



Course Specification

— (Bachelor)

Course Title: Database Systems

Course Code: APIS2210

Program: Diploma in Information Security

Department: Diplomas

College: Applied College

Institution: Umm Al-Qura University

Version: 1

Last Revision Date: 14/12/2024



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

- A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
- B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (level 2, 1st year)

4. Course general Description:

This course provides foundational database knowledge and covers topics related to the conceptual design of database based on the functional requirements for organizations. It presents the basics of information storage and management, from the conceptual modelling of an organization's data requirements using the relational model, through to the implementation of these requirements with tools such as SQL and techniques such as normalization.

5. Pre-requirements for this course (if any):

6. Pre-requirements for this course (if any):

7. Course Main Objective(s):

1. The student will understand various different types of data modelling techniques and the supporting theoretical foundation.
2. Create conceptual database Design for a given application using ER and relational database models.
3. Describe characteristics of entity relationship components and explain how relationships between entities are defined.
4. Be familiar with fundamental relational database concepts
5. Use Relational algebra operators and SQL commands and function for data manipulation.
6. Use normalization and normal forms to improve database design.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Explain difference between file systems and database systems	K1	Course lectures, project	Quizzes, Midterm Exam, Final Exam
1.2	Differentiate between ER and Normalization in relational model construction	K2	Course lectures, exercises, project	Quizzes, Midterm Exam, Final Exam
2.0	Skills			
2.1	Create a Conceptual Data Model	S1	Exercises, Project	Quizzes, Midterm Exam, Final Exam, project
2.2	Design a Relational Database Model	S2	Exercises, Project	Quizzes, Midterm Exam, Final Exam, project
2.3	Write SQL queries	S3	Exercises, Project	Quizzes, Midterm Exam, Final Exam, project
2.4	Installing database servers	S5	Exercises, Project	Quizzes, Midterm Exam, Final Exam, project
3.0	Values, autonomy, and responsibility			



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.1	To be independent and complete required tasks individually	V2	Project	Project

C. Course Content

No	List of Topics	Contact Hours
1.	File Systems VS DB Systems	3
2.	Data Modelling: Entity Relationship Diagram	3
3.	ERD to Relational Mapping	3
4.	Normalization: 1NF, 2NF, 3NF, BCNF	3
5.	Relational Algebra Operations	3
6.	SQL: Data Definition Language	6
7.	SQL: Data Manipulation Language	6
8.	Disk Storage, Basic File Structures, File Indexing Techniques	3
		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	1 - 15	15%
2.	Project	1 - 15	30%
3.	Midterm	1 - 15	20%
4.	Final Exam	Finals Week	35%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	
	Fundamentals of Database Systems By: Ramez Elmasri , Shamkant B. Navathe



Supportive References	<p>Modern Database Management</p> <ul style="list-style-type: none"> By: Jeffrey A. Hoffer and Ramesh Venkataraman Database Systems: A Practical Approach to Design, Implementation, and Management, 6th edition Published by Pearson (July 14, 2021) © 2013
Electronic Materials	Umm Al Qura e-learning system containing teaching resources (Slides, assignment papers, etc.)
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
<p>facilities</p> <p>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	<p>Lecture room with:</p> <ul style="list-style-type: none"> * at least 30 seats * A data show projector connected to a PC preferably with Internet connection * sliding board * PC Lab (at least 30 seats)
<p>Technology equipment</p> <p>(projector, smart board, software)</p>	30 Linux/Windows PCs
<p>Other equipment</p> <p>(depending on the nature of the specialty)</p>	A maintenance lab + A PC lab with various operating systems such as Linux windows etc.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of Students' assessment	Peers	Direct
Quality of learning resources	Quality Assurance Committee/ Curriculum Committee	Direct
The extent to which CLOs have been achieved	Instructor	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))





Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190358
DATE	1446/11/22

