, making job applications and attending interviews. The projected outcomes are: an authentic work experience, the credential of having completed a professional internship, and the establishment of a personal network of professional associates valuable for career advancement.

SECTION 4 TEACHING & LEARNING

The Computing Programme has a close relationship between students and lecturers. Students may contact lecturers in person at anytime during office hours (six hours per week), or through email. Lecture notes and supplementary material are available in the University e-learning system called Canvas. Recommended book lists are provided at the beginning of each semester (see Appendix A1 for an example).

Basically, all modules (except for *Information System Project*, *Final Year Project*, *Internship* and *Teaching Practice I & II*) are lecture-based and must fulfil the number of contact hours per week assigned to those modules. Many of the modules offer tutorial and laboratory practice as specified in the module syllabi. As for the final year projects, students are expected to complete an implementation-based and/or research-based project with the guidance, assistance and monitoring of the student project supervisors.

The teaching methods applied in most of the modules are face-to-face lectures and laboratory work. Generally, the credit hours of each module equal the number of contact hours per week, which comprises both lectures and laboratory work.

Students with an overall score of less than 35 in the coursework must take the re-sit examination even if the overall score for the module is 50 or above. Students with a score of less than 35 in the final examination must take the re-sit examination even if the overall score for the module is 50 or above. Students with an overall final grade of less than 35 are NOT allowed to take the re-sit examination.

The medium of instruction is English. Students are expected to attend lectures and tutorials and must attain 70% attendance in order to sit for their final examinations.

The main teaching methods include the following:

Face-to-face Lectures

In most modules, lecturers deliver pedagogical material to students in a logical and organized manner in the classroom. Students obtain concepts and knowledge of a specific module by attending the lectures, and learning is reinforced by assignments, laboratory practice and projects.

The University facilitates an interactive learning experience in the classroom. Students are often challenged to solve problems, and encouraged to criticize information they are exposed to, both inside and outside the classroom. These approaches increase students' involvement and attentiveness.

Many lecturers use *Microsoft PowerPoint* to deliver lectures, while some lecturers may use audio/video material. The required equipment (projector and computers) is available in every classroom and computer laboratory.

Laboratory Work

Modules related to programming, systems operation, multimedia authoring, and network administration generally involve a larger portion of hands-on practice than other modules. This is achieved by offering laboratory work in some general-purpose teaching computer laboratories and a special-purpose "hardware laboratory".

The University provides sufficient general-purpose teaching computer laboratories that offer PCs with Windows platforms and Apple Computer. System development tools (including compilers, database management system and project management software) and office software are accessible in the computer laboratories where teaching takes place. For network and system administration, the special-purpose "hardware laboratory" provides routers and switches for hands-on practice.

Group Projects

Several advanced level modules require students to work on module projects. In addition to extended problem-solving in specific modules, students are also involved in group work early in their studies.

The *Final Year Project* module takes a student-centered learning approach. Students participate in problem solving activities involving a different combination of application development, technical challenge and research problems. Project supervisors facilitate the learning experience by providing means for accessing information, monitoring, and giving advice to the students.

SECTION 5 STUDENT SUPPORT

Academic Support

At the University level, the Registry, the Student Affairs Office, the Library, and Information Technology Department provide services that support students in their attainment of success.

In particular, the Registry and the Student Affairs Office cater to the many needs of students, from coping with their studies, to their need for personal, social and career development. Admissions, registration and enrolment, deferred study, withdrawal, transcripts and testimonials, student insurance, student counselling, financial aid and scholarships, student hostels, and recruitment seminars are all handled by the Registry and the Student Affairs Office. The Registry also serves as the central hub for disseminating information, and regulations and guidelines to students, including the academic calendar, class timetables, examination and supplementary examination timetables, booklists, job opportunities, academic regulations, subject equivalence, class attendance, tuition fee and payment methods etc. Most of this information is available online, with some services offered online as well. For instance, students may enrol for modules online, and also view their grades and unofficial transcripts.

Student Counsellors
https://www.mpu.edu.mo/student_corner/en/counselling_service.php

The counselling service is intended to assist students in adapting to their studies in the University, assist them to effectively manage their studies or prevent personal difficulties and enrich their campus life. The Student Counsellors provide counselling services to students on an individual basis and organise various types of activities. The Student Counsellors visit hostel students and non-resident students residing in the city on a regular basis.

