澳門理工大學

Universidade Politécnica de Macau

Macao Polytechnic University

Macao Polytechnic University

Faculty of Applied Sciences

Master of Science in Big Data and Internet of Things

Programme Handbook

2023-2024

The Institution of Engineering and Technology

Accredited Programme

Engineering Council accredited degree

WELCOME

Welcome to the Master of Science Degree in Big Data and Internet of Things (the 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 Programme

Chan-Tong Lam, PhD.

Acting Dean, Faculty of Applied Sciences

Table of Contents

SECTION 1 PRELIMINARY INFORMATION

The *Master of Science in Big Data and IoT* (the MSc Programme) is a master degree programme under the *Faculty of Applied Sciences* (FCA) in the *Macao Polytechnic University* (MPU). The MSc programme admitted its first cohort in the academic year 2019/20. The degree is taught and examined entirely in English. Students in the MSc programme will normally complete the programme in two years on a full-time basis. A total of 30 credits must be taken in order to obtain their Master Degree. Scheduled teaching contact amounts to approximately 12 hours a week, and is timetabled between 6 pm and 11 pm Monday to Friday.

SECTION 2 PROGRAMME INFORMATION

Programme Aims and Objectives

The Internet of Things (IoT) refers to novel cutting edge technology that connects a plethora of digital devices equipped with several sensing and computing capabilities with the Internet. Through IoT, many physical items may be seamlessly integrated to the Internet for the purposes of data gathering, command and communication. It provides many opportunities for users, manufacturers, and service providers to offer various enhanced services to all users. A key issue today is, collected data from daily operations of enterprises and governments continues to grow. This raises the importance of Big Data, which involves the knowledge to use technology to capture, store, protect, search, analyze and visualize voluminous and complex data. Big data is the resource and even the core of a large amount of current and future Information and Communication Technology (ICT) applications, such as in the smart city technologies and artificial intelligence. It becomes a crucial factor to the development and success of our society.

There are several indications that demonstrate a need for skilled graduates with IoT and Big Data knowledge: 1) increasing number of connected devices, 2) increasing variety of IoT products, 3) evolving development of IoT standards, 4) integration of data from enterprise information systems and IoT devices, 5) demand for Big Data processing and analytics across all industries, 6) the need for implementation and development of an IoT-based smart city. This has created many specific IoT and Big Data job opportunities. Moreover, Big Data and IoT are the key elements in building a sustainable smart city. A Master of Science degree in Big Data and IoT allows students to take great advantage of the need for IoT and Big Data technologies, and become successful in the competitive Information Technology (IT) market.

This programme includes modules with required theories, approaches, applications and hands-on experience pertaining to IoT and Big Data processing, supported by our joint international R&D research centres in Ubiquitous Computing, Wireless Communication Technology, Multimedia Technology and Machine Learning.

The MSc in Big Data and IoT degree is designed to meet the demands for a new kind of IT specialist – those who have the ability to:

1. Compare key system architectures and communication mechanisms for IoT;
2. Design and develop innovative IoT applications to connect intelligent objects;
3. Apply leading-edge techniques for Big Data processing;
4. Extract information relevant for smart city applications;
5. Undertake IoT and Big Data research.

Programme graduates will be able to pursue careers in IoT and Big Data positions in industry and government, as well as initiate independent research via multiple scientific domains based on advanced IoT and Big Data technologies.

Entry Requirement

Applicants must satisfy the following two requirements:

- Possess a Bachelor Degree in the relevant discipline. According to Article 20 of the Higher Education Law of Macao Special Administrative Region (MSAR), article nº8, applicants for admission to the MSc in Big Data and IoT must possess a Bachelor Degree in the relevant discipline.
- Have passed the medical examination.

Programme Structure and Information

Structure of the Programme

The programme is delivered over four semesters spanning two years, the first two being mainly the taught modules and the 3rd and the 4th being the academic and/or research activities as well as the project report. Although there is no specific pathway for the Programme, the students are expected to select their specialist elective modules (one for each semester during the 1st and 2nd semester) suitable for their interest and for the preparation of their project report.

As shown in the Figure 1 below, the modules can be divided into 3 main groups:

Big Data and Data Analytics

Modules in this group cover the first main theme of the MSc programme. There are three compulsory modules. First, the module "Introduction to Big Data" sets the foundation of the field of Big Data and Data Analytics. Second, the module "Big Data Analytics" specializes in the issues of massive data and intelligent processing. Finally, the module "Machine Learning" discusses advanced topics in data analytics using machine learning, and data processing of digital media and data generated from various domains. This group also includes two elective modules, "Optimization Methods" and "Advanced Topics in Probability and Statistics", which prepare students to develop deep analytical solutions for various data processing problems.

Internet of Things

The second theme of the MSc programme is Internet of Things, and is covered by two compulsory modules and two specialist elective modules. The compulsory module "Internet of Things (IoT) Essentials" provides

the foundation knowledge in the field of IoT. On top on this, the compulsory module "Communication Technology for IoT" examine more in-depth issues of communications and protocols in state-of-the-art IoT systems. This group also includes three specialist elective modules, namely "Security and Authentication" , "Cloud Computing" and "Multimedia Technology for IoT".

