



Course Specification

(Bachelor)

Course Title: Database

Course Code: APCS2207

Program: Programming and Computer Science

Department:

College: Applied College

Institution: Umm Al-Qura university

Version: (1)

Last Revision Date: Jan 2025



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content.....	5
D. Students Assessment Activities	5
E. Learning Resources and Facilities.....	6
F. Assessment of Course Quality	6
G. Specification Approval	7



A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

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

3. Level/year at which this course is offered: (.....)

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. In addition, It provides advanced database knowledge like it presents the basics of transactions and database administration.

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

6. Co-requisites 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
7. Design and execute advanced queries.
8. Design application using EER model.
9. Describe components of database management systems.
10. Define concepts like transaction processing, backup, recovery and Security

2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	50%
2	Lab	2	50%
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	2*15
2.	Laboratory/Studio	2*15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Explain difference between file systems and database systems	K1	▪ Lectures Lab demonstrations.	▪ Written exam ▪ Lab assignments ▪ Quizzes
1.2	Differentiate between ERD and EERD and Normalization in relational model construction	K3		
1.3	Explain advanced database topics like transaction control	K3		
2.0	Skills			
2.1	Create a Conceptual Data Model	S1	▪ Lectures. ▪ Lab projects. ▪ Case studies	▪ Written exam ▪ Lab assignments. ▪ Class Activities
2.2	Design a Relational Database Model	S5		





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.3	Convert EER Model to a Relational Database Model	S5	<ul style="list-style-type: none">▪ presentations.▪ Brainstorming	<ul style="list-style-type: none">▪ Quizzes▪ Practical Exam
2.4	Installing database servers	S6		
2.5	Connect database with local and web server			
3.0	Values, autonomy, and responsibility			
3.1	Apply standards of integrity and ethical conduct in various academic contexts	V1	Small group discussions	Project
3.2	Work with in a team work to accomplish a project	V3		
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to database	2
2.	Data Modelling: Entity Relationship Diagram	4
3.	ERD to Relational Mapping	4
4.	The Enhanced Entity-Relationship (EER) model	2
5.	Normalization: 1NF, 2NF, 3NF	4
6.	SQL: Data Query and Definition Language	4
7.	SQL: Data Manipulation Language	4
8.	Database Backup and Recovery	2
9.	Transactions: failures, atomicity, consistency, isolation, durability	2
10.	Database administration (authorization and security)	2

Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes & Assignment	Throughout the term	15%
2.	Midterm Exam	10	20%





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
3.	Design and execute Project	15	25%
...	Final Exam	18	40%

*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	<ul style="list-style-type: none"> Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems, 6th Edition, ISBN-13: 978-0-13-608620-8, Addison-Wesley, 2011 Database Systems a Practical Approach to Design, Implementation, and Management. 4th ed, Thomas Connolly and Carolyn Begg, Addison Wesley, 2009. List Essential References Materials (Journals, Reports, etc.) N/A List Recommended Textbooks and Reference Material (Journals, Reports, etc.) <p>Jeffrey A. Hoffer, V. Ramesh, HeikkiTopi, Modern Database Management 10th Edition, ISBN 0136088392 9780136088394, Prentice Hall, ©2011</p>
Supportive References	
Electronic Materials	SQL Server (e.g. MS SQL Server, MySQL), data show
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		
Effectiveness of		





Assessment Areas/Issues	Assessor	Assessment Methods
Students assessment		
Quality of learning resources		
The extent to which CLOs have been achieved		
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190365
DATE	1446/11/22