Lecture Information for Students
https://www.mpu.edu.mo/student_corner/en/lecture_info.php
- Canvas
- Class Timetables
- Cancelled & Make-up Class Timetables
- Examination Timetables
- Re-sit Examination Timetables
- e-Portfolio
- Booklists

IT Facilities

The University is keen to equip the campus with an efficient and effective IT infrastructure and computing environment and provides students especially those in Computing Programme the conditions, they may expect to find in their future work place, using the Project Lab, Hardware Lab & self-study laboratory and other facilities.

On the one hand, the Project Lab (A216) providing high performance computers is dedicated to students in Computing Programme especially for their final year projects. Besides Intel based PCs and Apple computers, numerous mobile devices, are available for use in selected projects.

On the other hand, the Hardware lab allows students to have hand-on experience with CISCO networking equipment, and other hardware devices. The detailed configurations of the laboratories can be found in http://csc.mpu.edu.mo/index.php/computer-labs-intro.

A dedicated computer laboratory, at A204, with teaching assistant is setup to provide learning support to 1st and 2nd year students in their programming skills. Moreover, self-learning facilities can be found in the main campus. The self-study Computer Lab A213, equipped with Intel computers, Apple Computers, scanners, color copiers and printers, is for students and registered public access only. In the lab, some lab assistants from the Information Technology Department provides assistance in using the computing facilities and enforce the computer laboratory usage regulations. Their contact phone number is 85996252. In addition, the self-learning area and Information Literacy Lab are setup in the Library in Academic Building.

Basically, at least one of the computer labs opens 24 hours in normal days and until midnight in the evening of public holidays. The opening hours in the public holidays during Summer and Winter vacation are from 10

am till 10 pm. To access the computers in the labs, please login with your NetID and NetPassword as instructed in http://csc.mpu.edu.mo/index.php/accounts-a-passwords/netid-computer-account.

On the main campus, our IT facilities include a significant number of networked computers providing access to online services, Email and the Internet through computer laboratories and self-learning facilities and the campus wireless network as well.

In addition, Cyber cafés and information kiosks are available at a number of campus locations offering latest campus news and Internet access for students and visitors. Broadband Internet connections are provided in our student hostels to allow students to connect their computers to access the Internet within their rooms. *Canvas* is in use in the University offering our teachers and students an online teaching and learning management platform.

A helpdesk counter of the Information Technology Department is located at A201 on the main campus to provide IT support services to all staff and students.

