الملحق ٤: وصف المادة الدراسية

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Database Systems**	**Module Delivery**	
Module Type	Core	☒Theory ☒Lecture ☒ Lab ☐Practical ☐Seminar	
Module Code	**CPE 209**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	2	**Semester of Delivery**	4
Administering Department	Computer Eng.	**College**	College of Engineering
Module Leader	Yasser Abdulhaleem Abdulkareem	**e-mail**	yasser_almadani@uodiyala.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSc.
Module Tutor	Yasser Abdulhaleem Abdulkareem	**e-mail**	yasser_almadani@uodiyala.edu.iq
Peer Reviewer Name	Shaimaa khamees Ahmed Sabah A. AbdulKareem	**e-mail**	shaimaa_khamees@uodiyala.edu.iq sbh_anwar@uodiyala.edu.iq
Scientific Committee Approval Date	02/06/2024	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

**Ministry of Higher Education and
Scientific Research - Iraq
University of Diyala
College of Engineering
Department of Computer Engineering**

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Upon completion of this course, the student will be able to understand: 1. The Database system and application. 2. The Purpose of the database system. 3. About Characteristics and Benefits of a Database. 4. About Database Architecture. 5. About Database language languages. 6. About the Data Dictionary. 7. Types of DBMS. 8. The Relational databases. 9. About Database Design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe the fundamental elements of relational database management systems. 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. 3. Design ER-models to represent simple database application scenarios. 4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data. 5. Improve the database design by normalization.
Indicative Contents المحتويات الإرشادية	• Introduction to Database systems (2 hrs.), • Database Users, Roles and Database administration (2 hrs.), • Database Architectures and the Web (2 hrs.), • Introduction to Structured Query Language (SQL) (2 hrs.), • The SQL SELECT statement and Table Joins (2 hrs.), • Advanced SQL SELECT (2 hrs.), • SQL programming: stored procedures functions (2 hrs.), • Relational Algebra & SQL (2 hrs.), • Database analysis and data modeling (2 hrs.), • Using High-Level Conceptual Data Models for Database Design (2 hrs.), • Logical database design, mapping complex data models (2 hrs.), • Logical database design and normalization (2 hrs.), • Physical database design (2 hrs.), • Course projects (4 hrs.).

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, homework's and examples. Practical examples helps students to understand the course material.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (10)	7 and 14	LO #2 and #5
	Assignments	2	10% (5)	11 and 13	LO #4 and #5
	Projects / Lab.	1	10% (10)		
	Report				
Summative assessment	Midterm Exam	1 hr	10% (10)	9	LO #1 - #3
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Database systems.
Week 2	Database Users, Roles and Database administration.
Week 3	Database Architectures and the Web.
Week 4	Introduction to Structured Query Language (SQL).
Week 5	The SQL SELECT statement and Table Joins.
Week 6	Advanced SQL SELECT. 6.1 Aggregates. 6.2 Sub-selects. 6.3 Views.
Week 7	SQL programming: stored procedures functions.
Week 8	Relational Algebra & SQL.
Week 9	Database analysis and data modeling.
Week 10	Using High-Level Conceptual Data Models for Database Design.
Week 11	Logical database design, mapping complex data models.
Week 12	Logical database design and normalization.
Week 13	Physical database design.
Week 14	Course projects..
Week 15	Midterm Exam.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to databases management system. 1. Functions of a database. 2. Terminology. 3. Popular DBMS. 4. Uses in business and industry.
Week 2	Installing MySQL to manipulate with database.
Week 3	Installing Python and PyCharm (IDE) to manipulate with database.

Week 4	Getting started with MySQL: 1. Opening the database. 2. Application window. 3. Menu bar. 4. Status bar. 5. Toolbar. 6. Dialog box.
Week 5	Creating a database by using SQL statements: 1. Designing the database. 2. Creating a table structure. 3. Adding records.
Week 6	Editing a database by using SQL statements: 1. Modifying the table structure. 2. Adding or deleting records. 3. Inserting or deleting fields.
Week 7	Retrieving Information by using SQL statements: 1. Using Queries. 2. Querying multiple tables.
Week 8	Presenting the data: 1. Designing reports. 2. Creating reports.
Week 9	Advanced SQL Operators: 1. SQL like operator. 2. SQL Wildcard. 3. SQL IN operator. 4. SQL BETWEEN operator.
Week 10	SQL Joins: 1. INNER JOIN. 2. LEFT OUTER JOIN. 3. RIGHT OUTER JOIN. 4. FULL OUTER JOIN.
Week 11	SQL Constraints: 1. NOT NULL. 2. UNIQUE. 3. PRIMARY KEY. 4. FOREIGN KEY. 5. CHECK. 6. DEFAULT. 7. INDEX.
Week 12	SQL aggregate functions.
Week 13	SQL String functions.
Week 14	MySQL date functions.
Week 15	lab. Projects.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Fundamentals of Database Systems, 6th Edition, Ramez Elmasri and Shamkant B. Navathe.	Yes
Recommended Texts	SQL Learn Basics of Queries and Implement Easily, James Jackson.	No
Websites	https://www.coursera.org/courses?query=database%20management	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.