Project Report

In the beginning of the compulsory module "Project Report", which starts from the 2nd semester of Year 1, students learn practical transferable skills applicable to manage applied project in computing and information technologies (IT). Afterwards, students are required to apply the techniques and technologies which they have learned in a significant advanced project in "Project Report", which spans the 2nd semester of Year 1 and Year 2.

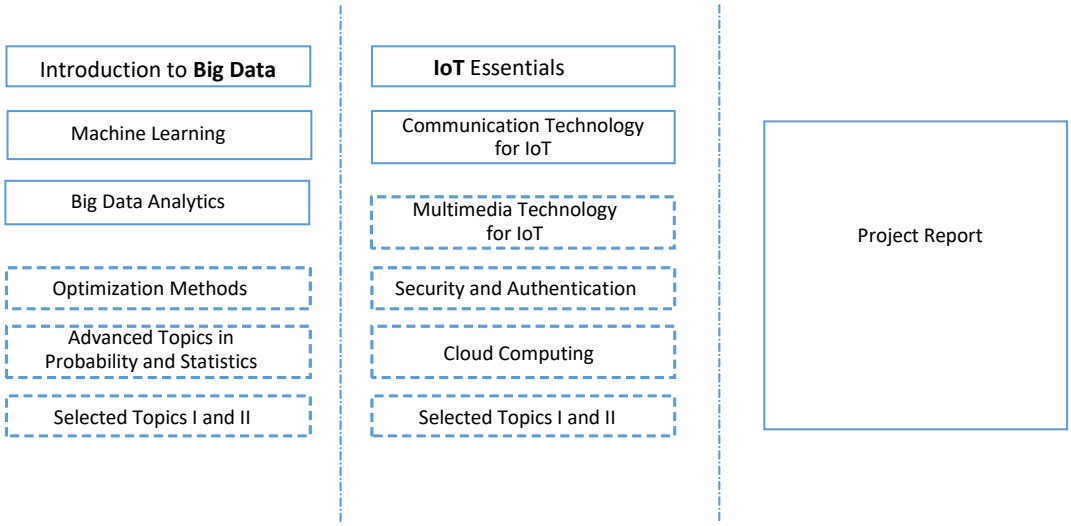


Figure 1 Module Structure of the Programme

Design of Curriculum

Period of Study

The length of study for the Programme is normally 2 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 2 years. Any approved long leave of absence, including deferment of study, shall not be counted towards the period of study. Students who are not able to complete the Programme within the maximum period of study (48 months) 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.

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 designed to cover various aspects of the fields of Big Data and IoT. Three compulsory modules in the 1st semester set the foundation knowledge in the fields of Big Data, IoT and also research skills. On top of these, two more compulsory modules broaden students' knowledge base in Big Data and IoT. In Year 1, students also need to select two specialist elective modules to further strengthen their knowledge in advanced issues in the fields.

Starting from the 2nd semester of year 1, students have to carry out the project report in the fields of Big Data and IoT and complete their work in year 2.

Graduation Requirement

The students are awarded the Master of Science in Big Data and IoT when they have gained 30 credits, and passed all the required modules, including all the compulsory modules (15 credits), two specialist elective modules (6 credits) and the project report (9 credits).

SECTION 3 MODULE INFORMATION

The Study Plan

Code	Module	Semester	Type	Hour	Credit
Year 1					
COMP6131	Internet of Things (IoT) Essentials	1st	Compulsory	45	3
COMP6132	Introduction to Big Data	1st	Compulsory	45	3
COMP6133	Machine Learning	1st	Compulsory	45	3
COMP6134	Communication Technology for IoT	2nd	Compulsory	45	3
COMP6135	Big Data Analytics	2nd	Compulsory	45	3
COMP6111	Optimization Methods	1st / 2nd	Specialist Elective	45	3
COMP6112	Security and Authentication	1st / 2nd	Specialist Elective	45	3
COMP6113	Cloud Computing	1st / 2nd	Specialist Elective	45	3
COMP6114	Multimedia Technology for IoT	1st / 2nd	Specialist Elective	45	3
COMP6115	Advanced Topics in Probability and Statistics	1st / 2nd	Specialist Elective	45	3
COMP6105	Selected Topics I	1st / 2nd	Specialist Elective	45	3
COMP6106	Selected Topics II	1st / 2nd	Specialist Elective	45	3
COMP6298	Project Report	2nd	Compulsory	--	
Year 2					
COMP6298	Project Report	1st / 2nd	Compulsory	--	9

Module Descriptions

Year 1

COMP6131 Internet of Things Essentials (3 credits; 45 hours; Pre-requisite: nil)

This module provides a comprehensive overview of the Internet of Things (IoT) from the global context, and introduces the design fundamentals of the IoT. An IoT environment should facilitate interactions among intelligent machines, smart devices, ubiquitous computers, physical objects and human users. A number of underlying technologies enabling IoT will be discussed,

for example, the sensing technologies, wireless sensor networks, machine-to-machine communications, Cloud and Fog computing technologies, etc. In particular, the core system architectures, such as the middleware to design single device and multi-device systems, will be discussed. In order to obtain more hands-on experience in building IoT applications, project-based system constructions through interconnecting different smart sensing devices and programming Raspberry Pi and Arduino single board computers will be covered.

