Course Specifications

Course Title:	**Advanced Database**
Course Code:	**ICS 325**
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. 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 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**	*	%١٠٠
2	**Blended**	*	%٠
3	**E-learning**	*	%٠
4	**Correspondence**	*	%٠
5	**Other**	*	%٠

7. Actual Learning Hours (based on academic semester)

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

* 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 the concepts and principles of database management systems (DBMS). It focuses to acquire knowledge of transaction processing concepts, concurrency control, recovery system, parallel and distributed database, query processing and query optimization techniques.

2. Course Main Objective

To understand and apply normalization concepts using functional and multivalued dependencies.
To understand and acquire knowledge of transaction processing concepts.
To identify, describe, analyze and apply concurrency and recovery of database transactions.
To understand and apply the concepts of SQL and PL/SQL programming to real world problem.
To understand and apply the basics of parallel and distributed database.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Understand relational database concepts	a1
1.2	Design and evaluate a relational database.	a1
1.3	Implement a relational database.	a1
1.4	Retrieve information from a database using Structured Query Language (SQL).	a1
1.5	Understand the environment and architecture of a database.	a1
1.6	Understand the basic concept of transactions, the importance of transactions and how transactions are managed in a database.	a1
2	**Skills :**	
2.1	Apply Oracle 10g program structure.	b1
2.2	Students will be able to reason about and apply SQL queries.	b1
2.3	Students will be able to analyze problems	b1
2.4	Apply solutions for a problem from our live.	b1
2.5		b1
3	**Competence:**	
3.1	Work in a group and learn time management.	c1
3.2	Learn how to search for information through library and internet.	c1
3.3	Present a short report in a written form and orally using appropriate scientific language	c1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Normalization using Functional and Multivalued Dependencies, Atomic Domains and First Normal Form, Decomposition using Functional and Multivalued Dependencies, More Normal Forms and Database Design Process.	6
2	Applying and using SQL, PLQ programing based on DDL, DML and DCL.	6
3	Transaction Management: Transaction Concepts, Transaction Model, and Properties of Transaction (ACID).	9
4	Concurrency Control: Locke-based protocols, Deadlock handling, Multiple Granularity, Timestamp-based protocols, Validation-based protocols, and multi version schemes.	9

5	Recovery System: Failure classifications, Recovery and Atomicity, and Buffer Management	6
6	Introduction to Parallel and Distributed Database, Introduction to Query Processing and Query Optimization Techniques	6
Total		

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		Developing basic communication Ability through short and varied situated discourse. Lecturing	Homework. Group Discussion Presentation
1.2			
…			
2.0	**Skills**		
2.1		Class discussion Presentation Individual meeting with the instructor (encouraging students to discuss different topics outside the classroom)	Presentation Essay Questions Research topics
2.2			
…			
3.0	**Competence**		
3.1		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			
…			

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	Oracle Database 12c PL/SQL Programming Michael McLaughlin McGraw - Hill Education 2014 ISBN-13: 978-0071812436 ISBN-10: 0071812431 Fundamentals of Database Systems (7th Edition) Ramez Elmasri and Shamkant Navathe Pearsons 2015 ISBN-10: 0133970779 Oracle Database 11g & MySQL 5.6 Developer Handbook Michael McLaughlin Mc Graw Hil 2012 ISBN: 978-0-07-176885-6
Essential References Materials	Jeffrey A. Hoffer, Mary Prescott, Fred McFadden, Modern Database Systems, 7th Ed., Prentice Hall
Electronic Materials	
Other Learning Materials	Oracle

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
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	Program plan committee
Reference No.	
Date	08/09/2019