



Programme Specification 課程規範

Awarding Body/Institution 頒授機構	Macao Polytechnic Institute
Teaching Institution 教學	Macao Polytechnic Institute
Endorsement in the Official Gazette 政府公報批示	307/2009
Name of Final Award and Programme Title 最終學位及課程名稱	Bachelor of Science in Computing
Name of Interim Award(s) 過渡學位名稱	n/a
Duration of Study/Period of Registration 學習期限/註冊期限	4 years
MPI Programme Code 理工課程編號	4LCDI
FHEQ Level of Award FHEQ 學歷水準	6
Programme Accredited by 專業認可機構	The Institution of Engineering and Technology (IET)
Responsible School 負責學校	School of Public Administration

Schools which will also be involved in teaching part of the programme 課程教學涉及的其他學校

N/A

Institution(s) other than Macao Polytechnic that will provide some teaching for the programme
為課程提供教學除理工以外的其他機構

N/A

Programme Outline 課程簡介

Studying the BSc. in Computing Programme students will learn and understand the computing fundamentals, including software engineering, computer programming, computer science principles, engineering constraints in design and applicable mathematics. Core subjects provide our students with solid foundation in Computing, including computer systems, data management, gaming and multimedia, Information System planning, design and control, mathematics, programming and information system development. Moreover, advanced computing courses are provided to enhance our students' theoretical thinking, while general studies courses are provided for interdisciplinary links. Two streams of specialisation, namely Enterprise Information Systems and Gaming Technology, are offered for our students' choice for a further specification in Computing.

Objectives of the Programme 課程目標

The BSc. 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 developing their academic competences to pursue postgraduate studies in Macao or abroad.

What Will You be Expected to Achieve 期望達到的成效

The aim of the Computing Programme is to equip students with not only practical knowledge and skills in Computing but also adequate written oral communication and interpersonal skills. Students will learn to select and apply proven methods, tools and techniques to the effective and efficient implementation of information systems, to work independently to develop necessary skills associated with the general support of computer systems and networks and to use project planning and management techniques in systems development. Students will also learn to understand the fundamental and operational issues of computer systems in business environment, to build the capacity and desire for lifelong learning and to learn advanced and emerging technologies on one's own. Two specialisations in the Computing Programme provide students with the option to further enhance their preferred specialised skills. For the Enterprise Information Systems specialisation, we want our student to gain an in-depth understanding of the information technology related to enterprise information systems, with an emphasis on development of such systems to support business processes. For the Gaming Technology specialisation, we want our students to acquire the general and advanced knowledge of current technologies and operating environment in the gaming industry.

Academic Content 學術內容

A1	Knowledge and understanding of software engineering and computer programming
A2	Knowledge and understanding of Computer Science principles and terms
A3	Essential knowledge of specific fields in computing, including multimedia, security and artificial intelligence
A4	Knowledge and understanding of engineering constraints in design and applicable mathematics
A5	Knowledge and understanding of the role of the engineer in society regarding economic development

Disciplinary Skills- able to 學科技能

B1	Apply software, hardware and programming skills to engineering projects
B2	Apply analytical and numerical techniques to a wide range of engineering problems
B3	Apply business, economic and professional skills required for management roles in industry
B4	Prepare descriptive and interpretative technical reports
B5	Use instrumentation competently and safely
B6	Plan, conduct, present and report a major engineering project
B7	Analyse, evaluate and interpret experimental data - Design engineering systems /components
B8	Present programme /system design in flow chart or UML format
B9	Formulate and test concepts and hypotheses

Attributes 特徵

C1	To make effective use of communication skills in both speaking and writing
C2	To design and write a computer program
C3	To use Information Technology efficiently
C4	To apply transferable skills
C5	To work in a team and understand professional responsibilities
C6	To acquire computer skills appropriate to an engineer

How Will You learn? 如何學習

The Computing Programme promotes active learning within a context of clear learning outcomes. Students are encouraged to take responsibility for their own learning. Most courses have a weekly contact hours and in some this will require collaborative group work. We expect informal work groups to emerge particularly in the more problem-solving programming courses. Clear guidance on references for a particular subject is provided. We also expect our students to be able to perform laboratory work and analyse its results through laboratory hours associated with some particular courses. We recognise the value of independent work at final year level for undergraduates. For example, our Final Year Project course is an individual project course. We consider it important to develop the ability of students to undertake basic research and development through both practical and theoretical means and to develop the ability to write accurate and concise technical report. In order to enable students to develop their skills we will offer extensive courses requiring independent work using written and presentational skills.