COMP6132 Introduction to Big Data (3 credits; 45 hours; Pre-requisite: nil)

This learning module covers the characteristics of Big Data, the sources of massive data in enterprises and sensor networks, and the challenges in data preparation, data storage and analytic processing. The students will acquire skills and working knowledge of the Big Data tools and technologies. This course focuses on the planning, designing and implementing Big Data solutions. Examples and exercises of Big Data systems are used to provide hands-on experiences in the workings of major components in Big Data solutions. The students will also be able to integrate the Big Data tools to form coherent solutions for business problems. Finally, additional related topics in the area of Big Data, such as alternative large-scale processing platforms, non-relational data stores, and Cloud Computing execution infrastructure are presented.

COMP6133 Machine Learning (3 credits; 45 hours; Pre-requisite: nil)

Artificial Intelligence (AI) is so pervasive today that possibly you are using it in one way or the other and you don't even know about it. One of the popular applications of AI is Machine Learning (ML), which is the science of getting computers to learn without being explicitly programmed. In the past decade, machine learning has given us many amazing applications such as self-driving cars, speech recognition, image recognition, financial trading, machine translation, AlphaGo etc. This module covers some of the most important methods for machine learning including deep neural networks, reinforcement learning, etc. The aim of the module is to give students the theoretical underpinnings of machine learning techniques, and to allow them to apply such methods in a range of areas such as image recognition, classification, automatic control etc. by practice.

COMP6134 Communication Technology for Internet of Things (3 credits; 45 hours; Pre-requisite: nil)

This learning module provides a comprehensive study of the major communication technologies and emerging standards that enable applications on Internet of Things (IoT). It covers a wide range of technologies which IoT is expected to bridge in the formation of an autonomous communication network that supports smart applications and intelligent decision making. Topics include: cellular technologies (2G/3G/4G/5G) and M2M communications, covering their transmission characteristics, physical layer technologies, medium access protocols, and routing protocols; WiFi; Bluetooth; Radio Frequency Identification (RFID); Near Field Communication (NFC); Wireless Sensor Networks; Wireless Personal Area Networks including IEEE 802.15.4 and ZigBee, and the Low Power networks such as SigFox and LoRa.

COMP6135 Big Data Analytics (3 credits; 45 hours; Pre-requisite: nil)

Recent advances in information and communication technologies (ICTs) have led to the rapid explosion of data. Business intelligence derived from big data can help firms to better understand market needs, develop new products and services, improve operational efficiency, and acquire competitive advantages. This learning module provides an overview of common big data applications and analytical techniques (e.g., sentiment analysis, decision tree, clustering, classification, etc.) in business and discusses some implementation issues related to big data projects. As part of a group project, students will need to demonstrate the ability to come up with a business plan based on a given case study and a relevant data set.

Specialist Elective Modules

COMP6111 Optimization Methods (3 credits; 45 hours; Pre-requisite: nil)

This module introduces the principal algorithms for linear, network, discrete, stochastic, system and process optimizations. Emphasis is on methodology and the underlying mathematical structures. Topics include the calculus, LP (Linear Programming), simplex method, network flow, game theory, queueing theory, system engineering and process optimization.

COMP6112 Security and Authentication (3 credits; 45 hours; Pre-requisite: nil)

This module focuses on information systems security. Students will learn fundamentals of computer security, formal models of security, aspects of information systems security such as access control, hacks/attacks, systems and programs security, intrusion detection, cryptography, networks and distributed systems security, worms, and viruses, and other Internet secure applications. Students will develop the skills necessary to formulate and address the security needs of enterprise and personal environments.

COMP6113 Cloud Computing (3 credits; 45 hours; Pre-requisite: nil)

Cloud Computing is one important technological innovation, and being adopted across industries at a rapid pace. With improved data redundancy and availability across different geographical locations, Cloud Computing transforms the ways how services, applications, and solutions are delivered. With the rises of novel virtualization technologies and new programming paradigms, applications can be delivered quickly to customers, without the need to own any physical infrastructure. Furthermore, with its rapid elasticity and scalability, Cloud Computing offers low-cost solutions to the needs of companies of any sizes. It is the perfect operating platform for housing Big Data systems and analysing collected IoT sensing data. In this module, the main characteristics and enabling technologies of Cloud Computing, including orchestration of compute nodes, and different service paradigms, will be discussed. Other underpinning issues such as security, privacy, and ethical concerns are also covered.

COMP6114 Multimedia Technology for Internet of Things (3 credits; 45 hours; Pre-requisite: nil)

This learning module aims to provide students with the advanced topics of multimedia compression and communication, and the in-depth concepts and applications of computer vision. Topics include the principles of scalable video and audio codecs, file formats and codec settings for optimizing the quality and media bandwidth, applying the codecs in developing a basic media player application that is suitable for mobile access, in-depth concepts and methods of computer vision, and the structure of the applications of computer vision.