Section 6 Major Quality Assurance Mechanism and Student Feedback System

In guaranteeing that the assessment and examination procedure is up to standard, the Subject Leaders of the Assessment Standards Task Group of the Quality Assurance Committee (see Figure 3) are responsible for vetting the final examination question papers and marking schemes before the final examination, and also moderating the grading of student scripts after the final examination. The Internal Examiner for each module is responsible for grading students' continuous and final examinations. The External Examiner vets examination papers, moderates examination scripts, and attends Programme Examination Board meetings at the end of each year. Grades are previewed and double-marked by the Assessment Standards Task Group, forwarded to the Programme Examination Board, which are then submitted to the Pedagogic Committee (PC), the Examination Board at the Faculty Level. Students are given the right to review their grades. In case of any dispute between a student and the teacher, the Assessment Standards Task Group will try to resolve the issue. If it is not resolved, the issue will be brought to the Faculty level.
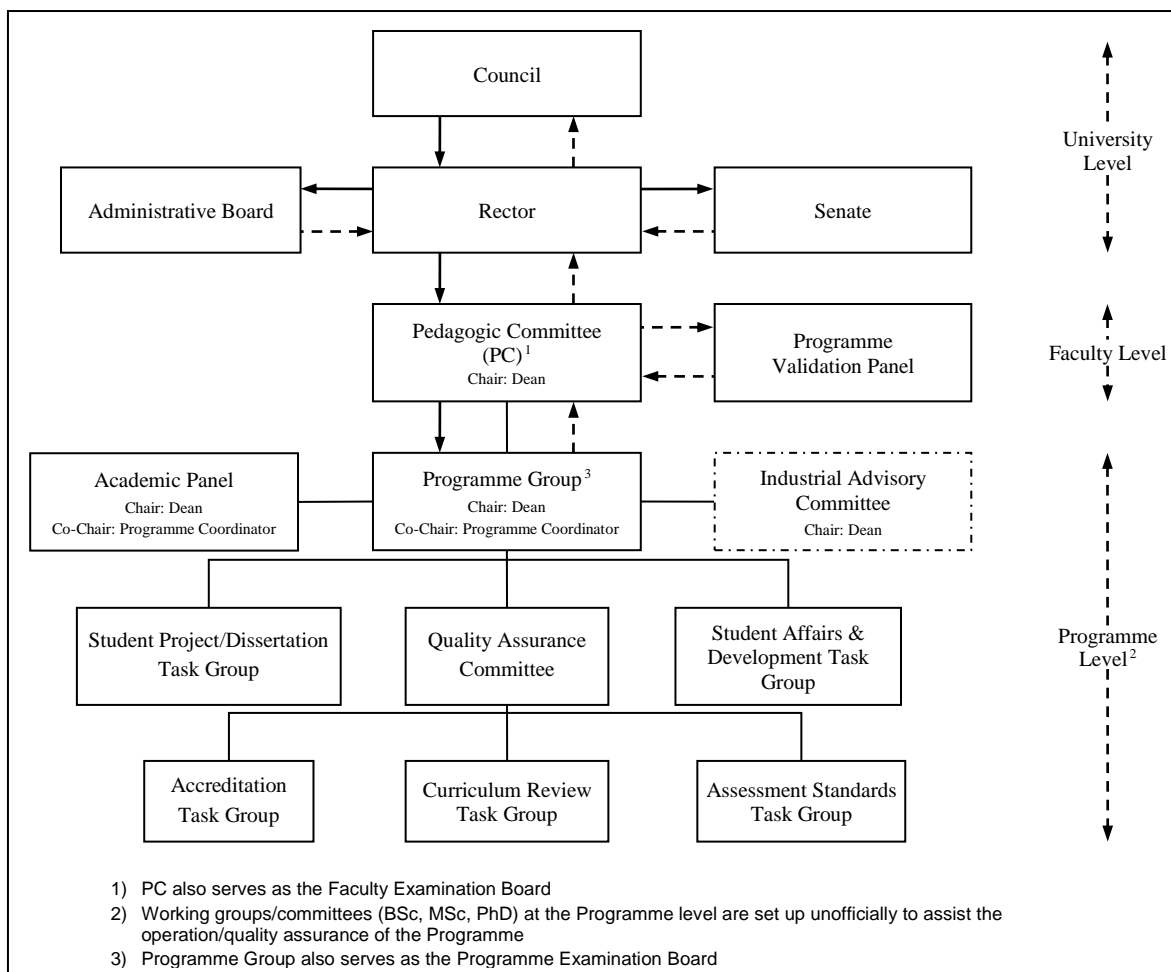
Figure 3 Academic Structure of MPU

Student Feedback

The University gathers feedback from students by a variety of means. These include informal staff/student discussions, Faculty Dialogue, Dialog with the University, student feedback questionnaires at module level, and engagement survey at the programme level.

Channels for student feedback are maintained and developed at the programme-level, being led by the Programme Coordinator, with the support of the Faculty Dean. At the Faculty level, the Faculty Dialog is a forum where student representatives can raise their problems and concerns. At the Programme level, students are encouraged to talk to their Year Tutors to discuss their personal as well as academic problems, which will be directed to the Student Advisor of the Programme's Student Affairs and Development Task Group. The Programme Coordinator may try to solve internal problems with the assistance of the Programme Team. If beyond the jurisdiction of the Programme level, problems will be directed to the Faculty Dialog Meeting. If beyond the jurisdiction of the Faculty level, the problems will be directed to the University level. The Faculty provides counsellors for students who want to resolve their problems further.

SECTION 7 GENERAL INFORMATION AND STUDENT ENQUIRIES

Programme Matters

Title and Name	Tel. No.	Email	Office
Programme Coordinator Dr. Tang Su Kit, Jacky 鄧樹傑博士	85996491	sktang@mpu.edu.mo	A202a
Assistant Programme Coordinator Chan Mei Pou, Calana 陳美寶	85993277	calanachan@mpu.edu.mo	M511
Assistant Programme Coordinator Dr. Choi Ka Cheng, Rebecca 蔡嘉靜博士	85993335	rebeccachoi@mpu.edu.mo	M509

Generative Artificial Intelligence Usage Policy

In response to the rapid growth of artificial intelligence technologies, the Faculty of Applied Sciences implemented a *Generative AI Usage Policy* specifically for student assessments. This policy aims to provide a framework for the ethical and responsible use of AI tools in academic settings, ensuring that students can leverage these innovations while maintaining academic integrity. By outlining clear guidelines for acceptable AI usage, we seek to encourage creativity and critical thinking, while preventing misuse that could undermine the learning process, fostering a responsible academic environment. Please see the detail below.

