**City University of Hong Kong**
**Course Syllabus**

**offered by Department of Information Systems**
**with effect from Semester A 2022 / 2023**

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## Part I Course Overview

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| **Course Title:** | Database Management |
| **Course Code:** | IS3331 |
| **Course Duration:** | One Semester |
| **Credit Units:** | 3 |
| **Level:** | B3 |
| **Proposed Area:** *(for GE courses only)* | ☐ Arts and Humanities<br>☐ Study of Societies, Social and Business Organisations<br>☐ Science and Technology |
| **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

*(A 150-word description about the course)*

Database management is an exciting, challenging and growing field in information systems and business management. By the end of this course, you will learn the concepts, principles and techniques of database management. You will also apply the database design methods to the modelling, design and implementation of databases for various business information systems. The course will introduce the structured query language (e.g. SQL) for retrieval of information in a relational database management system. The course will also build the foundations for big data and artificial intelligence applications.

### 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. | Analyze and evaluate the role of data management for businesses applications and its contribution to improve organizational performance. | 25% | | ✓ | |
| 2. | Design conceptual data models based on actual business requirements. | 25% | | ✓ | ✓ |
| 3. | Convert conceptual data models into relations, and normalize relations to meet user requirements. | 30% | | ✓ | |
| 4. | Develop database reports, queries and applications to improve the efficiency of businesses. | 20% | | ✓ | ✓ |
| | ** If weighting is assigned to CILOs, they should add up to 100%.* | 100% | | | |

*[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.*

*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 self-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. Teaching and Learning Activities (TLAs)

*(TLAs designed to facilitate students' achievement of the CILOs.)*

| **TLA** | **Brief Description** | **CILO No.** | | | | **Hours/week (if applicable)** |
|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | Seminar: 3 Hours/Week |
| TLA1: Lecture | Concepts related to database modelling, normalization, and languages for database query will be explained. | ✓ | ✓ | ✓ | ✓ | |
| TLA2: Demonstrations | Methods and techniques of database modelling and implementation will be demonstrated. | ✓ | ✓ | ✓ | ✓ | |
| TLA3: Practical/ Workshop | Hands-on skills on developing conceptual and physical database models and their implementation will be practiced. | | ✓ | ✓ | ✓ | |

## 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 | | |
| Continuous Assessment: 40% | | | | | | |
| **AT1: Quizzes** Two quizzes. | ✓ | ✓ | ✓ | ✓ | 10% | |
| **AT2: Group Project** A group project, which includes a project report and presentation, will be allocated to let students apply the modelling concepts techniques learnt in class to solve practical business problems. | ✓ | ✓ | ✓ | ✓ | 30% | |
| Examination: 60% (duration: one 2-hour exam) | | | | | | |
| **AT3: Examination** Students will be assessed via the examination on their understanding of concepts learned in class, textbooks, reading materials, and their ability to apply subject-related knowledge. | ✓ | ✓ | ✓ | ✓ | 60% | |
| ** The weightings should add up to 100%.* | | | | | 100% | |

[#] Remark: 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.)*

| **Assessment Task (AT)** | **Criterion** | **Excellent (A+, A, A-)** | **Good (B+, B, B-)** | **Fair (C+, C, C-)** | **Marginal (D)** | **Failure (F)** |
|---|---|---|---|---|---|---|
| AT1: Quizzes | Ability to accurately describe all key concepts, and effectively compare and discriminate among the key concepts. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective conceptual data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective physical data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to demonstrate a cogent ability to integrate all of the concepts, skills and techniques learnt to develop an effective database application to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| AT2: Group Project | Ability to accurately describe all key concepts, and effectively compare and discriminate among the key concepts. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective conceptual data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective physical data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to demonstrate a cogent ability to integrate all of the concepts, skills and techniques learnt to develop an effective database application to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |

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|---|---|---|---|---|---|---|
| AT3: Examination | Ability to accurately describe all key concepts, and effectively compare and discriminate among the key concepts. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective conceptual data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe all key concepts; and demonstrate the ability to creatively develop an effective physical data model to meet all stated business requirements. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to demonstrate a cogent ability to integrate all of the concepts, skills and techniques learnt to develop an effective database application to meet all stated business requirements. | High | Significant | Moderate | 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.)*

Concepts and methods of database management; Architecture and components of database systems; Database development and design; Entity-Relationship diagrams; Conceptual, logical and physical database design; Normalization; Relational database model; Data and text mining; Database definitions and manipulation languages; Structured Query Language.

**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.)*

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|---|---|
| 1. | Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi. Modern Database Management, 13th Edition by Pearson. (Aug 26, 2019). |

**2.2 Additional Readings**

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

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|---|---|
| 1. | Silberschatz, A., Database System Concepts, 7th edition, McGraw-Hill, Inc.,2019. |
| 2. | Carols Coronel and Steven Morris, Database Systems: Design, Implementation and Management, Course Technology, 2018. |