COMP6115 Advanced Topics in Probability and Statistics (3 credits; 45 hours; Pre-requisite: nil)

This module will cover core concepts of probability theory and statistics with applications. Specific topics will include random variables and distributions, quantitative research methods (correlation and regression), and modern techniques of optimization and machine learning (clustering and prediction).

COMP6116 Selected Topics I (3 credits; 45 hours; Pre-requisite: nil)

The selected topics are designed to accommodate new, advanced and state-of-the-art technologies that are not included in this curriculum. One example is data mining. Data Mining is one of the most popular research fields in Computer Science. The aim of this is to give an applicable understanding of the usage of data mining as of decision making. In this module, several essential fields would be discussed, including the classes of different algorithms and models, and the methodology of how to choose a suitable algorithm. Classification, pattern recognition and different learning types would be discussed and covered. Besides, other interdisciplinary topics, such as AI in drug discovery, can also be covered.

COMP6117 Selected Topics II (3 credits; 45 hours; Pre-requisite: nil)

The selected topics are designed to accommodate new, advanced and state-of-the-art technologies that are not included in this curriculum. One example is data mining. Data Mining is one of the most popular research fields in Computer Science. The aim of this is to give an applicable understanding of the usage of data mining as of decision making. In this module, several essential fields would be discussed, including the classes of different algorithms and models, and the methodology of how to choose a suitable algorithm. Classification, pattern recognition and different learning types would be discussed and covered. Besides, other interdisciplinary topics, such as AI in drug discovery, can also be covered.

Year 1-2

COMP6298 Project Report (9 credits; -- hours; Pre-requisite: nil)

Students are required to apply the techniques and technologies which they have learned in a significant advanced project. Under the supervision of an advisor, the students shall focus on a contemporary technological problem and make use of the leading-edge techniques to produce new solutions. Upon completion, the project report is to be submitted and evaluated using the standard criteria for advanced project.

SECTION 4 TEACHING & LEARNING

The MSc Programme has a medium student-staff ratio, which fosters 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. For many modules, a soft copy of lecture notes and supplementary material are available in module homepages and module folders in the campus network. Recommended/Refence book lists are provided at the beginning of each semester (see Appendix A1 for an example).

Basically, all modules (except for *Project Report*) 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 Project Report, students are expected to complete an advanced project with the guidance, assistance and monitoring of 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 will fail the module even if the overall score for the module is 50 or above. Students with a score of less than 35 in the final examination will fail the module even if the overall score for the module is 50 or above. There will be no re-sit examinations.

The medium of instruction is English. Students are expected to attend lectures and tutorials and must attain more than 80% 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 programme emphasizes 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, network administration and A.I. technologies 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 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 modules require students to work on module projects. In addition to extended problem-solving in specific modules, students are also involved in group work in their studies.

Research Laboratories

Teaching and research are professionally supported by our joint international laboratories and research centres as below.

Chinese-Portuguese-English Machine Translation Laboratory

The Chinese-Portuguese-English Machine Translation Laboratory (CPE Lab) was jointly established by Macao Polytechnic University (MPU), Guangdong University of Foreign Studies and Global Tone Communication Technology Company Limited during October 2016. Macao Polytechnic University is a public institution of higher education. MPU bestowed the legacy of over one hundred years teaching and research experience in Chinese-Portuguese translation. CPE Lab features cutting-edge infrastructure and servers for machine translation (MT). Our team is composed of experienced computing and Chinese-Portuguese translation professionals. We focus on multidisciplinary teaching and applied knowledge. The main research topics of CPE Lab are statistical machine translation, hybrid machine translation, neural-network machine translation and Portuguese speech recognition.

Joint Research Center in Ubiquitous Computing (UbiLab)

The Ubiquitous Computing Research Laboratory is a coordinated effort from the Macao Polytechnic University (MPU) and Henry Samueli School of Engineering & Applied Science of University of California, Los Angeles (UCLA). It is located at the MPU main campus. It conducts research on Wireless Mobile Systems. UbiLab activities include research projects in a broad range of wireless mobile networks and systems such as vehicular networks, sensor networks, mobile peer-to peer applications and health networks. The center features a cutting edge research infrastructure and is staffed by world-class scientists from both institutions.

UbiLab will undertake research and knowledge transfer projects which initially will be focused on vehicular communications and will leverage the current results and resources in the C-VeT testbed

at UCLA. Research activities will explore the following directions: vehicular urban pollution monitoring, intelligent transportation systems and location based services.

Gaming and Entertainment R&D Laboratory

In 2007, MPU joined hands with the Melco Group and founded MPU-Melco Gaming and Entertainment Information Technology Research and Development Centre, which had been renamed as Gaming and Entertainment R&D Laboratory since 2011.

This Gaming and Entertainment R&D Laboratory, now solely operated by MPU, aims at conducting researches in the gaming area and developing gaming, entertainment, tourism, and MICE related prototypes and products. Areas of R&D include casino management applications, gaming tools, controlling and monitoring applications, tourism & MICE applications and gaming communication standards.

