HKU BUSINESS SCHOOL
THE UNIVERSITY OF HONG KONG

MSBA7024 Database Design and Management

GENERAL INFORMATION

Instructor: Michael Chau

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Consultation times: Friday 2:30pm-5:30pm (tentative)

Tutors:
Huilin Gao <hlgao@connect.hku.hk> (hands-on sessions and grading)
Sichen Dong <u3007640@connect.hku.hk> (hands-on sessions and grading)
Allison Hu <ah1122@hku.hk> (class administration, attendance)

Pre-requisites: There are no pre-requite courses or knowledge for taking this course.

Course Website: Moodle

The following languages are used in this course: SQL, Javascript, Python

MySQL, Google BigQuery, and MongoDB are used as the database systems for hands-on experience.

COURSE DESCRIPTION

The ability to store, retrieve, and manipulate data using modern database systems is essential to the success of business analytics projects. Besides relational databases that have been widely used in transactional systems and dimensional databases that have been the core of data warehouses, non-relational databases (often referred to as NoSQL databases) have also gained much popularity in business analytics because of their flexibility to handle semi-structured and unstructured data. This course aims to introduce the fundamental principles of the design, development, and administration of various database models for students with no prior experience and knowledge in database management. In this course, students will learn the basic concepts involved in the design and management of relational databases, dimensional databases, and NoSQL databases for business analytics.

COURSE OBJECTIVES

- Introduce the fundamental principles of design, development, and administration of database management systems for students with no prior experience and knowledge in database management.
- Teach the basic concepts involved in the design and management of relational databases, dimensional databases, and NoSQL databases for business analytics.
- Provide students with hands-on experience on database tools and models.

PROGRAMME LEARNING OUTCOMES

PLO1: Acquisition and internalization of knowledge of the programme discipline

PLO2: Application and integration of knowledge

PLO3: Inculcating professionalism and leadership

PLO4: Developing global outlook

PLO5: Mastering communication skills

COURSE LEARNING OUTCOMES

Course Learning Outcomes	Aligned Programme Learning Outcomes
After taking this course, students should be able to:	
CLO1. Define and explain the characteristics, advantages and disadvantages of relational databases, dimensional databases, and NoSQL databases.	PLO1, 4, 5
CLO2. Describe the importance of data modeling concepts and use these effectively.	PLO1, 4, 5
CLO3. Plan and design a database.	PLO1, 2, 3
CLO4. Use database management systems such as MySQL and MongoDB to manage data for business analytics project.	PLO1, 2, 3

COURSE TEACHING AND LEARNING ACTIVITIES

Course Teaching and Learning Activities	Expected contact hour	Study Load (% of study)
T&L1. Interactive lectures	30	25%
T&L2. Online forum discussions	6	5%
T&L3. Assignments & Tutorials	42	35%
T&L4. Lecture preparation & Self-study	42	35%
Total	120	100%

Assessment Methods	Brief Description (Optional)	Weight	Aligned Course Learning Outcomes
A1. In-class & forum participation	Attendance & discussions	20%	CLO1, 2, 3, 4
A2. Assignments	Effort and accuracy	40%	CLO1, 2, 3, 4
A3. Final exam	Effort and accuracy	40%	CLO1, 2, 3, 4
Total		100%	

STANDARDS FOR ASSESSMENT

Course Grade Descriptors

A+, A, A-	•Demonstrate a strong understanding of all relevant knowledge •Handling questions professionally •High participation in discussions •Present arguments that have an element of originality •Achieve a standard of excellent performance in the exams with very accurate computation and very good analytical and problem solving skills •Excellent performance in assignments
B+, B, B-	•Demonstrate a good understanding of all relevant knowledge •Handling questions in a logical way •Good participation in discussions •Present arguments that go beyond the lecture and textbook •Achieve a standard of good performance in the exams with accurate computation and good analytical and problem solving skills •Good performance in assignments
C+, C, C-	•Demonstrate a basic understanding of the concepts involved •Fairly address questions as set •Some participation in discussions •Present arguments in a well-structure manner •Meet a standard of acceptable performance in the exams with reasonably accurate computation and acceptable analytical and problem solving skills •Acceptable performance in assignments
D+, D	•Demonstrate a minimum understanding of the concepts involved •Barely address questions as set •Minimal or no participation in discussions •Present arguments in a marginally acceptable manner

