QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Data Science & Artificial Intelligence Department

Study plan No.	**2024/2025**		**University Specialization**		**Data Science & Artificial Intelligence**	
Course No.	**0135220**		**Course name**		**Database**	
Credit Hours	**3 hours**		**Prerequisite Co-requisite**		**Introduction to Information Technology**	
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	☐ √ Mandatory requirements	☐ Elective requirements
Teaching style	☐ **Full online learning**		☐ **Blended learning**		☐ **√ Traditional learning**	
Teaching model	☐ **2Synchronous: 1asynchronous**		☐ **2 face to face : 1synchronous**		☐ **√ 2 Traditional**	

Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Bilal Hawashin	**Associate Professor**			**b.hawashin@zuj.edu.jo**	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**
				Traditional	

Brief description

This course provides a comprehensive concept of the relational database design and SQL (implemented in Oracle) used with relational databases. The students will be able to explain the fundamental concepts of databases, including data models, schema design, relational database, and normalization. They will be also able to design and implement relational databases, creating tables, establishing relationships between them, and executing SQL queries on the created tables.
The presentation stresses at relational data model; relational algebra; SQL; database analysis and design; ER and enhanced modelling; data normalization.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	Database Systems: Design, Implementation, and Management, 13th edition, Cengage Learning, 2018, by Carlos Coronel, Steven Morris. Database Systems: Design, Implementation, and Management, 14 edition, Cengage Learning, by Carlos Coronel, Steven Morris. 2022			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	**1.** Database systems: a pragmatic approach. By Elvis C. Foster, Shripad Godbole Foster, E. and Godbole, S., 3rd edition, CRC Press, Taylor & Franciss Group, Auerbach Publications. 2022. **2.** Database Management System: An Evolutionary Approach. By Patni, J.C., Sharma, H.K., Tomar, R. and Katal, A., CRC Press, 2022. **3.** Database System Concepts, by Abraham Silberschatz, Henry F. Korth, and S.Sudarshan, McGraw-Hill Education, 2020.			
Supporting websites				
The physical environment for teaching	☐ **√ Class room**	☐ labs	☐ Virtual educational platform	☐ Others

Necessary equipment and software	**Oracle SQL Plus**
Supporting people with special needs	
For technical support	

Course learning outcomes (S= *Skills, C= Competences K= Knowledge,)*

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	Understanding the basics of database development process and recognizing variety of entity relationship diagrams (ERD) and extended entity relationship diagrams (EERD), as well as understanding the concept of data normalization.	MK2
K2	Recognizing the basic data structures needed to process and manage the databases.	MK2
K3	Understanding how to analyze, design, and build effective and reliable database management system as well as how to create a relational database.	MK1, MK2
	Skills	
S1	Map the ERDs and EERDs into their equivalent database schemes as well as remove anomalies in tables and databases based on data normalization.	MS1
S2	Use the basic data structures needed to process and manage the databases and use databases to create various computer applications.	MS1
S3	Use, apply, and implement SQL to create tables and databases.	MS1
	Competences	
C1	To apply the main concepts of database development process for problems solving in real life.	MC1, MC2
C2	To build effective and smart database management systems/projects that match the requirements and needs of the labour market.	MC1, MC2
	Transferable	

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
PBL	%15	%15	%15	**15%**
Second / midterm exam	%30	%30	%30	**15%**
Participation / practical applications + Projects	%15	%15	%15	**30%**

Asynchronous interactive activities	0	0	0	**0**
final exam	%40	%40	%40	**40%**

Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week	First Lecture (F2F)	Second Lecture (F2F)	ILOs	PLOs	JNQF Descriptors*
1	Introduction to Databases	Introduction to Databases	ILO1-K	MK2	K
2	Introduction to Databases	Introduction to Databases	ILO1-K	MK2	K
3	Creating and Modifying Database Tables	Creating and Modifying Database Tables	ILO2-k, ILO3-k, ILO5-s, ILO6-s	MK1, MK2, MS1	K, S
4	Creating and Modifying Database Tables	Creating and Modifying Database Tables **+ Homework 1 on Creating and Modifying Database Tables**	ILO5-s ILO6-s	MS1	S
5	Using SQL Queries to Insert, Update, Delete, and View Data	Using SQL Queries to Insert, Update, Delete, and View Data	ILO2-k, ILO5-s	MK2, MS1	K, S
6	Using SQL Queries to Insert, Update, Delete, and View Data	Using SQL Queries to Insert, Update, Delete, and View Data **+ Homework 2 on Using SQL Queries to Insert Data**	ILO2-k, ILO5-s	MK2, MS1	K, S
7	Using SQL Queries to Insert, Update, Delete, and View Data	Using SQL Queries to Insert, Update, Delete, and View Data **+ Homework 3 on Using SQL Queries**	ILO2-k, ILO5-s	MK2, MS1	K, S

		to Delete Data			
Midterm Exam (30%)					
9	Using SQL Queries to Insert, Update, Delete, and View Data	Using SQL Queries to Insert, Update, Delete, and View Data **+ Homework 4 on Using SQL Queries to Update Data**	ILO5-s, ILO7-c	MS1, MC1	S, C
10	SQL: Data Manipulation	SQL: Data Manipulation	ILO5-s, ILO7-c	MS1, MC1	S, C
11	Database Design and the E-R Model	Database Design and the E-R Model	ILO1-k ILO4-s	MK2, MS1	K, S
12	Database Design and the E-R Model	Database Design and the E-R Model **+ Homework 5 on Database Design and the E-R Model**	ILO1-k ILO4-s	MK2, MS1	K, S
13	Mapping a Conceptual Design into a Logical Design	Mapping a Conceptual Design into a Logical Design	ILO4-s	MS1	S
14	Database Design 1: Normalization	Database Design 1: Normalization	ILO1-k, ILO4-s	MK2, MS1	K, S
15	Database Projects Discussion	Database Projects Discussion	ILO5-s ILO6-s ILO7-c, ILO8-c	MS1, MC1, MC2	S, C
16	**Final Exam**				

*** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.**
**** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.**