City University of Hong Kong
Course Syllabus

offered by Department of Information Systems
with effect from Semester A 2024 / 2025

Part I   Course Overview

Course Title:	Systems Analysis and Design
Course Code:	IS5411
Course Duration:	One Semester (13 weeks)
Credit Units:	3
Level:	P5
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	Nil

Part II   Course Details

1.   Abstract

This course focuses on systems analysis and design with an emphasis on the development of information systems. Methods of system documentation are examined through the use of object-oriented and structured analysis tools and techniques for describing processes, use cases, data structures, system objects, file designs, input and output designs, and program specifications.

2.   Course Intended Learning Outcomes (CILOs)
(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	Explain the need for modelling in IS analysis and design.	20%			
2.	Identify the necessary interactions between users, customers and managers involved in a real world system development project.	20%	✓	✓	
3.	Identify, and apply the different analysis and design methods for business applications.	20%	✓	✓	✓
4.	Critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	20%			
5.	Operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	10%			
6.	Apply information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	10%			
		100%			

A1:   *Attitude*
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2:   *Ability*
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3:   *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Learning and Teaching Activities (LTAs)
(LTAs designed to facilitate students' achievement of the CILOs.)

| LTA | Brief Description | CILO No. | | | | | | Hours/week |
		1	2	3	4	5	6	(if applicable)
LTA1: Lecture	Students will learn the concepts of traditional structured systems analysis and design methods and object-oriented systems analysis and design methods, associated modelling techniques using activities designed to enable students to differentiate between structured and object-oriented methods, to apply different modelling techniques, and to select appropriate requirements gathering techniques.	✓	✓	✓	✓			
LTA2: Laboratory	Students will spend time to reinforce and practice various modelling techniques learnt in lectures through the following activities during the laboratory sessions: • *Exercises*: Hands-on activities using a CASE tool (e.g., Microsoft Visio) as part of systems modelling exercises such as requirement gathering using interviews, use case models, functional models, structural models and behavioral models. • *Discussion*: Discussion on implications of various concepts learnt in lectures, and how they can be applied to a typical information system analysis and design project. • *Presentations*: Members of project team will make presentation of their project work, and the rest of the tutorial group and the instructor will comment and offer suggestions for improvements.	✓	✓	✓	✓	✓	✓	
LTA3: Project	Students will complete a group project to perform systems analysis and design activities aimed at capturing requirements of an information system in business sector and finding suitable solutions. The group project work will be submitted at different phases for review and comments by the instructor/tutors.	✓	✓	✓	✓	✓	✓	

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4	5	6		
Continuous Assessment: 50%								
AT1: Continuous Assessment Participation in class and lab sessions in activities such as: • formative assessment and feedback sessions • application of systems analysis techniques (including information-gathering techniques) • modelling exercises completed and submitted • presentation and discussion of partial solutions • critical analysis & suggestions to requirements models presented	✓	✓	✓	✓			15%	
AT2: Project Presentation Each project team makes one presentation (about 20 mins duration) of their draft project work and the rest of tutorial group members will participate in discussion and offer improvements.					✓	✓	10%	
AT3: Project (25%) This is a team-based activity with typically 4 students per team aimed at gathering requirements of an information system, and modelling those requirements using appropriate techniques. A generic pattern for the Project work includes: • Description of detailed business environment and system requirements (functional and non-functional) along with necessary source documents • Actors and their goals (use case diagram) • Use case descriptions • Activity diagram, system sequence diagram • Class diagram and database design • User interface design.	✓	✓	✓	✓	✓	✓	25%	
Examination: 50% (duration: one 2-hour exam)								
AT4: Final Examination This closed-book examination will assess both the conceptual understanding and the modeling skills using one or more small case studies.	✓	✓	✓	✓			50%	
							100%	

Note: Students must pass BOTH coursework and examination in order to get an overall pass in this course.