How Will You Be Assessed? 如何評核

The Computing Programme schedules an annual BSc. in Computing Examination Board (at the end of the 2nd semester) which considers all student academic profiles and agrees all final marks. Courses are assessed by a combination of coursework, laboratory/workshops, software designs/programme listing (& output), independent project, team-working, presentation and written examinations. Clear guidance on coursework requirement for each course is given, emphasising approaches to coursework of various types and how to avoid plagiarism, together with rules and procedures. Final Examinations are typically of a three hour paper undertaken at the end of each semester. Examination papers will be reviewed by Internal Moderators and then by External Examiners. All exam papers go through a moderation marking procedure. All first class and failed scripts together with a representative sample of intermediate scripts are sent to the External Examiners for quality control. Supplementary exam will be given for qualified students who fail their first attempt at the end of each semester. Normally, students who fail again in the supplementary exam or those fail to meet attendance requirement will be required to repeat the failed courses. There is no limitation on the maximum number of courses allowed to be taken in an academic year. Re-sit marks are capped at 50%.

Academic Year of Study 1 第1學年

Course Title 科目名稱	Course Code 科目編號	Credits 學分	Course Selection Status 選科種類	Academic Year of Study 學習之學年	Semester 學期
Communication	MSEL101	3	Elective	1	2
Introduction to Psychology	MSEL102	3	Elective	1	2
Introduction to Sociology	MSEL103	3	Elective	1	2
Introduction to Economics	MSEL104	3	Elective	1	2
Introduction to Public Administration	MSEL105	3	Elective	1	2
Introduction to Marketing	MSEL106	3	Elective	1	2
Human Resources Management	MSEL107	3	Elective	1	2
Interpersonal Relations	MSEL108	3	Elective	1	2
Graphics Design	MSEL109	3	Elective	1	2
Accounting	MSEL110	3	Elective	1	2
Introduction to Computing	COMP111	3	Compulsory	1	1
Programming I	COMP112	3	Compulsory	1	1
Web Technologies	COMP113	3	Compulsory	1	1
Computer Architecture	COMP121	3	Compulsory	1	2
Data Structures and Algorithms	COMP122	3	Compulsory	1	2
Data Communications	COMP123	3	Compulsory	1	2
Essential Computer Mathematics	MATH111	3	Compulsory	1	1
Discrete Mathematics	MATH121	3	Compulsory	1	2
Introduction to Business	MBUS100	3	Compulsory	1	1
English I	MENG111	4	Compulsory	1	1
English II	MENG121	4	Compulsory	1	2

Academic Year of Study 2 第2學年

Course Title 科目名稱	Course Code 科目編號	Credits 學分	Course Selection Status 選科種類	Academic Year of Study 學習之學年	Semester 學期
Database Design	COMP211	3	Compulsory	2	1
Programming II	COMP212	3	Compulsory	2	1
Operating Systems	COMP213	3	Compulsory	2	1
Computer Networks	COMP214	3	Compulsory	2	1
Object Oriented Technologies	COMP221	3	Compulsory	2	2
Internet Programming I	COMP222	3	Compulsory	2	2
Software Engineering	COMP223	3	Compulsory	2	2
Database Management Systems	COMP224	3	Compulsory	2	2
Network and System Administration	COMP225	3	Compulsory	2	2
Statistics I	MATH211	3	Compulsory	2	1

English III	MENG211	4	Compulsory	2	1
English IV	MENG221	4	Compulsory	2	2

Academic Year of Study 3 第3學年

Course Title 科目名稱	Course Code 科目編號	Credits 學分	Course Selection Status 選科種類	Academic Year of Study 學習之學年	Semester 學期
Communication	MSEL101	3	Elective	3	2
Introduction to Psychology	MSEL102	3	Elective	3	2
Introduction to Sociology	MSEL103	3	Elective	3	2
Introduction to Economics	MSEL104	3	Elective	3	2
Introduction to Public Administration	MSEL105	3	Elective	3	2
Introduction to Marketing	MSEL106	3	Elective	3	2
Human Resources Management	MSEL107	3	Elective	3	2
Interpersonal Relations	MSEL108	3	Elective	3	2
Graphics Design	MSEL109	3	Elective	3	2
Accounting	MSEL110	3	Elective	3	2
Performance Evaluation	COMP315	3	EIS Stream	3	1
Introduction to Gaming Technology	COMP316	3	GT Stream	3	1
Data Warehousing and Data Mining	COMP323	3	EIS Stream	3	2
Gaming Technology I	COMP324	3	GT Stream	3	2
Statistics II	MATH321	3	EIS Stream	3	2
Mathematics for Gaming Technology	MATH322	3	GT Stream	3	2
Multimedia Application Development	COMP311	3	Compulsory	3	1
Internet Programming II	COMP312	3	Compulsory	3	1
Project Management	COMP313	3	Compulsory	3	1
Human Factors and User Interfaces	COMP314	3	Compulsory	3	1
Information System Implementation	COMP321	3	Compulsory	3	2
Introduction to E-Business	COMP322	3	Compulsory	3	2
English V	MENG311	4	Compulsory	3	1
English VI	MENG321	4	Compulsory	3	2

