Universiti Teknologi MARA

SCHEME OF WORK

COURSE INFORMATION: **Semester: OCT2024-FEB2025**

Course Code	:	**ICT200**
Course Title	:	**INTRODUCTION TO DATABASE MANAGEMENT SYSTEM**
Level	:	**Diploma**
Course Credit(s)	:	**3**
Contact Hours	:	**4 (2 hours lecture + 2 hours lab; per week)**
SLT	:	**120 Hours, face to face: 59 hours, student preparation time: 61 hours**
Part	:	**3**
Course Status	:	**CORE**
Pre-requisite	:	**None**
Equivalent Course		**ITS232 / INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS**
Name of Lecturer	:	**NIK RUSLAWATI BT NIK MUSTAPA**
Room Num.	:	**C013**
Contact Num.	:	**05-4067434**
Email	:	nrnm@uitm.edu.my

COURSE DESCRIPTION:

In the information age today, the need to advance knowledge in developing a database management system is crucial. This course emphasized on the database concepts, principles, design, development and managing database systems. By acquiring the knowledge, the students will be able to appreciate the need for implementing database systems.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, the students should be able to:

1. Apply the knowledge of a database design based on the Entity-Relationship Model and 3NF relation. (C3)
2. Demonstrate effective interpersonal skills in the development of database system using RDBMS concepts. (A3)
3. Demonstrate digital skills in Structured Query Language constructions using RDBMS. (A3)

COURSE ASSESSMENT:

Writing Test [Cover topic 1-4] (CLO1)	**20 %**
Lab Test [SQL] + Lab Exercise (CLO3)	**20 %**
Group database Project (CLO2)	**20 %**
● Proposal content ○ Table of Contents ○ Members' Profile ○ Introduction to Organization ○ Organizational Background ▪ Organizational Chart ▪ Current System Description ○ Current Problem Statements ○ Proposed Database Objectives	

○ Initial Proposed System Business Rules ○ Initial Proposed Entity Relationship Diagram (ERD) ○ References/Bibliography – APA citation style	
● **Final report content** ○ Table of Contents ○ Inclusion of Proposal ○ Final ER Diagram ○ Relational Schema in 3NF ○ Data dictionary ○ Data Definition Language (DDL) ○ Data Manipulation Language (DML) that include queries which describe: ▪ Questions ▪ SQL statements ▪ Output ○ References/Bibliography – APA citation style ○ Appendices	
● **Database application presentation** ○ Pop up questions on DML	
FINAL EXAM (3 hours paper) (CLO1)-cover chap1-chap6 ● **Part A (MPC) – 20 M** ● **Part B (Short Questions) – 60 M** ● **Part C (ERD Question) – 20 M**	**40 %**
TOTAL	**100 %**
Passing Grade	**C (50%)**

RECOMMENDED TEXTBOOK (THEORY)

1. Carlos Coronel and Steven Morris, ***Database Systems: Design, Implementation, and Management***, 13th, Cengage Learning Pte Ltd, 2019, ISBN: 9789814834247

RECOMMENDED MANUALS (LABORATORY)

MySQL Lab Guide A supplement to: *Database Systems: Design, Implementation and Management (International Edition)* Rob, Coronel & Crockett (ISBN: 9781844807321)

REFERENCES

1. David Kroenke, David J. Auer, Robert C. Yoder, Scott L. Vandenberg, ***Database Concepts***, 8th, Pearson, 2017, ISBN: 013460153X
2. Ramez Elmasri, Shamkant B. Navathe, ***Fundamentals of Database Systems***, 7th, Pearson Education, 2017, ISBN: 933258270X
3. Satinder Bal Gupta and Aditya Mittal, ***Introduction to Database Management System***, 1st, Laxmi Publications, 2016, ISBN: 9381159319
4. Connolly,T. and Begg, C., Database Systems: ***A Practical Approach to Design, Implementation, and Management***, 6th, Pearson Education Limited, 2014, ISBN: 1292061189
5. Raghu Ramakrishnan and Johannes Gehrke, ***Database Management System***, 3rd, McGraw Hill Education, 2014, ISBN: 9339213114
6. Halse J. (2021), *What Is Agile Methodology?* Independently Published, ISBN: 9798537873440

TEACHING METHODOLOGY:

A combination of the following methods; lectures. lab work, and project-based learning.

COURSE PLAN:

