

ISOM3210: Information Systems Analysis and Design (3 credits, Fall 2025)

Lecture: Dr. Xiaojun Zhang

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Office Hours: 1:30pm – 4:30pm on Friday and by appointment

Lab (LA1, LA2, LA3 and LA4): Mr. Chris S H TSE

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Office: LSK 4065

Office Hours: By appointment

Pre-requisite: ISOM2010

Class Schedule ¹	Monday	Friday	Venue
L1	4:30pm – 5:50pm	12:00pm – 1:20pm	4582, Academic Building
L2	3:00pm – 4:20pm	10:30am – 11:50am	
L3	1:30pm – 2:50pm	9:00am – 10:20am	

Lab Schedule	Monday	Tuesday	Venue
LA1		9:00am – 10:20am	LSK 1034
LA2		3:00pm – 4:20pm	Rm 5620, Academic Building
LA3		6:00pm – 7:20pm	LSK 1034
LA4	6:00pm – 7:20pm		LSK 1011

Course Website: <http://canvas.ust.hk>

Textbooks (for reference to topics only):

1. “System Analysis and Design: An Object-Oriented Approach with UML”, by Alan Dennis, Barbara Haley Wixom and David Tegarden; 6th ed., 2020; John Wiley & Sons; ISBN 9-781119-559917.

1. Introduction

In today’s digital landscape, fueled by rapid advancements in AI, organizations must adeptly navigate new horizons in information technology, revolutionizing system architecture and functionality. They need to address the challenges inherent in implementing various information systems by adopting effective development methodologies, ranging from the classic Waterfall model to more Agile approaches like Scrum. This course provides an overview of planning the development of information systems by clearly

¹ For detailed information about class schedule, please refer to the table at the end of the syllabus.

understanding and specifying what a system should do and how its various components should work together, fostering an analytical, logical, and developmental mindset that help maneuver through various development methodologies. Through a blend of theoretical exploration and practical application, students will hone their skills in analyzing information system requirements and crafting innovative designs that align with organizational objectives. Join us on a transformative educational journey that empowers you to reshape your future in the new era of the IT industry.

2. Key Components of the Course

The course includes the following three key components:

- **Lectures (online learning and face to face):** explain and discuss the key topics on system analysis and design and work on exercises and cases relevant to the topics
- **Labs:** mainly to guide students to work on advanced and practical system analysis problems
- **Team project:** provide students with hands-on experience in applying knowledge and skills learned in class to model an information system

3. Intended Learning Outcomes

ILO1:	Identify the core issues and analyze critical factors for IS development-related decision-making
ILO2:	Describe how IS interacts with other parts of the business and make sound IS development decisions as business managers
ILO3:	Evaluate the feasibility of developing proposed information systems by aligning with the organization's business objectives, financial capability, and organization culture
ILO4:	Analyze user requirements and logically classify them into various perspectives to facilitate IS development
ILO5:	Apply IS development methodologies and frameworks to solve complex business problems
ILO6:	Develop professional IT documentations which effectively describe the structure and processes of information systems to relevant stakeholders in a systematic manner using various modelling techniques

4. Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve.

Assessment tasks	Mapped ILOs	Weighting	Due date
Comprehensive Assessment			
• Midterm	1, 2, 3, 4, 5, 6	20%	Week 6
• Final	1, 2, 3, 4, 5, 6	25%	End of semester
In-Class Assessment	5, 6	10%	Continuous assessment
Online Learning and Exercise	1, 2, 3, 4	10%	Continuous assessment
Team Project			
• System Proposal	1, 2, 3, 4, 5, 6	15%	Week 4, 5, 7
• Team Project Report	1, 2, 3, 4, 5, 6	20%	Week 13

Comprehensive Assessment

Comprehensive assessments will be carried out midway and at the end of the semester to evaluate the extent to which students individually have grasped the key concepts presented in the course. Alternative assessment methods will be considered solely in instances of documented health or family emergencies, or for official university-sanctioned activities. In such cases, the instructor reserves the right to use a percentage score of the other assessment methods to make up for the missed comprehensive assessment. Advanced notification of missing the comprehensive assessment is required. Failure to complete the comprehensive assessment will result in a score of 0.