IPv6 Network Research Laboratory

IPv6 Network Research Laboratory, established in April 2013, is the research laboratory collaborated by the Macao Polytechnic University and Macao Post and Telecommunications Bureau. The laboratory aims at promoting IPv6 knowledge and technology for the industry in Macao. The laboratory is equipped with a number of IPv6 network solutions and the IPv6 network connection for the following functions: IPv6 application demonstration, research and development, seminar/workshop organization and student project development.

MPU-BMM Testing Centre for Gaming Devices

MPU-BMM Testing Centre for Gaming Devices is Asia's first gaming technology Test Centre.

- It assists in developing a suitable set of gaming standards for Macao;
- It provides test and certification services for gaming devices, such as slot machines;
- It offers training for local technicians to master professional and technical certification of gaming devices;
- It explores research areas in certification of gaming devices.

Digital Terrestrial Television Research and Testing Center

The DTV Research and Testing Center aims at conducting in-depth technical testing on digital television receivers and performing high quality research in areas related to digital television technology. The first mission of the center is, by leveraging its modern facilities and the expertise of MPU research staff, to conduct compliance checking on digital TV set-top boxes available in Macau. The second mission is to conduct research in emerging areas related to digital television technology. Using our modern equipment, we are able to provide test-bed for new technologies such as internet TV, cognitive radio and video compression algorithms.

SECTION 5 STUDENT SUPPORT

Academic Support

At the University level, the Registry, the Student Affairs Office, the Library, and Computer Service Centre 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

http://www.mpu.edu.mo/student_corner/en/student_counseling.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.

Online Services for Students

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

- Student Information Web (SIWeb)
- Class Timetable Enquiry
- Examination Timetable Enquiry
- Class Cancellations & Make-up Classes Timetable Enquiry
- Student Payment Status Enquiry
- Canvas LMS – e-Learning Platform
- Requisition for Various Documentation

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/MSc 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 20-seats Student Lab (A216) providing high performance computers is dedicated to students in the Programme especially for their Project Reports. Besides Intel based PCs and Apple computers, numerous mobile devices, including smartphones, smartcard readers, finger-print readers, and GPS receivers, are available for use in selected projects.

On the other hand, the 33 seats 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.

The 50 seats self-study Computer Lab A213, equipped with Intel computers, Apple Computers, scanners and self-service "*MACAUpass*" color copiers and printers, is for students and registered public access only. In the lab, some lab assistants are hired to provide assistance in using the computing facilities and enforce the computer laboratory usage regulations. While working in the laboratory, the computer laboratory assistants are required to wear an identification badge with photo and official chop from the Computer Service Centre for identification. The contact phone number is 85996147. In addition, the 17 seats self-learning area and 31 seats Information Literacy Lab are setup in the Library in Wu Chi 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 10am till 10pm. 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 19 computer laboratories and self-learning facilities and the campus wireless network as well. The latter network on the main campus supports IEEE 802.11g standard.

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 Computer Service Centre is located at A201 on the main campus to provide IT support services to all staff and students.

Student Union

http://aeipm.mpu.edu.mo/

The Macao Polytechnic University Student Union was established on 5 August 1993. Currently the Student Union consists of 7 subsidiaries and 14 sports clubs such as the dragon boat team, the fencing team, the boxing clubs and the judo clubs. The mission of the Union is to protect the interests of students and to cultivate their team spirit through activities.

The Student Union organises different activities such as orientation parties, Halloween Festival, Christmas parties and a charity ball. To help students make contribution to the community, it organises and encourages students to participate in the Walk for a Million and the annual Bazaar and to serve as volunteer social workers. The Student Union is also responsible for organizing students to join the annual sports competitions for tertiary education organizations. The Student Union office is situated on the main campus of the Macao Polytechnic University.

Scholarships and Grants

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

In order to encourage Macao's best students to enrol on the degree programmes offered by MPU, and to reward our current and graduate honours students, MPU and other enterprising organisations co-sponsor a number of different types of scholarships and grants in the form of reduced annual tuition fees and the granting of cash awards. Over one hundred students benefit from these scholarships annually.

Moreover, to attract the registration of the best students of the Mainland of China, MPU also offers three types of scholarship, as follows:

- full scholarships (including tuition fees, hostel fees, and monthly living subsidy);
- cash scholarships of MOP30,000.00;
- annual tuition fees waived.

MPU also provides a local student grants scheme to help those experiencing financial difficulties to enrol on its degree programmes offered by MPU, in order to enable equal opportunities for eligible students to enrol and enrich their individual capabilities so as to serve society in the future. Therefore, MPU reserves more than one million patacas for such grants annually. According to previous data, some of the beneficiates may receive up to 80% annual tuition fee reduction. Currently more than 600 students have benefited from such grants with some, having successfully graduated, already serving our community.

Students from the MSc Programme may consult with their project report's supervisor for additional funding support possibilities.

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 2) 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.

