



<b>Faculty: Information Technology</b>	
<b>Department: Computer Science</b>	<b>Program: Master</b>
<b>Academic year: 2023/2024</b>	<b>Semester: 2<sup>nd</sup></b>

## Course Plan

### First: Course Information

<b>Course No.:</b> 1501731	<b>Course Title:</b> Advance Data Base System	<b>Credit Hours:</b> 3	<b>Theoretical:</b>	<b>Practical:</b> 0
<b>Prerequisite No. and Title:</b>		<b>Section No.:</b> 1	<b>Lecture Time:</b> Saturday 9-12	
<b>Level in JNQF</b>	9			
<b>Type Of Course:</b>	<input type="checkbox"/> <i>Obligatory University Requirement</i> <input type="checkbox"/> <i>Elective University Requirement</i> <input checked="" type="checkbox"/> <i>Obligatory Faculty Requirement</i> <input type="checkbox"/> <i>Elective Faculty Requirement</i> <input type="checkbox"/> <i>Obligatory Specialization Requirement</i> <input type="checkbox"/> <i>Elective Specialization Requirement</i> <input type="checkbox"/> <i>Ancillary course</i>			
<b>Type of Learning:</b>	<input checked="" type="checkbox"/> <i>Face-to-Face Learning</i> <input type="checkbox"/> <i>Blended Learning (2 Face-to-Face + 1 Asynchronous)</i> <input type="checkbox"/> <i>Online Learning (2 Synchronous+ 1 Asynchronous)</i>			

### Second: Instructor's Information

<b>Course Coordinator:</b>					
<b>Name:</b> Ahmad al-Qerem		<b>Academic Rank:</b> professor			
<b>Office Number:</b> 133 A		<b>Extension Number:</b> 1340	<b>Email:</b> ahmad_germ@zu.edu.jo		
<b>Course Instructor:</b>					
<b>Name:</b> Ahmad al-Qerem		<b>Academic Rank:</b> professor			
<b>Office Number:</b> 133A		<b>Extension Number:</b> 1340	<b>Email:</b> ahmad_germ@zu.edu.jo		
<b>Office Hours:</b>	Sunday	Monday	Tuesday	Wednesday	Thursday

### Third: Course Description

Our goal in this course is to provide students with advanced topics in a database system; the student will be able to understand the transactions and their properties, schedule concepts and types, the concurrency control techniques, database recovery techniques.

### Fourth: Course Objectives

1. provide the students the principles of how to manage the database systems, including concepts, integrity control, transactions, and concurrency control.
2. Learn the students the various types of computer database models, be able to outline the architecture of a database system.
3. understand the students the issues of transaction, concurrency, integrity
4. understand the students the issues of back-up and recovery of a computerized database

## Fifth: Learning Outcomes

<i>Level descriptor according to (JNQF)</i>	<i>CILOs Code</i>	<i>CILOs</i> If any CLO will not be assessed in the course, mark NA.	<i>Associated PILOs Code</i> Choose one PILO for each CILO*	<i>Assessment method</i> Choose at least two methods
Knowledge	K1	Overview the basic database concepts.	PK1	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Midterm exam</li> <li>Final exam</li> </ul>
	K2	Explain the main database problems in absence of concurrency control.	PK1	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Midterm exam</li> <li>Final exam</li> </ul>
	K3	Discuss the main database problems in absence of recovery control.	PK1	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Group presentation</li> <li>Final exam</li> </ul>
Skills	S1	Debate Learn how to outline the schedule types and characteristics.	PS2	<ul style="list-style-type: none"> <li>Midterm exam</li> <li>Final exam</li> </ul>
	S2	Analyze build sample test cases for the schedules.	PS3	<ul style="list-style-type: none"> <li>Midterm exam</li> <li>Final exam</li> </ul>
	S3	Manage serializability theory and how to apply its concepts with real-world examples.	PS3	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Midterm exam</li> <li>Final exam</li> </ul>
	S4	design concurrency control protocols	PS4	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Midterm exam</li> <li>Final exam</li> </ul>
Competencies	C1	Estimate Communication by Express and communicate ideas in projects	PC1	<ul style="list-style-type: none"> <li>Group presentation</li> <li>Participation</li> </ul>

\*CILOs: Course Intended Learning Outcomes; PILOs: Program Intended Learning Outcomes; For each CILO, the PILO could be the same or different.