In-Class Assessment

Students are required to attend classes and labs adequately prepared, actively participating in discussions and group tasks. Your contributions are greatly valued, and thus marks for in-class assessments will be granted to those who demonstrate active engagement. The credit awarded for in-class assessment will be based on both the quality and quantity of your input.

Online Learning and Exercises

Students are required to study course materials posted on Canvas and complete the corresponding online exercises.

Team Project - System Proposal and Project Report

Students must complete a team project requiring them to perform analysis and design activities on a proposed system. More details about the project will be provided.

Grading rubrics for each assessment will be conveyed during class and lab in due course.

5. Lab

Students are expected to work on more advanced and practical system analysis problems during lab sessions. It is essential to apply the concepts learned from both online and offline lectures to solve these problems in the labs. Punctuality is crucial; students should attend lab sessions on time, actively participate in discussions, and successfully complete the designated lab assignments.

6. Academic Integrity

Academic integrity entails absolute honesty in one's intellectual effort. In general, students who are found cheating or plagiarizing other people's work, regardless of whether such behaviors take place online or offline, will immediately fail the course and be subject to further disciplinary actions. In addition, uploading, distributing or reselling this course's materials to any individuals and/or online platforms is considered copyright infringement and violation of Student Conduct Code for encouraging or facilitating academic dishonesty and misconduct. For more information, please refer to the following website:

<https://registry.hkust.edu.hk/resource-library/academic-integrity>

7. Communication and Feedback

Assessment marks for comprehensive assessment and team project will be communicated via Canvas within two weeks of submission. Students who have further questions about the feedback including marks and areas of improvement (for team project), should consult the course team within five working days after the feedback is received.

8. Course AI Policy

Generative AI may be helpful to brainstorm initial ideas that students would not have thought of themselves. Hence, we allow students to leverage generative AI to come up with initial ideas, such as formulating system development ideas when kickstarting the group projects. However, students are expected to take an active role to evaluate the feasibility of different ideas, make necessary refinements specific to the business scenarios, and eventually propose robust information systems for system analysis and design using the knowledge and concepts covered in this course.

9. Final Grade Descriptors

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	• Demonstrate thorough understanding to IS development lifecycle • Articulate strategic IS development decisions that align with business goals • Apply IS analysis and design methodologies effectively to a given requirement definition • Produces clear, professional system documentation
B	Good Performance	• Demonstrate good understanding to IS development lifecycle • Articulate strategic IS development decisions that align with most of the business goals • Reasonably apply IS analysis and design methodologies to a given requirement definition • Produce system documentation that are reasonably clear and professional
C	Satisfactory Performance	• Demonstrate basic understanding to IS development lifecycle • Articulate IS development decisions that align with a few key business goals • Apply IS analysis and design methodologies to basic functionality based on a given requirement definition • Produce a complete system documentation
D	Marginal Pass	• Demonstrate very limited understanding to IS development lifecycle • Make weak IS development decisions • Struggled to apply accurate IS analysis and design methodologies to a given requirement definition • Produce incomplete system documentation
F	Fail	• Fail to demonstrate reasonable understanding to IS development lifecycle • Make poor or irrelevant IS development decisions • Apply incomplete and inaccurate IS analysis and design methodologies to a given requirement definition that confuses the project team • Unable to produce a readable system documentation

Class Schedule *(Tentative, last updated on August 13, 2025)*

<u>Week</u>	<u>Pre-Class Online Materials</u>	<u>Lecture</u>	<u>Lab</u>
1	Course Introduction and Project Initiation		
	<u>Reading Material:</u> System Request Template and the Concept of Feasibility Analysis	Sep 1: Course Introduction and Project Initiation	Sep 1, 2: Introduction to the Course Logistics and Project
		Sep 5: System Request and Feasibility Analysis	
2	Requirement Analysis in Agile Development		
	<u>Lecture Video:</u> 3-1: Requirements analysis <u>CHMS Case Study Video:</u> 01: Functional and Non-Functional Requirements <i>Online Exercise: Identify the Functional and Non-Functional Requirements for CHMS</i>	Sep 8: Q&A for Online Materials <i>(Optional)</i>	Sep 8, 9: Project discussion: Idea brainstorming
		Sep 12: Review and Group Case Study: Requirement Analysis	
	Sep 14: Project Team Formation Due		