1. **Purpose**

   This policy governs the use of Generative Artificial Intelligence (GenAI) tools (e.g., ChatGPT, GitHub Copilot, DALLE, etc. but not limited to) in learning, teaching and assessment. It ensures that students demonstrate authenticity and professionalism in academic achievement that meets the learning outcomes required for academic accreditation.

2. **Scope**

   This policy applies to all undergraduate or postgraduate students in Faculty of Applied Sciences (FCA) undertaking Bachelor, Master and PhD degrees and to teachers or supervisors assessing their work in study.

3. **Acceptable Use of GenAI**

   Students may use GenAI tools for the following purposes, provided they are *transparent and reflective* about their use:
   - Idea generation (e.g., brainstorming project topics or design approaches)
   - Code assistance (e.g., debugging, syntax suggestions)
   - Language support (e.g., grammar correction, paraphrasing)
   - Visualization (e.g., generating concept diagrams or mockups)

   All such uses must be:
   - Documented in assignments and assessments (see Section 6)
   - Critically evaluated by the student (e.g., limitations, accuracy, ethical implications)

4. **Prohibited Use**

   The following uses of GenAI are not permitted:
   - Submitting AI-generated content as original work without disclosure
   - Using GenAI to write substantial portions of the report, literature review, or analysis
   - Generating falsified data or results

- Using AI to bypass assessments or simulate experimental work

5. Alignment with Learning Outcomes

Students must demonstrate personal achievement of learning outcomes, particularly:
- Application of knowledge and problem-solving
- Design and innovation
- Ethical and professional responsibilities

The use of GenAI must not compromise the authenticity and professionalism of the outcomes. Teachers or supervisors will assess whether students have engaged in critical thinking, original design, and ethical reflection.

6. Disclosure Requirements

Students must include an AI Usage Statement in their work in any form, detailing:
- Tools used (e.g., ChatGPT, Copilot, etc)
- Purpose and context of use
- Reflections on accuracy, limitations, and ethical considerations

Examples:

a) Literature Review Support
"ChatGPT was used to summarize key concepts from peer-reviewed articles during the initial literature review phase. All summaries were cross-checked against the original sources, and no AI-generated text was used verbatim in the final report."

b) Coding Assistance
"GitHub Copilot was used to suggest code snippets for implementing a PID controller. The suggestions were reviewed, modified, and integrated manually. All final code was tested and documented by the student."

c) Brainstorming and Ideation
"ChatGPT was used to brainstorm potential project ideas and system architectures. The final project scope and design were independently developed and refined through supervisor feedback and personal research."

d) Writing and Language Support
"Grammarly and ChatGPT were used to improve grammar and clarity in the discussion section. No AI-generated content was used to formulate arguments or conclusions."

e) Data Visualization
"DALL·E was used to generate conceptual diagrams for the system overview. These were used for illustrative purposes only and do not represent actual design outputs."

f) Ethical Reflection
"The ethical implications of using AI tools in engineering design were explored using ChatGPT to generate discussion prompts. The final ethical analysis was written independently and reflects the student's own critical evaluation."

g) Improper Use (What Not to Do)
"Sections of the literature review were generated using ChatGPT and submitted without modification or citation." This would be considered a breach of academic integrity under this policy.

7. Teacher/Supervisor Responsibilities

Teacher or supervisor must:
- Discuss this policy with students at the beginning of the module
- Monitor AI usage during assignment or assessment milestones
- Evaluate the student's understanding and critical engagement with AI tools

8. Academic Integrity

Misuse of GenAI will be treated as a breach of academic integrity and may result in disciplinary action under the institution's misconduct policy.

