

ISOM3210: Information Systems Analysis and Design (Fall 2021)

Lecture: Dr. Xiaojun Zhang

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Office: LSK 4043

Office Hours: 9:00am – 12:00pm on Tuesday and by appointment

Lab (LA1, LA2, LA3 and LA4): Ms. Adrienne Y S LEE

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Office: LSK 4065

Office Hours: By appointment

Mr. Samuel S Y LAI

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Office: LSK 4065

Office Hours: By appointment

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|-----------------------------------|---|----------------------|-------------------|---------------------------------------|
| Class Schedule¹ | : | <u>Monday</u> | <u>Friday</u> | Venue: 4582, Academic Building |
| | | L1 : 1:30pm – 2:50pm | 9:00am – 10:20am | |
| | | L2 : 4:30pm – 5:50pm | 12:00pm – 1:20pm | |
| | | L3 : 3:00pm – 4:20pm | 10:30am – 11:50am | |

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|---------------------|---|-----------------------|------------|------------------------|
| Lab Schedule | : | <u>Wednesday</u> | - | Venue: LSK G011 |
| | | LA1 : 1:30pm – 2:20pm | (Adrienne) | |
| | | LA2 : 2:30pm – 3:20pm | (Adrienne) | |
| | | LA3 : 3:30pm – 4:20pm | (Adrienne) | |
| | | LA4 : 4:30pm – 5:20pm | (Adrienne) | |

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

Textbooks (for reference to topics only):

1. “System Analysis and Design with UML: An Object-Oriented Approach”, by Alan Dennis, Barbara Haley Wixom and David Tegarden; 6th ed., 2020; John Wiley & Sons; ISBN 978-1-119-55991-7.
2. AUCM: “Advanced Use Case Modeling,” 2nd printing, by Frank Armor and Granville Miller, Pearson, April 2001. ISBN 0201615924.

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

1. Introduction

In today's digital era where IT renovation and innovation are driven by larger societal and technological changes, organizations must become adept in bringing in new information systems and managing the challenges that go along with implementing the systems. This course provides an overview of planning the development of information systems through clearly understanding and specifying what a system should do and how various components of a system should work together. In addition, students will learn the fundamentals of IS development and apply them to solve business problems through analyzing the requirements of information systems and designing such systems.

2. Key Components of the Course

The course includes the following three key components:

- **Lectures (online and offline):** 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. Learning Outcomes (Adapted from Outcome Based Education (OBE): PILOs-BBA-IS)

Student learning outcomes:

- Analyze the core issues and identify critical factors for IS development-related decision-making
- Solve business problems using analytical IS development methodologies
- Understand how IS interact with other business areas
- Demonstrate substantial knowledge and understanding of system analysis and modeling paradigms
- Apply IS development frameworks and tools to resolve business problems in the IS sector of an organization and other business sectors relying on IS
- Understand key IS development management issues and make sound IS development decisions as business managers

In addition, throughout the semester, students will have opportunities to develop ability to:

- Learn the course fundamentals on their own
- Produce professional quality business documents
- Deliver a professional quality presentation
- Communicate ideas persuasively to inform and convince others
- Understand team dynamics and the various roles played within the team
- Contribute to the successful and timely completion of a group project in line with their roles in teams
- Collaborate positively by actively seeking and engaging in discussion of the views of others while showing sensitivity to opposing views
- Lead a team to success

4. Grading

- Assignments (20%)
- Comprehensive Assessment (30%)
- In-Class Assessment (8%)
- Online Learning and Exercises (7%)
- Team Project (35%)

Assignments

Students are required to work in pairs (i.e., groups of two people) to complete 2 assignments and submit them on or before the specified deadlines. In cases of documented health or family emergencies or for official, university-sanctioned activities, students may request for an extension of the deadlines. Students who fail to submit an assignment by the deadline will result in a score of 0.

