Course Specifications

Course Title:	Database Systems(2)
Course Code:	**ICS 224**
Program:	**Information and computer sciences**
Department:	**Computer science and information**
College:	**Science at Al-Zulfi**
Institution:	**Majmaah**

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A. Course Identification

1. Credit hours:2 (1+2)
2. Course type **a.** University ☐ College ☐ Department ☒ * Others ☐ **b.** Required ☒ * Elective ☐
3. Level/year at which this course is offered: 6
4. Pre-requisites for this course (if any)**: Database Systems 1 ICS 212**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	*	%80
2	**Blended**	*	%5
3	**E-learning**	*	%5
4	**Correspondence**	*	%5
5	**Other**	*	%5

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	15
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	45
Other Learning Hours*		
1	**Study**	15
2	**Assignments**	10
3	**Library**	30
4	**Projects/Research Essays/Theses**	5
5	**Others** (specify)	
	Total	60%

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces principles of database management systems (DBMS). It focuses on terminology and fundamental concepts of relational databases and database management systems, database system architecture, Query processing and optimization, Reliability, protection, performance transaction management concepts, concurrent transaction and deadlock concepts. Students will learn SQL and PL/SQL including, triggers and transaction processing

2. Course Main Objective

Students will develop relevant Oracle PL/SQL programming abilities.

2 Students will demonstrate proficiency design of database project.

3 Students will develop the ability to design DB Relation models.

4 Students will execute database with professional Oracle software.

5 Students will demonstrate skill in data analysis and DB management. 6 Motivate students to solve and develop databases problems as concurrency and deadlocks using Oracle PL/SQL programming

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Define the concept of transactions and describe fundamental transaction processing, concurrency and recovery control issues associated with database management systems.	K2
2	**Skills :**	
2.1	Use PL/SQL programming with DBMS	S1
2.2	Students will be able to reason about and apply SQL queries.	S2
2.3	Retrieve information from a database using Structured Query Language (SQL).	
3	**Competence:**	
3.1	Design and implement complex databases schemas using ER diagrams, normalization, integrity constraints, and advanced database system features such as stored procedures and triggers	c1
3.2	Develop database applications using database client APIs such as embedded SQL, ODBC, and JDBC	C2

C. Course Content

No	List of Topics	Contact Hours
1	Review the Concepts and principles of database management systems (DBMS)	6
2	Fundamental concepts of relational databases and embedded SQL statements (user data type, constraint, assertion, control statement, loop, exception using exist statement and dynamic SQL)	6
3	Fundamental concepts of Query processing and optimization. Applying examples using SQL, PL/SQL Programming based on: • Data Definition Language (DDL). • Data Manipulation Language (DML). • Data Control Language (DCL).	9
4	Introduction to Advanced Query Processing and Query Optimization Techniques	6
5	Transaction Management System	6

6	Introduction to Protocols for Concurrency Control and deadlocks	6
	Database File access, secondary storage characteristics, and access strategies.	6
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Define the concept of transactions and describe fundamental transaction processing, concurrency and recovery control issues associated with database management systems	Developing basic communication Ability through short and varied situated discourse. Lecturing	Homework. Group Discussion Presentation
…			
2.0	**Skills**		
2.1	Use PL/SQL programming with DBMS	Class discussion Presentation Individual meeting with the instructor (encouraging students to discuss different topics outside the classroom)	Presentation Essay Questions Research topics
2.2	Students will be able to reason about and apply SQL queries.		
2.3	Retrieve information from a database using Structured Query Language (SQL).		
3.0	**Competence**		
3.1	Design and implement complex databases schemas using ER diagrams, normalization, integrity constraints, and advanced database system features such as stored procedures and triggers	Discussion with students Making students aware about time management in completing their assignments. Counsel students how to make a good presentation in Database and DBMS	Respecting deadlines. Showing active class participation. Helping other students to understand tasks in the class. Giving clear and logical arguments Performing seriously on midterms and final exams
3.2	Develop database applications using database client APIs such as embedded SQL, ODBC, and JDBC		
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Class activities, group discussions, Presentation	Every week	5%
4	Homework + Assignments	After Every chapter	5%
5	Final Lab Exam	15	20%
6	Final written exam	16	40%
7	First written mid-term exam	6	15%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
Office hours: Mon: 10-12, Wed: 8-10
Email: m.jemmali@mu.edu.sa

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Thomas Connolly and Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation, and Management 6th Edition, ISBN-13: 978-0-13-294326-0, 6th Edition 2020
Essential References Materials	Jeffrey A. Hoffer, Mary Prescott, Fred McFadden, Modern Database Systems, 7th Ed., Prentice Hall
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classrooms with required digital aids and to support traditional method of teaching using blackboard. • Classrooms with proper lighting and air conditioning system integrated with the sound System /audio system. • Classroom with smart board interface, display screen and a computer to aid the sessions
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board with supporting software / computers with updated versions of software as required to understand the subject concepts.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student-faculty management meetings.	Program Leaders	Direct
Discussion within the staff members teaching the course	Peer Reviewer	Direct
Departmental internal review of the course.	Peer Reviewer	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Reviewing the final exam questions and a sample of the answers of the students by others.	Peer Reviewer	Direct
Visiting the other institutions that introduce the same course one time per semester.	Faculty	Indirect
Student-faculty management meetings.	Program Leaders	Direct
Discussion within the staff members teaching the course	Peer Reviewer	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	