List of Teachers

https://www.mpu.edu.mo/esca/en/academic_staff.php

Year Tutors

Class	Teacher	Tel. No.	Email	Office
Year 1-111	Dr. Lei Kin, Liam 李堅博士	85996808	liamli@mpu.edu.mo	N46b
Year 1-112	Dr. Yang Xu 楊旭博士	85996353	xuyang@mpu.edu.mo	A323
Year 1-113	Dr. Zhang Jie, Peter 張杰博士	85996837	jpeter.zhang@mpu.edu.mo	N56
Year 2-211	Dr. Choi Ka Cheng, Rebecca 蔡嘉靜博士	85993335	rebeccachoi@mpu.edu.mo	M509
Year 2-212	Chan Mei Pou, Calana 陳美寶	85993277	calanachan@mpu.edu.mo	M511
Year 2-213	Dr. Lam Chi Kin, Charles 林子健博士	85996823	cklamsta@mpu.edu.mo	N46b
Year 3-311	Dr. Wong Un Hong, Chester 黃遠雄博士	85996453	chesterwong@mpu.edu.mo	A320
Year 3-312	Siu Ka Meng, Andrew 蕭嘉明	85996451	kmsiu@mpu.edu.mo	A320
Year 4-411/412	Ho Ka Chong, Wilson 何家忠	85996586	kcho@mpu.edu.mo	A216

Student Enquiries

The Programme is operated with the *Faculty of Applied Sciences* (*FCA*).

Location of the FCA office:
  Room M539, Meng Tak Building, Main Campus.

Opening hours of the FCA office:
  Monday - Thursday   9 am - 1 pm; 2:30 pm - 5:45 pm
  Friday   9 am - 1 pm; 2:30 pm - 5:30 pm
  Saturday, Sunday and Public holiday   closed

Phone: (853) 85993281 or 85993273
Fax: (853) 28719227

Other Useful Contacts, Telephone Numbers, and Websites

WebMail

https://mail.mpu.edu.mo/

SIWeb

http://siweb.mpu.edu.mo/ – to check timetable and other useful information

Programme Website

http://cp.mpu.edu.mo/

University Official Website

http://www.mpu.edu.mo/

Library & Photocopying

Website: http://library.mpu.edu.mo/
Phone: (853) 85996241, 85996708

Information Technology Department Website

http://it.mpu.edu.mo/

Computer Help Desk at A201

Phone: (853) 85996152
Fax: (853) 28530505
Email: it@mpu.edu.mo

Submit requests via email or the web-based service request system (SRMS) at:
  http://it.mpu.edu.mo/srms.

Computer Lab Assistant at A213

Phone: (853) 85996147

Bell Centre

Phone: (853) 28719592
Fax: (853) 28719705
Email: mpubell@mpu.edu.mo

Registry

Phone: (853) 85996111/(853) 85996149/(853) 85996103
Fax: (853) 28523746
E-mail: registry@mpu.edu.mo

Student Affairs Office

Phone: (853) 85996203/(853) 85996121/(853) 85996486
Fax: (853) 28706747
E-mail: sao@mpu.edu.mo

Student Counselling and Advisory Services at A119

Phone: (853) 85996141/(853) 85996139/(853) 85996573
E-mail: counsellor@mpu.edu.mo

Welfare and Recreation Department

http://www.mpu.edu.mo/en/wrd_general_information.php

Student Union

https://www.facebook.com/aeipm

Scholarships and Grants

https://www.mpu.edu.mo/student_corner/en/scholarships_fellowships.php

Alumni

http://aaaipm.ipm.edu.mo/

A1. Important Information and Regulations

Important guidelines and regulations are available in MPU website. Some of these resources are selected and listed here for your convenience.

Student Handbook

https://www.mpu.edu.mo/studenthandbook/

The MPU Student Handbook provides students with such important information about the University as its regulations, services, facilities, and communication mechanisms. Printed copies of the Handbook are distributed to new students at the start of each academic year.

Prospectus

https://www.mpu.edu.mo/student_corner/en/prospectus_2425.php

The MPU prospectus provides students with such information as the academic calendar, MPU's profile, logo, motto, mission and vision, MPU's organisation and different study programmes.