	•Meet a standard of marginally acceptable performance in the exams with some errors in computation and barely adequate analytical and problem solving skills •Marginally acceptable performance in assignments
F	•Demonstrate a poor understanding of the concepts involved •Unable or unwilling to handle questions •Minimal or no participation in discussions •Present arguments poorly •Fail to meet a standard of passing the exams with major errors in computation and inadequate analytical and problem solving skills •Poor performance in assignments

Assessment Rubrics for Participation

A+, A, A-	•High participation in discussions •Always attend in-class discussions •Demonstrate a strong understanding of all relevant knowledge •Handling questions professionally •Present arguments that have an element of originality •Respect others and follow the class rules (no chatting and do not use cell phone)
B+, B, B-	•Good participation in discussions •Often attend in-class discussions •Demonstrate a good understanding of all relevant knowledge •Handling questions in a logical way •Present arguments that go beyond the lecture and textbook •Respect others and follow the class rules (no chatting and do not use cell phone)
C+, C, C-	•Some participation in discussions •Sometimes attend in-class discussions •Demonstrate a basic understanding of the concepts involved •Fairly address questions as set •Present arguments in a well-structure manner •Respect others and follow the class rules (no chatting and do not use cell phone)
D+, D	•Minimal or no participation in discussions •Rarely attend in-class discussions •Demonstrate a minimum understanding of the concepts involved •Barely address questions as set •Present arguments in a marginally acceptable manner •Respect others and follow the class rules (no chatting and do not use cell phone)
F	•Minimal or no participation in discussions •Almost never attend in-class discussions •Demonstrate a poor understanding of the concepts involved •Unable or unwilling to handle questions •Present arguments poorly •Behave poorly in class (often chatting with others, using cell phones, or being late)

Assessment Rubrics for Assignments and the Exam

A+, A, A-	•Demonstrate a strong understanding of all relevant knowledge •Present arguments that have an element of originality •Achieve a standard of excellent performance in the assessments with very accurate computation and very good analytical and problem solving skills
B+, B, B-	•Demonstrate a good understanding of all relevant knowledge •Present arguments that go beyond the lecture and textbook •Achieve a standard of good performance in the assessments with accurate computation and good analytical and problem solving skills
C+, C, C-	•Demonstrate a basic understanding of the concepts involved •Present arguments in a well-structure manner •Meet a standard of acceptable performance in the assessments with reasonably accurate computation and acceptable analytical and problem solving skills

D+, D	•Demonstrate a minimum understanding of the concepts involved •Present arguments in a marginally acceptable manner •Meet a standard of marginally acceptable performance in the assessments with some errors in computation and barely adequate analytical and problem solving skills
F	•Demonstrate a poor understanding of the concepts involved •Present arguments poorly •Fail to meet a standard of passing the assessments with major errors in computation and inadequate analytical and problem solving skills

COURSE CONTENT AND TENTATIVE TEACHING SCHEDULE

The following topics will be covered in this course:

1. Introduction to Database and Various Database Models

2. Relational Database – The Entity-Relationship Model

3. Relational Database – Structured Query Language

4. Relational Database – Using MySQL

5. Relational Database – Logical and Physical Database Design; Normalization

6. Dimensional Database – Data Warehouse

7. Dimensional Database – Star Schema

8. NoSQL Database – Introduction to Various Types of NoSQL Models

9. NoSQL Database – Document Store

10. NoSQL Database – Using MongoDB

REQUIRED/RECOMMENDED READINGS & ONLINE MATERIALS (e.g. journals, textbooks, website addresses etc.)

To be announced on Moodle.

MEANS/PROCESSES FOR STUDENT FEEDBACK ON COURSE

- Conducting mid-term survey in additional to SETL around the end of the semester
- Online response via Moodle site
- Students are encouraged to provide feedback directly to the instructor

COURSE POLICY (e.g. plagiarism, academic honesty, attendance, etc.)

An orderly learning environment is extremely important for this course. Disruptive behaviors are absolutely unacceptable. Academic dishonesty includes cheating, plagiarism, unauthorized collaboration, falsifying academic records, and any act designed to avoid participating honestly in the learning process. Any such dishonesty will result in an F grade.

ADDITIONAL COURSE INFORMATION (e.g. e-learning platforms & materials, penalty for late assignments, etc.)

- Assignments should be submitted on Moodle before the deadline. If a submission is late for 24 hours or less, 20% will be deducted. If a submission is late for more than 24 hours, no credit will be given.
- Lecture notes and self-learning materials will be uploaded on Moodle.