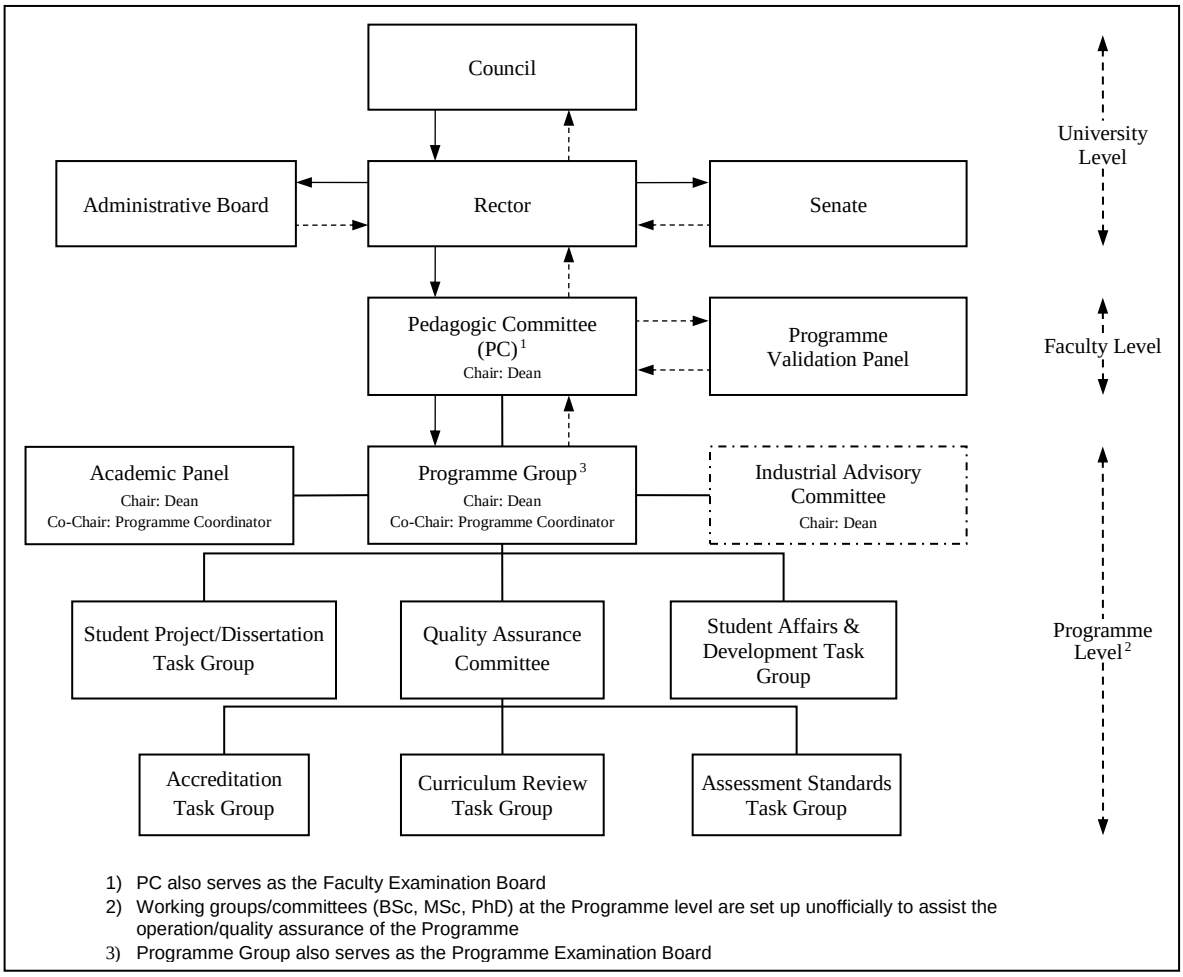


Figure 2 Academic Structure of MPU

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 Affairs Leader of the Programme's Student Affairs and Development Working 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 (PhD programme) Dr. Ke Wei 柯韋博士	85993342	ctlam@mpu.edu.mo	M537
Programme Coordinator (MSc programme) Dr. Ng Koon Kei, Benjamin 吳冠祺博士	85996431	bng@mpu.edu.mo	A313

List of Teachers

Teacher's Name	Tel. No.	Email	Office
Tse Tan Sim, Rita 謝丹嬋	85993280	ritatse@mpu.edu.mo	M512
Chan Mei Pou, Calana 陳美寶	85993277	calanachan@mpu.edu.mo	M511
Cheong Ngai, Phillip 張毅	85993333	ncheong@mpu.edu.mo	M520
Choi Ka Cheng, Rebecca 蔡嘉靜	85993335	rebeccachoi@mpu.edu.mo	M509
Ho Ka Chong, Wilson 何家忠	85996586	kcho@mpu.edu.mo	A216
Ines Lau 劉曼玲	85993263	ineslau@mpu.edu.mo	M503
Ke Wei 柯韋	85996452	wke@mpu.edu.mo	A319
Kim Song-Kyoo, Amang 金松圭	85996455	amang@mpu.edu.mo	A320
Lam Chan Tong 林燦堂	85993342	ctlam@mpu.edu.mo	M537
Law Ka Lun, Eddie 羅家倫	85993287	eddielaw@mpu.edu.mo	M509
Lei Iat Seng, Philip 李日昇	85993356	philiplei@mpu.edu.mo	M540
Liu Yue, June 劉玥	85996433	yue.liu@mpu.edu.mo	A313
Luo Wuman, Amy 羅吳蔓	85996321	luowuman@mpu.edu.mo	A323
Ng Koon Kei, Benjamin 吳冠祺	85996431	bng@mpu.edu.mo	A313
Siu Ka Meng, Andrew 蕭嘉明	85996451	kmsiu@mpu.edu.mo	A320
Tang Su Kit, Jacky 鄧樹傑	85996491	sktang@mpu.edu.mo	A202a
Yang Xu 楊旭	85996353	xuyang@mpu.edu.mo	A323
Yuan Xiao Chen 袁小晨	85996434	xcyuan@mpu.edu.mo	A313
Wang Yapeng 王雅鵬	85996432	yapengwang@mpu.edu.mo	A313
Yung Yau Kong, Edmund 容祐江	85993354	edmundyung@mpu.edu.mo	M511
Wong Chi Him, Dennis 黃智謙	85996875	cwong@mpu.edu.mo	N46B
Tan Tao 檀韜	85996643	taotan@mpu.edu.mo	A313