Rules and Regulations

https://www.mpu.edu.mo/student_corner/en/rules_regulations.php

Academic Regulations

Admission Policy

Assessment Strategy

Regulations for Handling Examination Violations

Regulations for Handling Violations of Academic Integrity

Examination Regulations for Students

Regulations on the Management and Use of Teaching Facilities (Intranet)

Guidelines on Avoiding Plagiarism for Degree Programmes

Guidelines on Prevention of Sexual Harassment and Procedures of Handling Sexual Harassment Complaints (Intranet)

Students' Motorcycle Car Park

General Guidelines for Students with a Disability

Student Disciplinary Regulations

Guidelines for Student Internship

Assessment Strategy

http://www.mpu.edu.mo/student_corner/en/assessment_strategy.php

Macao Polytechnic University Guidelines for Plagiarism Avoidance

https://www.mpu.edu.mo/student_corner/en/reg_for_handling_violations_acad_integrity.php

Examination Regulations for Students

http://www.mpu.edu.mo/student_corner/en/examination_regulations_for_students.php

Adverse Weather Arrangements

https://www.mpu.edu.mo/student_corner/en/adverse_weather_arrangements.php

A2. MPU Campus Map

Map of Macao Polytechnic University Main Campus (1)

Map of Macao Polytechnic University Main Campus (2)

Remarks

(1) **A202a – Office of the Programme Coordinator of the BSc in Computing**

(2) **A204 – Computer Lab for BSc in Computing Students**

(3) **A216 – Computing Programme Project Lab**

(4) **A303 – Chinese-Portuguese-English Machine Translation Laboratory**

(5) **A304 – Centre for Portuguese Studies**

(6) **A318 – Electronic Lecture Theatre**

(7) **A319/A320 – Gaming and Entertainment Information Technology Research and Development Centre**

(8) **A322/A323 – Joint Research Center in Ubiquitous Computing**

Appendices

A3. Academic Calendar

Macao Polytechnic University

1st Semester, 2025/26

Week	Month							Events		Public Holidays / Students' Recess	
	August 2025										
	Su	M	T	W	T	F	Sa				
						1	2				
	3	4	5	6	7	8	9				
	10	11	12	13	14	15	16				
	17	18	19	20	21	22	23				
1	24	25	26	27	28	29	30	26	(開課) First Day of Classes (1st Semester)		
	31										
	September 2025										
	Su	M	T	W	T	F	Sa				
2		1	2	3	4	5	6				
3	7	8	9	10	11	12	13				
4	14	15	16	17	18	19	20				
5	21	22	23	24	25	26	27				
6	28	29	30								
	October 2025										
	Su	M	T	W	T	F	Sa			1	(國慶節) National Day
				1	2	3	4			2	(國慶節翌日) The day following National Day
7	5	6	7	8	9	10	11			7	(中秋節翌日) The day following Mid-Autumn Festival
8	12	13	14	15	16	17	18			29	(重陽節) Chung Yeung Festival
9	19	20	21	22	23	24	25				
10	26	27	28	29	30	31					
	November 2025										
	Su	M	T	W	T	F	Sa			2	(追思節) All Soul's Day
							1			3	(追思節之後首個工作日) First Working Day After
11	2	3	4	5	6	7	8				All Soul's Day
12	9	10	11	12	13	14	15				
13	16	17	18	19	20	21	22				
14	23	24	25	26	27	28	29				
	30										
	December 2025										
	Su	M	T	W	T	F	Sa	2	(課堂結束) Last day of classes (1st sem.)	8	(聖母無原罪瞻禮) Immaculate Conception
15		1	2	3	4	5	6	3-6	(補課/複習) Make-up Classes / Revision	20/12-1/1	(聖誕及新年假期)Christmas /
	7	8	9	10	11	12	13	9-19	(期末考試) Final Examinations (1st Sem.)		New Year Recess
	14	15	16	17	18	19	20				
	21	22	23	24	25	26	27				
	28	29	30	31							

