



**FACULTY OF APPLIED SCIENCE**  
**BACHELOR OF SCIENCE IN ARTIFICIAL INTELLIGENCE**  
**LEARNING MODULE OUTLINE**

Academic Year	2024/2025	Semester	2
Module Code	SOCI1112		
Learning Module	Sustainable Development		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	2	Contact Hours	30
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**MODULE DESCRIPTION**

Through a combination of lectures by instructor and active exploration by students, this module aims to provide students with an understanding of the basic concepts, principles and models related to Sustainable Development (SD). It covers the national governance system and related laws and regulations of SD. By introducing the various governance patterns of SD, it promotes students to understand the worldwide development trend and multi-dimensions of the SD. Combining the relevant frontier issues and social hot spots of Macao's SD, inspire students to pay attention to the fields of economy, education, national security, science and technology, protection of vulnerable groups, cultural tourism, smart cities, artificial intelligence and social welfare security, and consider about how to promote the SD of Macao.

**MODULE INTENDED LEARNING OUTCOMES (ILOS)**

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

M1.	distinguish and generalize the basic concepts and related fields of sustainable development; (C7)
M2.	identify and summarize the general principles and theories of the sustainable development; define distinguish the fundamental objectives, measures, and the typical cases of governance patterns of sustainable development; (C7, C8, C11)
M3.	understand the trend of sustainable development in the worldwide, including the latest development in environmental protection, advance technology, nation security, political structure green economy, and cultural tourism, etc.; (C7, C8, C11)
M4.	grasp the contents of the sustainable development of Macao society, and to understand the cutting-edge dynamics in related fields, especially those related to the smart cities and artificial intelligence; (C7, C8, C11)
M5.	use relevant theories, drawing lessons from typical cases, explain and evaluate the current situation, conditions and limitations of local sustainable development, and analyse the future sustainable development prospects of Macao in the field of smart cities and artificial intelligence. (C7, C8, C10, C11)



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 on common platforms, including the Internet platform;					
P2. Acquire essential knowledge in specific fields of artificial intelligence, including machine learning, computer vision and natural language processing;					
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 both relational and non-relational data stores, with an emphasis on how to organise, maintain, retrieve and analyse information;					
P6. Distinguish the fundamental and operational issues of computer systems and artificial intelligence applications, 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. Introduction	4
	1.1 Basic concept of Sustainable Development (SD) in general	
	1.2 Concept and functions of constitution	
	1.3 The leading organizations and important roles related to SD	
3-4	2. The main governance patterns of SD	4
	2.1 The classic theories and principles of SD	
	2.2 Some worldwide typical cases and advance experiences of SD	
	2.3 The relationship between economy SD and environment protection	



5-12	3	Specific fields of SD	16
	3.1	National security and SD	
	3.2	SD in macroeconomic growth, regional differences and the gap between rich and poor	
	3.3	Social security, population ageing and SD	
	3.4	International relations and global governance of SD	
	3.5	Education equality and public health of SD	
	3.6	Green economy, environmental protection and SD	
	3.7	Cultural tourism exploration and cultural heritage protection and SD	
	3.8	Technological innovation, AI development and SD	
13-15	4.	SD of Macao	6
	4.1	The current situation and course of urban development of Macao	
	4.2	The advantages and limitations of the development of Macao	
	4.3	SD policy and governance measurements of the Macao SAR Government and the Macao enterprises	
	4.4	Smart city: one of the development objectives of Macao	

### 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. In-class exercises		✓	✓	✓	

### 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 LO	ILOs to be Assessed
A1. Assignment / Classwork	25%	C7, C8, C11	M1, M2, M3, M4, M5
A2. Presentation	25%	C8, C11	M3, M4, M5
A3. Final Report	50%	C7, C8, C11	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](http://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

There is no official text for this module. Module notes are distributed in the module.

## REFERENCES

1. Robertson, M. (2021). *Sustainability: Principles and Practice*. London & New York: Routledge.
2. Hess, P. N. (2016). *Economic Growth and Sustainable Development*. London & New York: Routledge.
3. Nightingale, A. J. (ed.) (2019). *Environment and Sustainability in a Globalizing World*. London & New York: Routledge.
4. Benn, S., Edwards, M. & Williams, T. (2022). *Sustainability: A Key Idea for Business and Society*. London & New York: Routledge.

## 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/](http://www.mpu.edu.mo/student_handbook/).