Sun Yue, Joy 孫悅	85996889	yuesun@mpu.edu.mo	N46B
Lam Chi Kin 林子健	85996823	cklamsta@mpu.edu.mo	N46B
Lyu Erli 呂而立	85993267	erlilyu@mpu.edu.mo	M505
Li Shu 李舒	85996821	shuli@mpu.edu.mo	N46B
Wang Duo 王鐸	85996884	duo.wang@mpu.edu.mo	N46B
Shen Hong 沈鴻	85993262	hshen@mpu.edu.mo	M501
Liu HuanXiang 劉煥香	85996874	hxliu@mpu.edu.mo	N46C

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) 85993278 or 85993273
Fax: (853) 28719227

Other Useful Contacts, Telephone Numbers, and Websites

WebMail

https://mail.mpu.edu.mo

SIWeb

http://siweb.ipm.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) 85996139/(853) 85996141
E-mail: priscillalai@mpu.edu.mo or thomasho@mpu.edu.mo

Welfare and Recreation Department

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

Student Union

https://www.facebook.com/aeipm

Alumni

http://mpu.edu.mo/aaampu/Chinese/cindex.htm

APPENDICES

A1. Important Information and Regulations

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

Student Handbook

http://www.mpu.edu.mo/cntfiles/upload/docs/student_corner/common/student_handbook_e.pdf
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

http://www.mpu.edu.mo/student_corner/en/prospectus_2223.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

Academic Regulations Governing Master's Degree Programmes
http://www.mpu.edu.mo/student_corner_p/en/ar_master.php

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

Macao Polytechnic University Guidelines for Plagiarism Avoidance
http://www.mpu.edu.mo/student_corner/en/guidelines_plagiarism_avoidancephp.php

Examination Regulations for Students
http://www.mpu.edu.mo/student_corner/en/examination_regulations_for_students.php

Adverse Weather Arrangements
http://www.mpu.edu.mo/student_corner/en/typhoons_and_heavy_rain.php

A2. MPU Campus Map

Map of Macao Polytechnic University Main Campus (1)

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

Map of Macao Polytechnic University Main Campus (2)

Remarks

(1) A202a – IPv6 Network Laboratory

(2) A204 – Computer Lab for CSP Students

(3) A216 – Digital Terrestrial Television Research and Testing Centre / CSP Project Lab

(4) A303/A304 – Chinese-Portuguese-English Machine Translation Laboratory

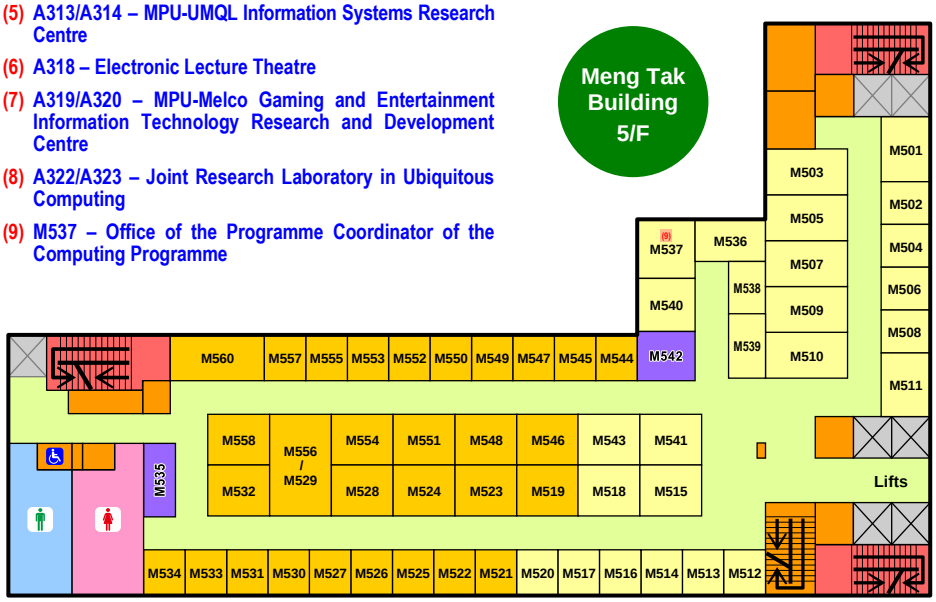
(5) A313/A314 – MPU-UMQL Information Systems Research Centre

