

## ISOM3260 Database Design and Administration (Fall 2023)

### Instructors

|              | L1  | LA1 & LA2  |  |
|--------------|---|--|--|
| Name         | Prof Percy Dias   | Mr. Chris Tse                                      | Mr. Samuel Lai                                       |
| Office       | LSK4037   | LSK4065  | LSK4065  |
| Email        | <a href="mailto:percy@ust.hk">percy@ust.hk</a>  | <a href="mailto:imchris@ust.hk">imchris@ust.hk</a> | <a href="mailto:imsamuel@ust.hk">imsamuel@ust.hk</a> |
|              | (Email subject: <b>[ISOM3260]</b> ...)  |  |  |
| Telephone    | 2358-7654   | 2358-7638  | 2358-7638  |
| Office hours | By appointment  | By appointment                                     | By appointment                                       |
| Textbook     | Modern Database Management (13th Edition)   |  |  |
| Course web   | <a href="https://canvas.ust.hk/">https://canvas.ust.hk/</a><br>Please visit Canvas regularly for the updates in the course. |  |  |

### Time and Venue

|     |                             |         |
|-----|-----------------------------|---------|
| L1  | Friday 9:00am to 10:50am    | LSK1001 |
| LA1 | Monday 12:00pm to 2:50pm    | LSKG005 |
| LA2 | Wednesday 12:00pm to 2:50pm | LSKG005 |

### Overview

This course covers the basic concepts and principles of database design and implementation. Database management systems are the foundation of any information systems. Database systems must effectively store and manage data with integrity and security. This course emphasizes both theories and hands-on experience. The course work includes a group project in which students design and implement a database system to solve a practical business problem. Oracle will be used as the main software package for students to gain hands-on experience.

### Course Objectives

In this course, students will learn the fundamentals of database design and development. By attending this course, students will learn how they can develop a database in different stages. Specifically,

- They will learn how to do conceptual modeling.
- They will learn how to do logical database design.
- They will learn how to do physical database design.
- They will learn how to store and manipulate data in relational databases.
- They will learn how to generate management reports from relational databases.

Advanced topics (e.g., data and database administration, etc.) will be covered.

### Intended Learning Outcomes

- Describe the database environment, benefits and risks, and development process.
- Analyze how data should be represented and stored in the business information systems.
- Design the data structure in conceptual and logical levels.
- Manipulate the data with structured query language (SQL) and advanced SQL.
- Apply programming skills and construct a realistic business information system.

## Grading Scheme

|  |     |
|--|-----|
| <u>Individual</u>                      |     |
| Lab Submissions                        | 10% |
| Midterm Exam                           | 25% |
| Final Exam                             | 30% |
| <u>Group</u>                           |     |
| Progress Demonstration                 | 5%  |
| Project Demonstration and Final Report | 30% |

The grading scheme and class schedule are subject to change under any special circumstances. Possible changes include, but are not limited to, replacing evaluation components with alternatives, and changing the weighting of evaluation components.

## Academic honesty

Written work that you hand in is assumed to be original unless your source material is documented appropriately. Using the ideas or words of another person, even a peer, or a web site, as if it were your own, is plagiarism. Cheating and plagiarism are serious academic offenses. Students should read the section on cheating and plagiarism in the HKUST catalog.

Furthermore, students should be aware that faculty members have a range of academic actions available to them in cases of cheating and plagiarism, including failing a student on that particular work, to failing a student in a course, to referring the case to school/university committees for consideration of dismissal from the university program.

## Grade appeal

Any appeal to score/grade has to be filed through email to your instructors. No appeal of a particular score/grade will be considered 72 hours after its score/grade release day.

## Class Schedule (Tentative)

|    | Lecture (Friday)  | Lab (LA1 on Monday & LA2 on Wednesday)                                    |
|----|---|---|
| 1  | Sep 1: Database Fundamentals  | Sep 4, 6: Introduction to Labs and Group Project                          |
| 2  | Sep 8: ER Diagram   | Sep 11, 13: ER Diagram concept review and Project requirements discussion |
| 3  | Sep 15: Enhanced ER Diagram   | Sep 18, 20: Drawing ER Model using Data Modeler<br>SQL (DDL)              |
| 4  | Sep 22: Practice on Conceptual Data Model                             | Sep 25, 27: SQL (DML)<br>Project Development (1)                          |
| 5  | Sep 29: Midterm Catchup   | Oct 2, 4: <b>Holiday / No Lab</b>   |
| 6  | Oct 6: <b>Midterm Exam</b>  | Oct 9, 11: Project Development (2)  |
| 7  | Oct 13: ER Diagrams Transformation                                    | Oct 16, 18: Breakout for Project  |
| 8  | Oct 20-26: <b>Progress Demonstration</b><br>(Oct 23: <b>Holiday</b> ) |   |
| 9  | Oct 27: Normalization   | Oct 30, Nov 1: More about SQL<br>Project Development (3)                  |
| 10 | Nov 3: Physical Database Design                                       | Nov 6, 8: Project Development (4)   |
| 11 | Nov 10: Database Administration / Security                            | Nov 13, 15: Project Development (5)                                       |
| 12 | Nov 17: Final Catchup / Review  | Nov 20, 22: Breakout for Project  |
| 13 | Nov 24-30: <b>Project Demonstration</b>                               |   |

Note. Schedule is tentative and subject to change. Please check the course website regularly for the updated schedule.

## Examination Arrangements and Regulations

Students are required to attend the examinations scheduled by the course instructor and/or Academic Records and Registration (ARR), Academic Registry. If there is a conflict in exam schedule with another course, you should resolve it before the add-drop period (e.g., consider taking a different course during add/drop period).

- If a student is unable to attend a scheduled examination because of illness or other circumstances beyond the student's control,

Midterm Exam: the student may request for a make-up midterm exam and seek approval from the course instructor, within one week from the missed examination. Appropriate supporting document is required.

Final Exam: the student may apply to ARR, Academic Registry within one week from the missed exam for a make-up exam. The student is required to provide appropriate supporting document in the application. A make-up exam can be given only if the application of the make-up exam is approved by all related parties including the course instructor, ARR, Academic Registry and etc.

**Note.** The format of the make-up exam could be different from that of the scheduled exam. The make-up exam is given on a take-it-or-leave-it basis. No further arrangement will be provided if the student fails to attend the make-up exam.

- If a scheduled exam is cancelled due to bad weather conditions (<http://ugadmin.ust.hk/ug-guide/classes/weather.html>),

Midterm Exam: a rescheduled exam will be arranged by the course instructor.

Final Exam: a rescheduled exam will be arranged by ARR, Academic Registry. It is possible that the rescheduled final exam is held after the exam period, i.e., 19 December 2023 or even later.

Students will be notified by email or a public announcement. A student who fails to attend the rescheduled exam is required to apply for the make-up exam and seek approval from all related parties, before a make-up exam can be given.