Comprehensive Assessment

A comprehensive exercise is expected to measure the degree to which students individually have understood the key concepts covered in the course. To help prepare for the exercise, review session will be offered. Alternative assessment method will be allowed only in cases of documented health or family emergencies or for official, university-sanctioned activities. The instructor reserves the right to use a percentage score of the other assessment methods to make up for the missed comprehensive exercise. Advanced notification of missing the comprehensive exercise is required. If you fail or delay to submit the comprehensive exercise, you will receive a score of 0.

In-Class Assessment

Students are expected to come to class and lab prepared and participate in discussions and group tasks. We highly value your inputs, and so in-class assessment marks will be awarded to those who make an effort to actively engage in discussions and group tasks. Both quality and quantity of your contribution will determine the credit for in-class assessment.

Online Learning and Exercises

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

Team Project

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

5. Lab

Students are required to work on more advanced and practical system analysis problems during lab sessions. You are expected to apply concepts that are learnt from online and offline lectures into lab sessions for these

problems. You should attend lab sessions on time, engage actively in discussions and complete the assigned lab tasks.

6. Academic Integrity and Copy Infringement

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:

<http://ugadmin.ust.hk/integrity/student-1.html>

Class Schedule (*Tentative, last updated on Sep 21, 2021*)

| <u>Topic</u> | <u>Pre-Class Online Materials</u> | <u>Lecture (Friday & Monday)</u> | <u>Lab (Wednesday)</u> | <u>Readings</u> |
|--------------|---|---|--|-----------------|
| 1 | Course Introduction and Project Initiation | | | |
| | - | - | Sep 1: No Lab | Ch. 1 Ch. 2 |
| | | Sep 3: Course Introduction and Project Initiation | - | |
| 2 | System Request and Feasibility Analysis | | | |
| | <u>Reading Material:</u> System Request Template and the Concept of Feasibility Analysis | Sep 6: Review and Group Case Study: System Request and Feasibility Analysis | Sep 8: Introduction to Online Self-Study and Course Grading Criteria | Ch. 2 |
| 3 | Requirement Analysis | | | |
| | <u>Lecture Video:</u> 3-1: Requirements analysis | Sep 10: Q&A for Online Materials (<i>Optional</i>) | - | Ch. 3 |
| | <u>CHMS Case Study Video:</u> 01: Functional and Non-Functional Requirements | Sep 13: Review and Group Case Study: Requirement Analysis | Sep 15: Requirement Collection | |
| | <i>Online Exercise: Identify the Functional and Non-Functional Requirements for CHMS</i> | <i>Sep 15: Project Team Formation Due</i> | | |

| <u>Topic</u> | <u>Pre-Class Online Materials</u> | <u>Lecture (Friday & Monday)</u> | <u>Lab (Wednesday)</u> | <u>Readings</u> |
|---|---|--|------------------------|---------------------------------|
| 4 | 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 | Sep 17: Q&A for Online Materials (Optional) | - | AUCM Ch. 7 Ch. 8 Ch. 9 |
| <u>CHMS Case Study Videos:</u> 02a: Actor and Use Case Diagram 02b: Base Use Case 03: Conditional Flow | Sep 20: Review, Group Case Study and Exercises: Use Case Modeling | Sep 22: Public Holiday | | |
| <i>Online Exercise: Complete the Use Case Diagram and the Base Use Case Forms with Conditional Flows for CHMS</i> | | | | |
| Sep 24: Take-home Group Exercise: Campus Housing System Due (Submit in project groups) Due | | | | |
| 5 | 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 | Sep 24: Q&A for Online Materials (Optional) | - | AUCM Ch. 10 |
| | <u>CHMS Case Study Videos:</u> 04a: Extending Use Case 04b: Included Use Case | Sep 27: Review and Group Exercise: EUC and IUC | Sep 29: Wireframe | |
| <i>Online Exercise: Suggest EUC and Identify IUC for CHMS</i> | | | | |
| Sep 29 (11:59PM): Assignment 1 Due | | | | |