5. Assessment Rubrics
(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
AT1: Continuous Assessment	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
AT2: Project Presentation	Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to communicate information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	High	Significant	Moderate	Basic	Not even reaching marginal levels
AT3: Project	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Moderate	Basic	Not even reaching marginal levels

	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to communicate information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	High	Significant	Moderate	Basic	Not even reaching marginal levels
AT4: Final Examination	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Moderate	Basic	Not even reaching marginal levels

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
AT1: Continuous Assessment	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Basic	Not even reaching marginal levels
	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Basic	Not even reaching marginal levels
	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Basic	Not even reaching marginal levels
AT2: Project Presentation	Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	High	Significant	Basic	Not even reaching marginal levels
	Ability to communicate information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	High	Significant	Basic	Not even reaching marginal levels
AT3: Project	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Basic	Not even reaching marginal levels

	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Basic	Not even reaching marginal levels
	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Basic	Not even reaching marginal levels
	Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	High	Significant	Basic	Not even reaching marginal levels
	Ability to communicate information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	High	Significant	Basic	Not even reaching marginal levels
AT4: Final Examination	Ability to explain the need for modelling in IS analysis and design.	High	Significant	Basic	Not even reaching marginal levels
	Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.	High	Significant	Basic	Not even reaching marginal levels
	Ability to identify, and apply the different analysis and design methods for business applications.	High	Significant	Basic	Not even reaching marginal levels
	Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	High	Significant	Basic	Not even reaching marginal levels

Part III   Other Information (more details can be provided separately in the teaching plan)

1. **Keyword Syllabus**

   (An indication of the key topics of the course.)

   Organizational context for information systems.   The need to describe IS.   Modelling. Systems development life cycle.   Different approaches to information and business system creation.   Different approaches to information and business systems analysis and design.   Structured approach.   Object-oriented approach.

   Details:

   - Organisational context for information systems.
   - The need to describe IS - analysis of existing systems for evolutionary maintenance; design of new systems; communication between users, developers and project managers.
   - Modelling - the purpose of a model; abstraction; key concepts; criteria for assessing modelling formalisms.
   - Systems development life cycle - overview of business systems planning and business area analysis; detailed focus on systems analysis (requirements specification).
   - Different approaches to information and business system creation, application and deployment - application service providers (ASP), buy, make, various partnerships.
   - Different approaches to information and business systems analysis and design - structured approach and object-oriented approach.
   - Structured approach - process modeling and data modeling.
   - Object-oriented approach - use-case modeling and class modeling.

2. **Reading List**

2.1 **Compulsory Readings**

   (Compulsory readings can include books, book chapters, or journal/magazine articles.   There are also collections of e-books, e-journals available from the CityU Library.)

1.	Satzinger, Jackson, Burd, Introduction to Systems Analysis and Design : An Agile, Iterative Approach, International Edition, ISBN-13: 978-1111972264, Joe Sabatino (March 1, 2012)

2.2 **Additional Readings**

   (Additional references for students to learn to expand their knowledge about the subject.)

1.	Dennis, A., Wixom, B.H. and Roth, R.M., <u>Systems Analysis and Design</u>, John Wiley, 3rd edition, 2006.
2.	Whitten, J.L. and Bentley, L.D., <u>Systems Analysis and Design Methods</u>, 7th edition, Irwin/McGraw Hill, 2005.
3.	George, J.F., Batra, D., Valacich, J. and Hoffer, J.A., <u>Object-Oriented System Analysis and Design</u>, 1st edition, Prentice Hall, 2004.
4.	Kendall, K.E. and Kendall, J.E., <u>Systems Analysis and Design</u>, 6th edition, Prentice Hall, 2004.

5.	Bennett, S., McRobb, S. and Farmer, R., <u>Object-Oriented Systems Analysis and Design Using UML</u>, 2nd edition, McGraw Hill, 2002.
6.	George, J.F., Batra, D., Valacich, J.S. and Hoffer, J.A., <u>Object-oriented Systems Analysis and Design</u>, Prentice Hall, 2004. ISBN: 0131133268.
7.	Larman, C., <u>Applying UML and Patterns</u>, 2nd edition, Prentice Hall PTR, 2002. ISBN: 0130479500.

2.3   Online Resources:

UML Resources - http://www.uml.org/

Agile modelling - http://www.agilemodeling.com/