

# Macao Polytechnic Institute

## School of Business

### Bachelor of E-commerce

#### Module Outline

Academic Year 2021/2022 Semester 1

<b>Learning Module</b>	System Analysis and Design	<b>Class Code</b>	COMP3120-311		
<b>Pre-requisite(s)</b>	Nil				
<b>Medium of Instruction</b>	English			<b>Credit</b>	3
<b>Lecture Hours</b>	20 hrs	<b>Lab/Practice Hours</b>	25 hrs	<b>Total Hours</b>	45 hrs
<b>Instructor</b>	Prof. Victor Chan		<b>E-mail</b>	vkychan@ipm.edu.mo	
<b>Office</b>	Room M5-49, Meng Tak Building.		<b>Telephone</b>	8599-3322	

#### **Description**

This learning module forms an introduction to formal procedures and methods of e-commerce systems analysis and design. Topics include data, process, object-oriented analysis and design modeling methods, systems life cycle, feasibility analysis, data analysis, aspects of systems design, database design, external design, architectural design, portals design, systems implementation and maintenance. Case studies are a feature of the learning module.

#### **Learning Outcomes**

After completing the learning module, students will be able to:

1. describe the object-oriented system analysis and design, UML and the Unified Process,
2. practise detailed object-oriented system analysis and design,
3. practise software quality assurance, software testing, and software maintenance, and
4. evaluate the value of system analysis and design in real-world enterprises.

## Alignment of Programme and Module Intended Learning Outcomes

<b>Programme Intended Learning Outcomes</b>	<b>MILOs</b>
1. Demonstrate an understanding of the business processes and operations and the skillful realization of information technologies required to practice electronic commerce;	MILOs 1, 2, 3
2. Apply knowledge in business, mathematics, programming, computing, web development, and database to address complex problems in the context of electronic commerce;	MILOs 1, 2, 3
3. Analyze critically the effect of web technology use on organizational performance and develop electronic commerce strategies that fit organizational objectives;	MILO 4
4. Select and apply tools and technologies to effectively implement electronic commerce systems in business intelligence, enterprise resources planning, supply chain management, and customer relationship management;	
5. Develop relationships, motivate others, manage conflicts, lead changes, and work across differences in multi-disciplinary electronic commerce projects;	MILOs 1, 2
6. Communicate and work effectively using written and spoken word, non-verbal language, and electronic tools with fellow professionals and different stakeholders in the electronic commerce industry;	MILOs 1, 2
7. Demonstrate a global electronic commerce perspective as evidenced by an understanding of foreign languages and the role of Macau as an interface between the East and the West;	
8. Cope with and manage contemporary advancement related to electronic commerce development and demonstrate lifelong learning attitudes and abilities;	
9. Conduct research and devise innovative electronic commerce models to exploit business opportunities; and	MILOs 1, 2
10. Reflect on professional responsibilities and keep up with the latest electronic commerce issues on legal, environmental, ethical, and societal considerations to benefit society comprehensively.	

### Content

1. Introduction to Systems Analysis and Design (2 hours)
  - 1.1 Describe the system development life cycle
  - 1.2 Appraise object-oriented system analysis and design
  - 1.3 Outline the Unified Process
  - 1.4 Outline the United Modelling Language (UML)

2. Requirements (3 hours)
  - 2.1 Create requirements through interviews, joint application development (JAD) sessions, questionnaires, document analysis and observation
  - 2.2 Devise feasibility analysis
  - 2.3 Create system proposals
3. The Business Modelling and Requirements Workflows (3 hours)
  - 3.1 Create a glossary
  - 3.2 Create use-case diagrams and use case descriptions
  - 3.3 Create activity diagrams
4. The Analysis Workflow (4 hours)
  - 4.1 Devise functional modelling
  - 4.2 Devise class modelling
  - 4.3 Devise dynamic modelling
  - 4.4 Apply boundary class extraction,
  - 4.5 Apply control class extraction
  - 4.6 Apply use case realization.
5. The Design Workflow (3 hours)
  - 5.1 Devise the architecture
  - 5.2 Devise formats of the attributes
  - 5.3 Apply allocation of operations to classes
6. Implementation and Maintenance (2 hours)
  - 6.1 Appraise testing and quality assurance
  - 6.2 Appraise maintenance
7. Final Examination (3 hours)

**Practice 1 (25 hours)**

8. Requirements (6 hours)
  - 8.1 Devise feasibility analysis based on a student-initiated project
  - 8.2 Create a system proposal based on a student-initiated project
9. The Business Modelling and Requirements Workflows (6 hours)
  - 9.1 Create a glossary
  - 9.2 Create use-case diagrams and use case descriptions based on a student-initiated project
  - 9.3 Create activity diagrams, as necessary, based on a student-initiated project

10. The Analysis Workflow (7 hours)
  - 10.1 Devise functional modelling based on a student-initiated project
  - 10.2 Devise class modelling based on a student-initiated project
  - 10.3 Devise dynamic modelling based on a student-initiated project
  - 10.4 Apply boundary class extraction based on a student-initiated project
  - 10.5 Apply control class extraction based on a student-initiated project
  - 10.6 Apply use case realization based on a student-initiated project
  
11. The Design Workflow (6 hours)
  - 11.1 Devise the architecture based on a student-initiated project
  - 11.2 Devise formats of attributes based on a student-initiated project
  - 11.3 Apply allocation of operations to classes based on a student-initiated project

### **Class Practice**

Date & Time	Practice Item	Title	Students / Group	Mode of Practice	Requirement
From the 21st hour onwards	Practice 1	Student-initiated project for information system development	Group	Reports of artefacts, deliverables, etc.	An Interim Report and a Final Report.

### **Teaching Method**

Lectures, case studies, group discussion and class practice.

### **Attendance**

Attendance requirements are governed by the “Academic Regulations Governing Bachelor’s Degree Programmes of Macao Polytechnic Institute”.

## **Assessment**

This learning module is graded on a 100 point scale, with 100 being the highest possible score and 50 being the passing score.

	<b>Item</b>	<b>Description</b>	<b>Percentage</b>
1.	Interim Report	For class practice	30%
2.	Final Report	For class practice	30%
3.	Examination	A comprehensive examination	40%
<b>Total Percentage:</b>			100%

## **Plagiarism Policy**

It is a student's responsibility to ensure that his/her assignment has been checked by the *Turnitin* software, and the similarity score given by the *Turnitin* software cannot be higher than 30%. However, a special case can be determined by the instructor.

## **Teaching Material(s)**

### **Textbook(s)**

A. Dennis, B. H. Wixom, R. M. Roth, 2019, Systems Analysis and Design, 7th ed., Wiley.

## **Reference**

### **Website(s)**

<https://www.wiley.com/en-us/Systems+Analysis+and+Design%2C+7th+Edition-p-9781119496328>