



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

Academic Year	2023/2024	Semester	2
Module Code	COMP222		
Learning Module	Internet Programming I		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	3	Contact Hours	45 hrs
Instructor	Calana Chan	Email	calanachan@mpu.edu.mo
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**MODULE DESCRIPTION**

This learning module is an introduction to server-side web programming. Students will be taught the most important concepts for building web applications through lectures and hands-on programming experience, which will enable them to design and program web-based software systems. The learning module provides the principles of web application development, and arms students with the skills for developing web oriented applications. Topics include web request handling, state management, and database manipulation. For demonstration purpose, the learning module focuses on building web applications with Django.

**MODULE INTENDED LEARNING OUTCOMES (ILOS)**

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

M1.	Demonstrate competencies in designing a dynamic web site; (D1p, D2p)
M2.	Demonstrate knowledge and skills in web application development using Python and Django; (EA1p, EA4p, EP2p)
M3.	Develop interactive database driven web application; (EA4p, EP1p)
M4.	Identify application-level threats and countermeasures of web applications. (D2p)

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

PILOs	M1	M2	M3	M4
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. Introduction to Web programming using Django	3
2-4	2. Creating Django projects and applications 2.1. Views and URLconfs 2.2. Templates 2.3. Tracing, debugging and error handling	9
5-7	3. Database-driven applications 3.1. Using models 3.2. Basic data access 3.3. Advanced models	9
8-9	4. Working with forms	6



10-11	5. State management 5.1. Sessions and cookies 5.2. Web application security risks	6
12-14	6. User authentication and authorization 6.1. Authentication in web requests 6.2. Permissions and authorization	9
15	7. Django's Internationalization and Localization features [optional]	3

### 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
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 (%)	AHEP3 LOs	ILOs to be Assessed
A1. Assignment	15	EA1p, EA4p, D1p, EP1p, EP2p	M1, M2, M3, M4
A2. In-class exercises and labs	10	EA1p, EA4p, EP1p, EP2p	M2, M3, M4
A3. Tests	25	EA1p, EA4p, D1p, EP1p, EP2p	M1, M2, M4
A4. Examination	50	EA1p, EA4p, D2p	M1, M2, M4

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 class.

## REFERENCES

1. Nigel George (2019). *Build a Website With Django 3*. Independently Published.
2. Antonio Melé (2022). *Django 4 by Example*. Packet Publishing.

## 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/).