(6) A318 – Electronic Lecture Theatre

(7) A319/A320 – MPU-Melco Gaming and Entertainment Information Technology Research and Development Centre

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

(9) M537 – Office of the Programme Coordinator of the Computing Programme



A3. Academic Calendar

Macao Polytechnic University

1st Semester, 2023/24

Week	Month	Events		Public Holidays / Students' Recess	
	August 2023				
	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 24 25 26	24	(開課) First Day of Classes (1st Semester)		
1	27 28 29 30 31				
	September 2023				
	Su M T W T F Sa				
	1 2				
2	3 4 5 6 7 8 9				
3	10 11 12 13 14 15 16				
4	17 18 19 20 21 22 23				
5	24 25 26 27 28 29 30			30	(中秋節翌日) The day following Mid-Autumn Festival
	October 2023				
	Su M T W T F Sa				
6	1 2 3 4 5 6 7			1	(國慶節) National Day
7	8 9 10 11 12 13 14			2	(國慶節翌日) The day following National Day
8	15 16 17 18 19 20 21			3	(中秋節翌日之後首個工作日) First Working Day After The day following Mid-Autumn Festival
9	22 23 24 25 26 27 28			4	(國慶節翌日之後首個工作日) First Working Day After The day following National Day
	29 30 31			23	(重陽節) Chung Yeung Festival
	November 2023				
	Su M T W T F Sa				
10	1 2 3 4			2	(追思節) All Soul's Day
11	5 6 7 8 9 10 11				
12	12 13 14 15 16 17 18				
13	19 20 21 22 23 24 25	29	(課堂結束) Last day of classes (1st sem.)		
14	26 27 28 29 30	30/11-6/12	(補課/複習) Make-up Classes / Revision		
	December 2023				
	Su M T W T F Sa				
	1 2	1-6	(補課/複習) Make-up Classes / Revision		
	3 4 5 6 7 8 9	7-19	(期末考試) Final Examinations (1st Sem.)	8	(聖母無原罪瞻禮) Immaculate Conception
15	10 11 12 13 14 15 16				
	17 18 19 20 21 22 23			20/12-1/1	(聖誕及新年假期)Christmas / New Year Recess
	24 25 26 27 28 29 30				
	31				

Macao Polytechnic University

2nd Semester, 2023/24

Week	Month	Events		Public Holidays / Students' Recess	
	January 2024				
	Su M T W T F Sa				
	1 2 3 4 5 6	4	(期末考試成績公佈)Final Grades Announced	1	(元旦) New Year Day
1	7 8 9 10 11 12 13	4	(開課)First Day of Classes (2nd Semester)		
2	14 15 16 17 18 19 20	4-5	(補考申請)Application for Re-sit Exam		
3	21 22 23 24 25 26 27	10-16	(補考期)Re-sit Examinations		
4	28 29 30 31	25	(補考成績公佈)Re-sit Exam Grades Announced		
	February 2024				
	Su M T W T F Sa				
	1 2 3				
5	4 5 6 7 8 9 10			7/2-18/2	(春節假期) Lunar New Year Recess
	11 12 13 14 15 16 17				
6	18 19 20 21 22 23 24				
7	25 26 27 28 29				
	March 2024				
	Su M T W T F Sa				
	1 2				
8	3 4 5 6 7 8 9				
9	10 11 12 13 14 15 16				
10	17 18 19 20 21 22 23				
11	24 25 26 27 28 29 30			29	(耶穌受難日) Good Friday
	31			30	(復活節前日) Holy Saturday/Easter Eve
	April 2024				
	Su M T W T F Sa				
12	1 2 3 4 5 6			1	(復活節前日之後首個工作日) First Working Day After Easter Eve
13	7 8 9 10 11 12 13				
14	14 15 16 17 18 19 20	20	(課堂結束) Last day of classes (2nd sem.)	4	(清明節) Ching Ming Festival
	21 22 23 24 25 26 27	22-26/4	(補課/複習) Make-up Classes / Revision		
	28 29 30	27/4-9/5	(期末考試) Final Examinations (2nd Sem.)		
	May 2024				
	Su M T W T F Sa				
	1 2 3 4	2-9	(期末考試) Final Examinations (2nd Sem.)	1	(勞動節) Labour's Day
15	5 6 7 8 9 10 11				
	12 13 14 15 16 17 18	22	(期末考試成績公佈) Final Grades Announced	15	(佛誕節) Buddha's Birthday
	19 20 21 22 23 24 25	22-23	(補考申請) Application for Re-sit Exam		
	26 27 28 29 30 31	28/5-3/6	(補考期) Re-sit Examinations		
	June 2024				
	Su M Tu W Th F Sa				
	1	1-3	(補考期) Re-sit Examinations		
	2 3 4 5 6 7 8	8	(補考成績公佈) Re-sit Exam Grades Announced		
	9 10 11 12 13 14 15			10	(端午節) Tuen Ng Festival
	16 17 18 19 20 21 22				
	23 24 25 26 27 28 29				
	30				