



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Database Management Systems		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CYS251		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	Dept. of Cybersecurity	College	College of Information Technology
Module Leader	Dr. Ahmad AlSabhany	e-mail	Ahmad.alsabhany@uofallujah.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	Lect. Basem Mohd. Saleh	e-mail	bassim.m.s1977@uofallujah.edu.iq
Peer Reviewer Name	Dr. Senan Ali Abd	e-mail	senan.a.abd@uofallujah.edu.iq
Scientific Committee Approval Date	25-5-2026	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Develop a solid understanding of database concepts, architectures, and database management systems. 2. Design relational databases using appropriate data modeling techniques. 3. Apply normalization principles to develop efficient and consistent database structures. 4. Develop practical skills in creating, managing, and querying databases using SQL. 5. Implement database operations for data storage, retrieval, modification, and management. 6. Apply fundamental database security and integrity mechanisms. 7. Design and implement database solutions that satisfy specified organizational requirements. 8. Prepare students for advanced study in web applications, data analytics, and cybersecurity systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the fundamental concepts, architectures, and functions of database management systems. 2. Design relational database schemas using appropriate data modeling techniques. 3. Apply normalization principles to develop efficient and consistent database structures. 4. Create, manage, and query databases using SQL. 5. Implement database operations for data storage, retrieval, modification, and management. 6. Apply database integrity constraints and security mechanisms to protect data. 7. Develop and deploy database solutions that satisfy specified organizational requirements. 8. Utilize databases effectively in web applications, information systems, and cybersecurity-related applications.
Indicative Contents المحتويات الإرشادية	• Introduction to Database Systems and DBMS Concepts • Database Architecture and Database Models • Data, Information, and Database Applications • Relational Database Concepts • Relational Model and Relational Algebra Fundamentals • Entity-Relationship (ER) Modeling

	● Database Design Methodology ● Relational Schema Design ● Normalization Techniques (1NF, 2NF, 3NF, BCNF) ● Structured Query Language (SQL) ● Data Definition Language (DDL) ● Data Manipulation Language (DML) ● Data Query and Retrieval Operations ● Joins and Multi-Table Queries ● Aggregate Functions and Grouping Operations ● Views and Database Objects ● Stored Procedures and Triggers ● Transactions and Concurrency Control ● Database Security and Access Control ● Data Integrity Constraints ● Backup and Recovery Concepts ● Database Administration Fundamentals ● Database Applications in Web Systems and Cybersecurity
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The module is delivered through lectures, laboratory sessions, practical database exercises, and project-based learning activities. Students develop database design and implementation skills through hands-on work with relational databases, SQL programming, and database management tools. Real-world case studies are used to demonstrate the role of databases in business systems, web applications, and cybersecurity environments. Laboratory activities emphasize database modeling, normalization, query development, data integrity, security mechanisms, and the implementation of complete database solutions.

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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Assignments	2	10% (10)	5 and 10	All
	Quiz	1	10% (10)	4	LO #1 - #3
	Quiz (Lab.)	1	10% (10)	9	LO #4 - #6
	Project	1	10% (10)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Databases, DBMS, and Database Applications
Week 2	Creating and Managing Databases with Microsoft Access
Week 3	Tables, Fields, Records, Keys, and Database Relationships
Week 4	MySQL, Linux-Based Database Systems and Databases
Week 5	SQL Fundamentals: Queries, Filtering, and Sorting
Week 6	SQL Data Manipulation
Week 7	SQL Functions and Expressions
Week 8	Midterm Examination
Week 9	Advanced SQL Queries: Multi-Table Queries, Joins, and Aggregate Functions
Week 10	Entity-Relationship Modeling and Database Design
Week 11	Views, Stored Procedures, and Database Objects
Week 12	Microsoft SQL Server and Database Administration
Week 13	Database Security, Users, Roles, and Access Control
Week 14	Database Project I: Design and Implementation
Week 15	Database Project II: Testing and Applications in Web Systems and Cybersecurity

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Creating a Simple Database in Microsoft Access
Week 2	Tables, Forms, Queries, and Reports in Microsoft Access
Week 3	Primary Keys, Foreign Keys, and Database Relationships
Week 4	MySQL Installation, Linux Terminal Access, and Database Creation
Week 5	SQL Queries: SELECT, WHERE, ORDER BY, DISTINCT, and LIMIT
Week 6	SQL Data Manipulation: INSERT, UPDATE, DELETE, and Data Import
Week 7	SQL Functions, Expressions, and Calculated Fields
Week 8	Midterm Practical Assessment
Week 9	Multi-Table Queries, Joins, Aggregate Functions, GROUP BY, and HAVING
Week 10	Entity-Relationship Diagrams and Database Design Exercises
Week 11	Creating Views, Stored Procedures, and Database Objects
Week 12	Microsoft SQL Server and SQL Server Management Studio
Week 13	Managing Users, Roles, Permissions, and Database Security
Week 14	Database Project I: Design and Implementation
Week 15	Database Project II: Testing, Optimization, and Presentation
Week 16	Project Seminars

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Coronel, C., & Morris, S. (2022). Database Systems: Design, Implementation, & Management (14th ed.). Cengage Learning. 2. Pratt, P. J., & Last, M. (2023). Concepts of Database Management (10th ed.). Cengage Learning.	Yes
Recommended Texts	1. Beaulieu, A. (2020). Learning SQL (3rd ed.). O'Reilly Media.	Yes

Websites	1. MySQL Documentation – https://dev.mysql.com/doc/ 2. Microsoft SQL Server Documentation – https://learn.microsoft.com/sql/ 3. W3Schools SQL Tutorial – https://www.w3schools.com/sql/ 4. SQLBolt Interactive SQL Lessons – https://sqlbolt.com/ 5. MySQL Tutorial – https://www.mysqltutorial.org/
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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.				