| <u>Topic</u> | <u>Pre-Class Online Materials</u> | <u>Lecture (Friday & Monday)</u> | <u>Lab (Wednesday)</u> | <u>Readings</u> |
|--------------|--|---|---------------------------------|-----------------|
| 6 | Project Proposal Meeting | | | |
| | - | Oct 1: Public Holiday | - | - |
| | | Oct 4: Midterm Overview | Oct 6: Tips on Project Proposal | |
| 7 | Midterm Overview and Project Proposal | | | |
| | - | Oct 8: Project Proposal Meeting I | - | - |
| | | Oct 11: Project Proposal Meeting II | Oct 13: Project Work | |
| | Oct 13 (11:59PM): Project Proposal & First Peer Evaluation Due | | | |
| 8 | Class Diagram Overview | | | |
| | <u>Lecture Videos:</u> 8-1: Overview 8-2: Class, Attribute and Method 8-3: Relationship | Oct 15: Q&A for Online Materials (<i>Optional</i>) | - | Ch. 5 |
| | <i>Online Exercise: Develop the Class Diagram for a Clinic Appointment System</i> | Oct 18: Summarize Midterm Survey Review Class Diagram Concepts and Introduce Inheritance | Oct. 20: No Lab | |
| 9 | Develop Class Diagram from Use Cases | | | |

| <u>Topic</u> | <u>Pre-Class Online Materials</u> | <u>Lecture (Friday & Monday)</u> | <u>Lab (Wednesday)</u> | <u>Readings</u> |
|--------------|---|--|--|-----------------|
| | <u>Lecture Videos:</u> 9-1: Rules 9-2: Identification of Classes, Attributes and Methods 9-3: Specification of Relationships <u>CHMS Case Study Videos (<i>Released After Oct 27</i>):</u> Develop the Class Diagram for CHMS: 05a: Register as a Member 05b: Reserve Facilities 05c: Relationships <i>Online Exercise: Complete the Class Diagram for CHMS (To be released on Oct 27 and Due on Nov 1)</i> | Oct 22: Q&A for Online Materials (<i>Optional</i>) Oct 25: Group Exercise: Class Diagram of Campus Housing System | - Oct 27: Class Diagram I | Ch. 5 |
| 10 | Sequence Diagram | | | |
| | <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 29: Q&A for Online Materials (<i>Optional</i>) Nov 1: Review and Group Exercise: Sequence Diagram | - Nov 3: Class Diagram II | Ch. 6 |

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| 11 | Behavioral State Machine (BSM) |
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| <u>Topic</u> | <u>Pre-Class Online Materials</u> | <u>Lecture (Friday & Monday)</u> | <u>Lab (Wednesday)</u> | <u>Readings</u> |
|--|---|--|--|-----------------|
| | <u>Lecture Videos:</u> 11-1 Introduction 11-2 Key Concepts <i>Online Exercise:</i> <i>Develop BSM for Tune Order and Book Order</i> | Nov 5: Q&A for Online Materials <i>(Optional)</i> Nov 8: Review and Group Exercise: BSM for Clinic Emergency Care and CHMS | - Nov 10: Sequence Diagram | Ch. 6 |
| 12 | Exercise: Class Diagram, Sequence Diagram and Behavioral State Machine Diagram | | | |
| | Final Exam Review | | | |
| | <u>Reading Material:</u> Dr. Samuel Case | Nov 12: Q&A for Dr. Samuel Case <i>(Optional)</i> Nov 15: Wrap up the Key Takeaway of Dr. Samuel Exercise Final Exam Review | - Nov 17: Tips on Project Presentation | - |
| <i>Nov 17: Assignment 2 Due</i> | | | | |
| 13 | Project Consultation | | | |
| | - | Nov 19 & 22: Project Consultation | - | - |
| <i>Nov. 24: Presentation Slides and Final Project Report Due</i> | | | | |
| 14 | Project Presentation | | | |
| | - | Nov 26 & 29: Project Presentation | - | - |
| <i>Nov. 30: Second Peer Evaluation Due</i> | | | | |