## Sixth: Learning Resources

<b>Main Reference:</b>	Elmasri R. and Navanthe S. B., “Fundamentals of Database Systems”,		
<b>Author:</b> Elmasri R. and Navanthe S. B.,	<b>Issue No.:</b> 7ed ed.	<b>Print:</b>	<b>Publication Year:</b> 2015

<b>Additional Sources and Websites:</b>	<ul style="list-style-type: none"> <li>Supplementary Textbook/ Material(s): Silberschatz, Korth and Sudarshan, “Database System Concepts”, McGraw Hill, 2010.</li> <li>Tamer Özsu and Patrick Valduriez, “Principles Of Distributed Database Systems”. 3rd Edition. 2011.</li> </ul>
<b>Teaching Type:</b>	<input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input checked="" type="checkbox"/> MS Teams <input checked="" type="checkbox"/> Moodle

## Seventh: Course Structure

Week	Course Intended Teaching Outcomes (CILOs)	Topics	Teaching Procedures*	Teaching Methods**	References***
1	K1,	Introduction to transaction processing	Face-to-Face	Lecture, In-class Questions	Chapter 1
2	K1, K2	Characterizing Schedules Based on Recoverability	Face-to-Face	Lecture, In-class Questions	Chapter 1
3	K1, K2, S2, S2	Serial, Non-serial, and Conflict-Serializable Schedules	Face-to-Face	Lecture, In-class Questions	Chapter 1
4	K1, K2, S2, S2	Testing for Conflict Serializability of a Schedule	Face-to-Face	Lecture, In-class Questions	Chapter 1
5	K1, K2, S2, S3	Concurrency Control Techniques	Face-to-Face	Lecture, In-class Questions	Chapter 1
6	K1, K2, S2, S3	Two-phase Locking Techniques for Concurrency Control	Face-to-Face	Lecture, In-class Questions	Chapter 1

7	K2, S2, S3	Types of Locks and System Lock Tables	Face-to-Face	Lecture, In-class Questions	Chapter2
8	K2, S2, S3	Guaranteeing Serializability by Two-Phase Locking	Face-to-Face	Lecture, In-class Questions	Chapter2
<b>Midterm Exams</b>					
9	K2, S2, S3, S4	Dealing with Deadlock and Starvation	Face-to-Face	Lecture, In-class Questions	Chapter2
10	K2, K3, S2, S3, S4	Concurrency Control Based on Timestamp Ordering	Face-to-Face	Lecture, In-class Questions	Chapter3
11	K2, K3, , S2, S3, S4	The Timestamp Ordering Algorithm	Face-to-Face	Lecture, In-class Questions	Chapter3
12	K2, K3, S2, S3, S4	Multi-version of concurrency control techniques	Face-to-Face	Lecture, In-class Questions	Chapter3 Chapter4
13	K2, K3, S3, S4	Database Recovery Techniques and View of data blocks and log-based recovery	Face-to-Face	Lecture, In-class Questions	Chapter4
14	K2, K3, S3, S4, C1	<b>Group presentation</b>	Face-to-Face	Lecture, In-class Questions	Chapter4
<b>Final Exams</b>					

\*Teaching procedures: (Face-to-Face, synchronous, asynchronous).

\*\* Teaching methods: (Lecture, video...).

\*\*\* Reference: (Pages of the book, recorded lecture, video...)

## Eighth: Assessment Methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Specific Course Output to be assessed							
				K1	K2	K3	S1	S2	S3	S4	C1
First Exam											
Second Exam											
Mid-term Exam			30	✓	✓		✓	✓	✓	✓	
Participation			5	✓	✓	✓	✓	✓			
Asynchronous Activities											
Quizzes			5	✓	✓	✓			✓	✓	
Assignments											
Group presentation			20		✓	✓			✓	✓	✓
Final Exam			40	✓	✓	✓	✓	✓	✓	✓	
<b>Total out of 100</b>			<b>100</b>								

## Ninth: Course Policies

- All course policies are applied to all teaching patterns (online, blended, and face-to-face Learning) as follows:
  - a. Punctuality.
  - b. Participation and interaction.
  - c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approval	Name	Date	Signature
Head of Department			
Faculty Dean			