Macao Polytechnic University
2ⁿᵈ Semester, 2025/26

Week	Month							Events		Public Holidays / Students' Recess	
	January 2026										
	Su	M	T	W	T	F	Sa	3	(期末考試成績公佈)Final Grades Announced	1	(元旦) New Year Day
					1	2	3	5-6	(補考申請)Application for Re-sit Exam		
1	4	5	6	7	8	9	10	6	(開課)First Day of Classes (2nd Semester)		
2	11	12	13	14	15	16	17	9-15	(補考期)Re-sit Examinations		
3	18	19	20	21	22	23	24	23	(補考成績公佈)Re-sit Exam Grades Announced		
4	25	26	27	28	29	30	31				
	February 2026										
	Su	M	T	W	T	F	Sa				
5	1	2	3	4	5	6	7				
6	8	9	10	11	12	13	14			15-26	(春節假期) Lunar New Year Recess
	15	16	17	18	19	20	21				
	22	23	24	25	26	27	28				
	March 2026										
	Su	M	T	W	T	F	Sa				
7	1	2	3	4	5	6	7				
8	8	9	10	11	12	13	14				
9	15	16	17	18	19	20	21				
10	22	23	24	25	26	27	28				
	29	30	31								
	April 2026										
	Su	M	T	W	T	F	Sa			3	(耶穌受難日) Good Friday
11				1	2	3	4			4	(復活節前日) Holy Saturday/Easter Eve
12	5	6	7	8	9	10	11			6	(清明節之後首個工作日) First Working Day After Ching Ming Festival
13	12	13	14	15	16	17	18	23	(課堂結束) Last day of classes (2nd sem.)		
14	19	20	21	22	23	24	25	24-29	(補課/複習) Make-up Classes / Revision	7	(復活節前日之後首個工作日) First Working Day After Easter Eve
	26	27	28	29	30			30/4-12/5	(期末考試) Final Examinations (2nd Sem.)		
	May 2026										
	Su	M	T	W	T	F	Sa	2-12	(期末考試) Final Examinations (2nd Sem.)	1	(勞動節) Labour's Day
						1	2				
15	3	4	5	6	7	8	9	23	(期末考試成績公佈) Final Grades Announced		
	10	11	12	13	14	15	16	26-27	(補考申請) Application for Re-sit Exam		
	17	18	19	20	21	22	23	30/5-5/6	(補考期) Re-sit Examinations	25	(佛誕節) Buddha's Birthday
	24	25	26	27	28	29	30				
	31										
	June 2026										
	Su	M	Tu	W	Th	F	Sa	1-5	(補考期) Re-sit Examinations		
		1	2	3	4	5	6	12	(補考成績公佈) Re-sit Exam Grades Announced		
	7	8	9	10	11	12	13				
	14	15	16	17	18	19	20			19	(端午節) Tuen Ng Festival
	21	22	23	24	25	26	27				
	28	29	30								

Appendices

A4. Class Timetables

The Class Timetable for the 1st Semester of Academic Year 2025/2026 is available on MPU website:
https://wapps2.mpu.edu.mo/siweb_news/newslogin.asp?page=time_prog.asp&lang=en

A5. Textbook List

Year	Module Name	Module Code	Teacher	Text Book (* = Reference Book)	Edition / Year	Publisher	Author	Remark / ISBN
1	Introduction to Computer Science and its Application	COMP1121	Wang Ke	Discovering Computers: Digital Technology, Data, and Devices	ebook	Cengage Learning	Misty E. Vermaat, Susan L. Sebok, Steven M. Freund, Jennifer T. Campbell and Mark Frydenberg	9788000040172
	Introduction to Programming	COMP1122	Chester Wong / Jia Dengqiang	Introduction to Computation and Programming Using Python	3rd / 2021	MIT Press	John V. Guttag	9780262542364 (Paperback) 9780262363433 (eBook)
	Linear Algebra	MATH1111	Wang Duo / Charles Lam	Introduction to Linear Algebra	6th / 2023	MIT Press	Gilbert Strang	9781733146678
	Calculus	MATH1112	Lei Kin	SI Units Thomas Calculus	15th	Pearson	George B. Thomas	9781292459677
				SI Thomas Calculus VS EB	15th	Pearson	George B. Thomas	9781292727936 (eBook)
	Constitution and Basic Law	LLAW1120	Yolanda Leong	* Explaining the Macao Basic Law	2020	"One Country, Two Systems" Research Centre of MPU	Li, L. N. & Xu, C. (eds.)	9789996522291
				* Constitution	6th / 2018	Beijing: Renmin University of China Press	Xu, C. & Hu, J.	-
	English I	MENG1111	Daisy Jiang / Jovy Wong / Joanna Leung / Viana Vong	Cutting Edge (Intermediate)	3rd / 2013	Pearson Longman	Cunningham S., P. Moor, and J. Bygrave	9781447936879
				* Ready to Write	3rd / 2010	Pearson Longman	Blanchard, K. and C. Root	9780131363304
				* Success with Reading 1	2019	Cosmos Culture	Gionis, T.	9786263000384