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

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE IN ARTIFICIAL INTELLIGENCE

LEARNING MODULE OUTLINE

Academic Year	2024/2025	Semester	2
Module Code	COMP2114		
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.	Illustrate the milestones in computing, networking and artificial intelligence which served as catalysts for change in the society; (C7)
M2.	Compare and contrast different ethical theories; (C6, C8)
M3.	Discuss legal and ethical considerations of intellectual property infringement and plagiarism in the context of digital technologies and algorithms; (C15)
M4.	Demonstrate the knowledge of ethical issues in privacy, cybersecurity and artificial intelligence; (C8, C9, C10, C18)
M5.	Analyse phenomena of diversity, equity and inclusion in computing and artificial intelligence; (C7, C11)
M6.	Explain the concepts and the implementations of IT in sustainability; (C7, C11)
M7.	Identify the importance of professional ethics, professional development, continue education and self-learning plans. (C18)

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

PILOs		M1	M2	M3	M4	M5	M6	M7
P1.	Select and apply proven methods, tools and techniques to the effective and efficient implementation of information systems on common platforms, including the Internet platform;							
P2.	Acquire essential knowledge in specific fields of computing disciplines including networking, artificial intelligence and security;	✓		✓			✓	
P3.	Apply necessary mathematical techniques to model, analyse and devise solutions to complex problems;							
P4.	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;			✓	✓	✓		
P5.	Design and implement relational database, with an emphasis on how to organise, maintain, retrieve and analyse information;							
P6.	Distinguish the fundamental and operational issues of computer systems, with considerations of user, business, ethical, societal and environmental needs;	✓	✓	✓		✓	✓	
P7.	Evaluate, prepare and communicate effectively on technical information to both technical and non-technical audience;							
P8.	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;			✓	✓	✓	✓	✓
P9.	Use project planning, risk management and quality management techniques in solutions to complex problems;							
P10.	Build the capacity and desire for lifelong learning and to learn advanced and emerging technologies on one's own;							✓

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1-2	1. Catalysts for Change	4.5
	1.1. Milestones in Computing	
	1.2. Milestones in Networking	
	1.3. Milestones in Information Storage and Retrieval	
	1.4. Information Technology Issues	
2-5	2. Introduction to Ethics	9
	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	
	2.9 Virtue Ethics	
5-6	3. Networked Communications	4.5
	3.1 Email and Spam	
	3.2 World Wide Web	
	3.3 Censorship	
	3.4 Freedom of Expression	
	3.5 Children and Inappropriate Content	
	3.6 Breaking Trust on the Internet	
	3.7 False Information	
	3.8 Internet Addiction	
7-8	4. Intellectual Property	4.5
	4.1 Plagiarism	
	4.2 Intellectual Property Rights	
	4.3 Protecting Intellectual Property	
	4.4 Copyright and Fair Use	
	4.5 Restrictions on Use	
	4.6 Peer-to-Peer Software	
	4.7 Open-Source Software and Licenses	
	4.8 Creative Commons	
8-9	5. Information Privacy	4.5
	5.1 Perspectives on Privacy	
	5.2 Information Disclosures	
	5.3 Data Mining and Data Mining by Government	
	5.4 Information Collection by Governments	
	5.5 Regulation of Public and Privacy Databases	

	5.6 Information Dissemination	
10-11	6. Computer and Network Security	4.5
	6.1 Hacking	
	6.2 Malware	
	6.3 Cyber Crime	
	6.4 Cyber Attacks	
11-12	7. Computer Reliability	3
	7.1 Data-entry or data-retrieval errors	
	7.2 Software and billing errors	
	7.3 Human errors in software engineering	
	7.4 Computer Simulations	
12-13	8. AI Ethics	3
	8.1 Introduction to AI Ethics	
	8.2 AI and Intellectual Property	
	8.3 Regulations and Guidelines	
13-14	9. Professional Ethics	3
	9.1 Computer Professionals	
	9.2 Software Engineering Code of Ethics and Professional Practice	
	9.3 Case Studies with the Code of Ethics	
	9.4 Continuing Education and Professional Development	
14-15	10. Automation and Globalization	4.5
	10.1 Automation and Employment	
	10.2 Breakthroughs in AI	
	10.3 Workplace Changes	
	10.4 Globalization	
	10.5 The Digital Divide	
	10.6 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	M6	M7
T1. Lectures	✓	✓	✓	✓	✓	✓	✓
T2. Assignments	✓	✓	✓	✓	✓	✓	✓
T3. Test	✓	✓	✓	✓	✓	✓	✓
T4. Examination	✓	✓	✓	✓	✓	✓	✓

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 (%)	AHEP4 LOs	ILOs to be Assessed
A1. Assignments (x2)	40%	C6, C7, C8, C9, C10, C11, C18	M1, M2, M3, M4, M5, M6, M7
A2. Test (Midterm)	20%	C6, C7, C8, C9, C10, C11, C15	M1, M2, M3, M4, M5, M6, M7
A3. Examination (Final)	40%	C6, C7, C8, C9, C10, C11, C15	M1, M2, M3, M4, M5, M6, M7

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.

REFERENCES

1. Michael J. Sandel (2009). Justice: What's the Right Thing to Do? Farrar, Straus and Giroux.

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/.