Academic Year of Study 4 第4學年

Course Title 科目名稱	Course Code 科目編號	Credits 學分	Course Selection Status 選科種類	Academic Year of Study 學習之學年	Semester 學期
Computer Aided Design	COMP401	3	Elective	4	1 and 2
Computer Forensics	COMP402	3	Elective	4	1 and 2
Database Administration and Programming	COMP403	3	Elective	4	1 and 2
IP Routing	COMP404	3	Elective	4	1 and 2
Mobile Computing & Wireless Networks	COMP405	3	Elective	4	1 and 2
Selected Topics I	COMP 406	3	Elective	4	1 and 2
Selected Topics II	COMP407	3	Elective	4	1 and 2
Enterprise System and Application Development	COMP413	3	EIS Stream	4	1
Gaming Technology II	COMP414	3	GT Stream	4	1
Strategic Planning for Information Systems	COMP423	3	EIS Stream	4	2
Computer Game Design and Development	COMP424	3	GT Stream	4	2
Digital Image and Video Processing	COMP411	3	Compulsory	4	1
Computer Security	COMP412	3	Compulsory	4	1
Artificial Intelligence	COMP421	3	Compulsory	4	2
Ethics and Professional Issues in Computing	COMP422	3	Compulsory	4	2
Final Year Project (EIS)	COMP491	12	Compulsory	4	1 and 2
Final Year Project (GT)	COMP492	12	Compulsory	4	1 and 2

What Are the Entry Requirements? 入學條件

There are two different entry routes: local recruitment in Macao using admission examinations as assessment criteria, and recruitment in Mainland China using marks from National College Entrance Examination (NCEE) as selection criteria.

For applicants from Macao: applicants have to be Secondary school graduates (Form 6), and attend the Institute'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 Mainland 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, Guishou, Jiangxi, Jilin, Heilongjiang, Anhui, Hebei, and Shanxi.

How Do We Listen and Act on Your Feedback? 如何聽取及回應學生的回饋

All students have access to the MPI Counselling Services, Students' Union, Careers Service and Student Support Services through the Student Affairs Office. All students are allocated year tutors. The role of the year tutor is to provide general academic and personal support and encouragement, and advice on pastoral issues. Year tutors are full-time members of staff and are the initial point of contact on the above matters. Students may make their complaints through different channels; for instance the Year Tutors, the School Dialogue Meeting, and the Institute Dialogue Meeting. School Dialogue with Students (which is composed of elected student representatives from each year of the degree, Programme Coordinator / Assistant Coordinators, and School Director) provides a forum for consultation and discussion between staff and students. The School Dialogue is convened at least once each semester. Other channels of feedback include Graduate and Employer Surveys and Student Surveys conducted annually. Normally, the School Director will act on the students' feedback accordingly, based on the recommendations of the Programme.

Academic Support 教學支援

An orientation programme for first year students is held at the beginning of semester 1 of each academic year. All students receive a copy of the handbook for the relevant stage and have access to the MPI's Intranet system which offers: (1) Student's e-services; (2) E-mail communication with staff and other students; (3) Access to learning and teaching materials; (4) Access to all MPI libraries and to the Institute's computer labs or other computer facilities including the Project Lab dedicated for students in the Final Year Project. All students are allocated year tutors. The Student Advisor, who is also the Student Affairs Leader, is responsible for 'students at risk' (i.e. those considered to be at risk of failing examinations or who have failed examinations; students with inadequate class attendance; and students with serious personal, academic or health problems). The Student Advisor will also deal with cases referred by Year tutors. Student Advisor monitors those students who have their GPA below 1.5 and also have failed 3 or more courses from the previous semester. Year tutors will be advised to speak to these students personally to determine the cause underlying poor performance or absence and to facilitate the student's successful passage through the degree programme. Progress records are kept for these students.

Programme-specific Rules and Facts 課程特定的規則及內容

N/A

Specific Support for Disabled Students 對於殘障學生的特殊支援

Macao Polytechnic Institute has in place an institution-wide policy to ensure that all student needs are taken care of and a supportive and accessible learning environment is maintained. When cases of special needs are notified or identified, special arrangements are made on a case-by-case basis with the joint effort of the programme and several student support services of the Institute, such as the Registry, the Student Affairs Office, the Computer Services Centre, etc. to provide the necessary support.

Links With Employers, Internship Opportunities and Transferable Skills

與僱主關係、實習機會及可轉移技能

Graduates from the Computing Programme will have developed a range of cognitive and practical skills together which will be applicable to different context beyond academia. To broaden the participation of students in their communication with the global Computing community, the Programme promotes internship, joint student projects with organisations, student activities, and overseas exchanges. Throughout the academic year, the Computing Programme also invites external speakers to share their experience with our students, by giving seminars or teaching practical courses. Moreover, the Computing Programme also organises short training courses, provided by leading local companies, for our students. Industrial Advisory Meeting organised by the Computing Programme is held at least annually to provide the Computing Programme with valuable industrial advices and feedbacks on the performance of our graduates.