



FACULTY OF APPLIED SCIENCES
BACHELOR OF SCIENCE IN COMPUTING
LEARNING MODULE OUTLINE

Academic Year	2023/2024	Semester	2
Module Code	COMP422		
Learning Module	Ethics and Professional Issues in Computing		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	3	Contact Hours	45 hrs
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MODULE DESCRIPTION

This module provides an overview of ethical theories and problems encountered by computer professionals in today's environment. Stimulating issues such as ethics of AI and algorithms, privacy, cybersecurity and intellectual property from different views are discussed. The discussion topics in this module challenge students to think critically and draw their own conclusions, which ultimately prepare them to become responsible, ethical users of future technologies.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	Understand the milestones in computing and networking which served as catalysts for change in the society; (SM1p)
M2.	Compare and contrast different ethical theories; (ET5p)
M3.	Summarize ethical issues in computing and networked communications; (ET1p)
M4.	Demonstrate the knowledge of ethical issues in intellectual property, privacy, computer and network security, computer reliability, professional ethics, work and wealth, and plagiarism; (ET1p, EP5p, EP6p)
M5.	Analyse the "Digital Divide" and "Winner-Take-All" phenomena. (ET5p)

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs	M1	M2	M3	M4	M5
P1. Select and apply proven methods, tools and techniques to the effective and efficient implementation of information systems;					
P2. Evaluate computer systems in a local area network, and understand the additional requirements for connection to other					



	networks through wide area networks;					
P3.	Be competent in system development in the Internet and the web platform;					
P4.	Work independently to design and implement a relational database, with an emphasis on how to organise, maintain and retrieve information from a DBMS;					
P5.	Acquire essential knowledge in specific fields of computing disciplines including multimedia, security and artificial intelligence;					
P6.	Acquire the perceptive skills needed to understand information presented in the form of UML diagram, flow chart or other industry standard formats;					
P7.	Understand the need for and use of the necessary mathematical techniques;					
P8.	Work independently to develop an understanding of, and the knowledge and skills associated with the general support of computer systems and networks;					
P9.	Work as an effective member of a team in the analysis, design and development of software systems;					✓
P10.	Use project planning and management techniques in systems development;					
P11.	Understand the fundamental and operational issues of computer systems in business environments;	✓	✓	✓	✓	
P12.	Equip with adequate written, oral communication and interpersonal skills;					
P13.	Build the capacity and desire for lifelong learning and to learn advanced and emerging technologies on one's own;				✓	
P14.	(For Enterprise Information Systems specialization) 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;					
P15.	(For Gaming Technology specialization) Acquire the general and advanced knowledge of current technologies and operating environment in the gaming industry;					
P16.	(For Computer Education specialization) Acquire the general and practical knowledge of computer education and its practicing environment in secondary education.					

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1	1. Catalysts for Change	3
	1.1 Milestones in Computing	
	1.2 Milestones in Networking	
	1.3 Milestones in Information Storage and Retrieval	
	1.4 Information Technology Issues	



2-4	2. Introduction to Ethics	7.5
	2.1 Subjective Relativism	
	2.2 Cultural Relativism	
	2.3 Divine Command Theory	
	2.4 Ethical Egoism	
	2.5 Kantianism	
	2.6 Act Utilitarianism	
	2.7 Rule Utilitarianism	
	2.8 Social Contract Theory	
4-6	3. Networked Communications	7.5
	3.1 Email and Spam	
	3.2 World Wide Web	
	3.3 Children and the Web	
	3.4 Breaking Trust on the Internet	
	3.5 Internet Addiction	
7-8	4. Intellectual Property	6
	4.1 Intellectual Property Rights	
	4.2 Protecting Intellectual Property	
	4.3 Local IP and Copyright Laws	
	4.4 Peer-to-Peer Networks	
	4.5 Open-Source Software	
	4.6 Creative Commons	
9-10	5. Information Privacy	4.5
	5.1 Perspectives on Privacy	
	5.2 Information Disclosures	
	5.3 Data Mining	
	5.4 Information Collection by Governments	
	5.5 Regulation of Public and Private Databases	
	5.6 Information Dissemination	



10-11	6. Cybersecurity	3
	6.1 Hacking	
	6.2 Malware	
	6.3 Cybersecurity and National Security	
11	7. Computer Reliability	1.5
	7.1 Data-Entry or Data-Retrieval Errors	
	7.2 Software and Billing Errors	
	7.3 Notable Software System Failures	
	7.4 Computer Simulations	
	7.5 Software Engineering	
	7.6 Software Warranties and Vendor Liability	
12	8. Ethics of AI	3
	8.1 Biases of AI and Data	
	8.2 Case Studies of AI Ethics	
	8.3 Ethical Guidelines for the Use of AI	
13	9. Professional Ethics	3
	9.1 Computer Professionals	
	9.2 Software Engineering Code of Ethics	
	9.3 Analysis of the Code	
14	10. IT and Sustainability	3
	10.1 Sustainable Development Goals	
	10.2 Environmental Informatics	
	10.3 Green IT and IT for Sustainability	
15	11. Work and Wealth	3
	10.1 Automation and Unemployment	
	10.2 Workplace Changes	
	10.3 Globalization	
	10.4 The Digital Divide	
	10.5 The “Winner-Take-All Society”	



TEACHING AND LEARNING ACTIVITIES

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	M1	M2	M3	M4	M5
T1. Lectures	✓	✓	✓	✓	✓
T2. Case studies and discussion		✓	✓	✓	✓

ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	Weighting (%)	AHEP3 LOs	ILOs to be Assessed
A1. Assignments / Classwork / Project	40	SM1p, ET5p, ET1p, EP5p, EP6p	M1, M2, M3, M4, M5
A2. Test	20	SM1p, ET5p, ET1p, EP5p	M1, M2, M3
A3. Examination	40	SM1p, ET5p, ET1p, EP5p, EP6p	M1, M2, M3, M4, M5

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

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.

REQUIRED READINGS

1. Quinn, M. J. (2020). *Ethics for the Information Age* (8th ed.). Pearson. (EBOOK)

REFERENCES

1. Johnson, D. G. (2009). *Computer Ethics* (4th ed.). Pearson.



STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.