3	Intro to UML and Use Case Modeling / Object-Oriented Modeling		
	- Base Use Case Description		
	- Elaborated Use Case Description (Alternative and Conditional)		
	<u>Lecture Videos:</u> 4-1: Introduction to UML 4-2: Base Use Case 4-3: Conditional Flow <u>CHMS Case Study Videos:</u> 02a: Actor and Use Case Diagram 02b: Base Use Case 03: Conditional Flow <i>Online Exercise: Complete the Use Case Diagram and the Base Use Case Forms with Conditional Flows for CHMS</i>	Sep 15: Q&A for Online Materials (<i>Optional</i>)	Sep 15, 16: Project discussion: Requirements Analysis
	Sep 19: Review, Group Case Study and Exercises: Use Case Modeling		
Sep 25: Take-home Exercise: Campus Housing System ; Project Milestone 1 Due			

4	Object-Oriented Modeling (continued) - Elaborated Use Case Description (Extending and Included Use Cases)		
	<u>Lecture Videos:</u> 5-1: Extending Use Case 5-2: Included Use Case <u>CHMS Case Study Videos:</u> 04a: Extending Use Case 04b: Included Use Case <i>Online Exercise: Suggest EUC and Identify IUC for CHMS</i>	Sep 22: Q&A for Online Materials (<i>Optional</i>) Sep 26: Review and Group Exercise: EUC and IUC	Sep 22, 23: Project discussion: Mapping Requirements into Use Cases
	Oct 2: Project Milestone 2 Due		
5	Class Diagram for Agile Development		
	<u>Lecture Videos:</u> 8-1: Overview 8-2: Class, Attribute and Method 8-3: Relationship <i>Online Exercise: Develop the Class Diagram for a Clinic Appointment System</i>	Sep 29: Q&A for Online Materials (<i>Optional</i>) Oct 3: Review Class Diagram Concepts	Sep 29, 30: Identify Class diagram components

6	Midterm Overview		
		Oct 6: Summarize Midterm Survey Midterm Overview	Oct 6, 7: No Lab (Public holiday)
		Oct 10: Midterm Assessment Venue: TBD Time: TBD	
	Oct 16 (11:59PM): Project Proposal Due		
7	Develop Class Diagram from Use Cases		
	<u>Lecture Videos:</u> 9-1: Rules 9-2: Identification of Classes, Attributes and Methods 9-3: Specification of Relationships	Oct 13: Q&A for Online Materials (<i>Optional</i>)	Oct 13, 14: Class diagram practice
		Oct 17: Review and Group Exercise: Class Diagram of Campus Housing System	
	Oct. 23 (11:59PM): First Peer evaluation due		

8	Sequence Diagram for Agile Development		
	<u>Lecture Videos:</u> 10-1: Introduction 10-2: Development 10-3: Highlights <u>CHMS Case Study Videos:</u> 06: Sequence Diagram of CHMS <i>Online Exercise: Draw a Sequence Diagram for One Use Case of CHMS</i>	Oct 20: Q&A for Online Materials (<i>Optional</i>)	Oct 20, 21: Class Diagram wrap-up and project discussion
		Oct 24: Review and Group Exercise: Sequence Diagram	

9	Behavioral State Machine (BSM) for Agile Development		
	<u>Lecture Videos:</u> 11-1 Introduction 11-2 Key Concepts <i>Online Exercise: Develop BSM for Tune Order and Book Order</i>	Oct 27: Q&A for Online Materials <i>(Optional)</i>	Oct 27, 28: Developing Sequence diagram
		Oct 31: Review and Group Exercise: BSM for Clinic Emergency Care and CHMS	
10	Exercise: Class Diagram, Sequence Diagram and Behavioral State Machine Diagram		
	Final Exam Review		
	<u>Reading Material:</u> Dr. Chris Case	Nov 7: Wrap up the Key Takeaway of Dr. Chris Exercise and Final Exam Review	Nov 3, 4: Developing BSM Diagram and UML Summary
11	Project Work		
		Nov 10 & 14: Project work (No lecture)	No Lab
12	Project Consultation		
		Nov 17 & 18: Project consultation (No lecture)	No Lab
13	Project Submission		
	Nov 27 (11:59PM): Project Final Report due Nov 29 (11:59PM): Second Peer Evaluation due		