

COURSE DESCRIPTIONS

Faculty	Science and Information Technology				
Department	Software Engineering			NQF level	6
Course Title	Databases	Code	503341	Prerequisite	501330
Credit Hours	3	Theory	2	Practical	1
Course Leader	Dr. Nashat Alrefai	Email	n.alrefai@jadara.edu.jo		
Lecturers	Dr. Nashat Alrefai Dr. Basem Alzughoul Dr. Mohammad Alrefai Ms. Sarah Alquran Ms. Eman Alshboul Mr. Mohammad Abu qteish	Emails	n.alrefai@jadara.edu.jo b.zughoul@jadara.edu.jo m.alrefai@jadara.edu.jo s.alquran@jadara.edu.jo		
Lecture time		Classroom			
Semester	Second 2025/2026	Production	2008	Updated	2026
Type of Teaching	☒ Face to Face ☐ Blended ☒ Online				

Short Description

In this course, the students will be introduced to traditional files structure problems, database systems concepts, database systems evolution, database types, entity, attributes, relationship, and relationship degree, architecture, modeling methods using ERD, relational algebra, normalization and relational database constraints. SQL data definition and manipulation languages are also covered.

Course Objectives

- To let students, acquire knowledge and understand the advantages of a database systems approach, database architecture of ANSI/SPARC, the database models, Database design, data integrity and constrains types, relational algebra operators, and SQL.
- Promote students' skills to gather and analyze data for designing database schema and using and applying SQL language effectively to create and manipulate database.

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1. Illustrate database concepts, architecture, environment, models and characteristics. (K1)

B. Knowledge - Practical Application

a2. Develop database tables using relational algebra, ERD, and normalization based on user requirements. (K4)

a3. Apply DDL, DML using SQL effectively. (K4)

C. Skills - Generic Problem Solving and Analytical Skills

b1. Analyze user requirements to design the database model. (S1)

D. Skills - Communication, ICT, and Numeracy			
E. Competence: Autonomy, Responsibility, and Context			
c1. Design database solutions by integrating individual and collaborative efforts effectively. (C1)			
Teaching and Learning Methods (TMs)			
TM1. ☒ Face to Face		TM2. ☐ Online (synchronous)	
TM3. ☒ Online (asynchronous)			
TM4. ☐ Brain Storming		TM5. ☐ Using Video	
TM6. ☒ Discussions			
Assessment Methods (AMs)			
AM1. ☒ Formative		AM2. ☒ Quiz	
AM3. ☒ Assignment		AM4. ☐ Homework	
AM5. ☐ Lab Test		AM6. ☒ Project	
AM7. ☐ Presentation		AM8. ☐ Experiment	
AM9. ☒ Midterm		AM10. ☒ Final Exam.	

Course Contents					
Week	Hou rs	CILOs	Topics	Teaching & Learning Methods	Assessment Methods
1	3	a1	Introduction (Chapter 1 From Text Book)	TM1, TM3,TM6	AM1, AM2 AM9, and AM10
2	3	a1, a2, a3	Database Requirements and ER Modeling (Chapter 2 From Text Book)	TM1, TM3	AM2, AM3, AM9, and AM10
3	3	a3, b1	Database Requirements and ER Modeling (Chapter 2 From Text Book)	TM1, TM3,TM6	AM9, and AM10
4,5	3	a2, a3, b1	Relational Database Modeling (Chapter 3 From Text Book)	TM1, TM3	AM3, AM9, and AM10
6	3	a3, b1, c1	Structured Query Language (Chapter 5 From Text Book, chapter 6 and chapter 7 From Ref 1)	TM1, TM3	AM3, AM9, and AM10
7	2	a1, a2, a3, b1	Midterm Exam		AM9
8	3	a3, b1, c1	Structured Query Language (Chapter 5 From Text Book, chapter 6 and chapter 7 From Ref 1)	TM1, TM3,TM6	AM2, AM3, AM10
9	3	a3, b1, c1	Structured Query Language (Chapter 5 From Text Book, chapter 6 and chapter 7 From Ref 1)	TM1, TM3	AM2, AM3
10	3	a3, b1, c1	Database Implementation and Use (Chapter 6 From Text Book)	TM1, TM3	AM2, AM3, AM10
11	3	a3, b1	The Relational Algebra (Chapter 8 From Ref 1)	TM1	AM2, AM10

12	3	a3, b1	The Relational Algebra (Chapter 8 From Ref 1)	TM1, TM6	AM2, AM10
13	3	a3, b1	Update Operations, Update Anomalies, and Normalization (Chapter 4 From Text Book, chapter 14 From Ref 1)	TM1	AM2, AM10
14	3	a1, a2, c1	Object-oriented Database and Distributed database	TM1	AM10
15	2	a1, a2, a3, b1	Final Exam		AM10

Infrastructure	
Textbook	Database Systems: Introduction to Databases and Data Warehouses, Nenad Jukic, Susan Vrbsky, Svetlozar Nestorov, 2nd Edition
References	- Fundamentals of database systems, Elmasri Navathe, Addison Wesley, 7th Edition Database systems. C.S. Date, Addison Wesley - Database System Concepts, Abraham Silberschatz, Henry Korth & Sudarshan, 6th edition 2011. - Beaulieu, A. (2020). Learning SQL: Generate, manipulate, and retrieve data. O'Reilly Media
Required reading	
Electronic materials	http://elearning.jadara.edu.jo https://www.oracle.com https://www.mysql.com
Other	

Course Assessment Plan							
Assessment Method		Grade	CILOs				
			a1	a2	a3	b1	c1
First (Midterm)		30	10	5	10	5	0
Second (if applicable)		0					
Final Exam		40	10	10	10	10	0
Coursework		30					
Coursework assessment	Assignments			5			5
	Case study						
	Discussion and interaction						
	Group work activities (Project)						10
	Lab tests and assignments						
	Presentations						
	Quizzes		5		5		
Total		100	25	20	25	15	15

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.