WEEK / DATE	TOPICS	TEACHING METHODOLGY	REFERENCE: TEXTBOOK / MANUAL	COURSE OUTCOME	ACTIVITY / ASSESSMENT
1 - 2	**INTRODUCTION TO COURSE INFORMATION** **CHAPTER 1: <u>DATABASE SYSTEMS</u>** ● Introducing the Database ● Why Database Design Is Important ● Evolution of File System Data Processing ● Problems with File System Data Processing ● Database Systems ● Preparing for Your Database Professional Career	Lecture	**Lesson Plan / Scheme of Work** **Student Profile** **<u>Textbook:</u>** **<u>Peter Rob, 13th ed.</u>**	CLO1	***Brief explanation on Course Information, CLO, Assessments*** ***Performing Group for Database Project*** **Entrance Survey (7 Oktober – 3 November 2024)**
	CHAPTER 7: SQL Lab ● MySQL Installation ● Building a database: Table by Table (will be used in next lab).	Lab Work **Lab Exercise 1:** MySQL Installation	**Lab Notes MySQL**	CLO3	***Briefing on Proposed Database Project Report***
3 – 4 Hari Deepavali 31 Oktober 2024	**CHAPTER 2: <u>DATA MODELS</u>** ● Data Modelling and Data Models ● The Importance of Data Models ● Data Model Basic Building Blocks ● Business Rules ● The Evolution of Data Models ○ The Hierarchical and Network Model ○ The Relational Model ○ The Entity Relationship Model ○ The Object-Oriented (OO) Model ● Degrees of Data Abstraction	Lecture / Project-based Learning		CLO1, CLO2	
	CHAPTER 7: SQL Lab ● Simple SQL Queries ● Scalar Functions and Arithmetic	Lab Work **Lab Exercise 2:** Simple SQL Queries **Lab Exercise 3:** Scalar Functions and Arithmetic	**Lab Notes MySQL**	CLO3	**Simple SQL Queries Lab Exercise** **Scalar function and Arithmetic Lab Exercise**

5 – 6	**CHAPTER 3: <u>THE RELATIONAL DATABASE MODEL</u>** ● A Logical View of Data ○ Tables and Their Characteristics ● Keys ● Integrity Rules ● The Data Dictionary and the System Catalog ● Relationships Within the Relational Database ○ The 1:M Relationship ○ The 1:1 Relationship ○ The M: N Relationship ● Indexes	Lecture / Project-based Learning		CLO1, CLO2	**Week 6 Proposal Submission**
	CHAPTER 7: SQL Lab ● Column Functions and Grouping ● Retrieving data from Multiple Tables	Lab Work **Lab Exercise 4:** Column Functions and Grouping **Lab Exercise 5:** Retrieving data from Multiple	**Lab Notes MySQL**	CLO3	**Column Functions & Grouping Lab Exercise** **Retrieving Data from Multiple Tables Lab Exercise**
MID SEM BREAK 18 – 24 November 2024 [1 WEEK]					
7 –9	**CHAPTER 4: <u>ENTITY RELATIONSHIP (ER) MODELING</u>** ● The Entity Relationship Model (ERM) ● Developing an ER Diagram **<u>ADVANCED DATA MODELING</u>** ● The Extended Entity Relationship Model ○ Entity Supertypes and Subtypes ○ Specialization Hierarchy ○ Inheritance ○ Subtype Discriminator ○ Disjoint and Overlapping Constraints	Lecture / Project-based Learning		CLO1, CLO2	**<u>Lab Test (20%)</u>** **SQL Statement**
	CHAPTER 7: SQL Lab ● Using Subqueries ● Maintaining Data ● Data Definition Language	Lab Work **Lab Exercise 6:** Using Subqueries **Lab Exercise 7:** Maintaining Data **Lab Exercise 8:** Data Definition Language	**Lab Notes MySQL**	CLO3	**Using Subqueries Lab Exercise** **Maintain data lab exercise**

10 – 11 (16/12/24 - 20/12/24 & 30/12/24 - 3/1/25)	**CHAPTER 5: <u>NORMALIZATION OF DATABASE TABLES</u>** ● Database Tables and Normalization ● The Need for Normalization ● The Normalization Process ○ Conversion to First Normal Form ○ Conversion to Second Normal Form ○ Conversion to Third Normal Form ● Normalization and Database Design ● Denormalization	Lecture	Textbook pages: 200 – 218, 224 – 232	CLO1	**<u>Writing Test (20%)</u>** **Chapter 1 – 4**
	CHAPTER 7: SQL Lab ● Group Project Supervision	Lab Work Briefing on application and final report	**Lab Notes MySQL**	CLO3	
CUTI KHAS PERAYAAN 23 - 29 Disember 2024 **(Krismas: 25 Disember** **Tahun Baru 1 jan 2025)**					
12-13 Tahun Baru Cina 29-20 Jan 2025	**TOPIC 6: <u>DATABASE DESIGN</u>** ● **C**hanging Data into Information ● The Information System ● Development Life Cycle (SDLC) ● Agile methodology ● The Database Life Cycle (DBLC) ○ The Database Initial Study ○ Database Design ○ Implementation and Loading ○ Testing and Evaluation ○ Operation ○ Maintenance and Evolution ● DBMS Software Selection ● Database Design Strategies	Lecture / Project-based Learning		CLO1, CLO2	**Exit Survey** **6 Januari - 9 Februari 2025** **SUFO** **(6 Januari - 9 Februari 2025)**
14	**Test Discussion** **<u>Submission for Database Project Report and presentation</u>**				**<u>Project deliverables submission and project presentation (20%)</u>**
CUTI ULANGKAJI 27 Januari – 2 Februari 2025 [1 WEEK]					
PEPERIKSAAN AKHIR 3 – 23 Februari 2025 [3 WEEK]					

Prepared by: Class Lecturer
Signature:

Update Date: 7 Oktober 2024