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

Study plan No.	**2021/2022**		**University Specialization**		**Artificial Intelligence**
Course No.	**0142251**		**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**		☐ **√ 3 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	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**

Brief description

This course provides comprehensive concepts of the relational database design and SQL (implemented in Oracle) used with relational databases. The presentation stresses at relational data model; relational algebra; SQL; database analysis and design; ER and enhanced modeling; 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.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	**1.** Database System Concepts, 6th edition, McGraw Hill, 2010, by Abraham Silberschatz, Henry F. Korth, and S.Sudarshan. **2.** Guide to Oracle 10g, 5th edition, Course Technology, 2006, by Joline Morrison, Mike Morrison, Rocky Conard. **3.** Database Systems: Models, Languages, Design, and Application Programming, 6th ed, Pearson Inc., 2011, by Ramez A. Elmasri, Shamkant Navathe. **4.** Concepts of Database Management, 7th edition, Course Technology, 2012, by Philip J. Pratt, Joseph J. Adamski.			
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				

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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.	MK3
K2	Recognizing the basic data structures needed to process and manage the databases.	MK3
K3	Understanding how to analyze, design, and build effective and reliable database management system as well as how to create a relational database.	MK3
K4	Recognizing variety of entity relationship diagrams (ERD), and extended entity relationship diagrams (EERD).	MK3
K5	Understanding the concept of data normalization.	MK3
	Skills	
S1	Identify problems in the design of file-based information systems that stimulate the use of the database system.	MS3
S2	Use the basic data structures needed to process and manage the databases.	MS3
S3	Use databases and employ them to create various computer applications.	MS3
S4	Use, apply, and implement SQL to create tables and databases.	MS3
S5	Map the ERDs and EERDs to their equivalent database schemes.	MS3
S6	Revise and correct all errors and remove anomalies in tables and databases based on data normalization.	MS3
	Competences	
C1	To apply the main concepts of database development process for problems solving in real life.	MC1
C2	To build effective database management systems.	MC3
C3	To create smart database applications that match the requirements and needs of the labor market.	MC3
C4	To build smart projects for databases.	MC4

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)
First exam	0	0	%20	**0**
Second / midterm exam	%30	%30	%20	**30%**
Participation / practical applications	0	0	10	**30%**
Asynchronous interactive activities	%30	%30	0	**0**
final exam	%40	%40	%50	**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	Subject	learning style*	Reference **
1	**1. Introduction to Databases** Database-System Applications Purpose of Database Systems View of Data	Lectures	Supplementary reference 1 Pages: 1-9
2	**1. Introduction to Databases (*continued*)** Database Languages Relational Databases Database Design	Lectures	Supplementary reference 1 Pages: 9-20
3	**2. Creating and Modifying Database Tables (*Cont.*)** Oracle 10g Data Types Constraints	Lectures	Supplementary reference 2 Pages: 41-84
4	**2. Creating and Modifying Database Tables (*Cont.*)** Creating Database Tables Viewing Information About Tables Modifying and Deleting Database Tables	Lectures	Supplementary reference 2 Pages: 41-84
5	**3. Using SQL Queries to Insert, Update, Delete, and View Data** Inserting Data into Tables Creating Transactions and Committing New Data Creating Search Conditions in SQL Queries Updating and Deleting Existing Table Rows	Lectures	Supplementary reference 2 Pages:85-106
6	**3. Using SQL Queries to Insert, Update, Delete, and View Data** Retrieving Data from a Single Database Table Using Calculations in SQL Queries	Lectures	Supplementary reference 2 Pages: 121-148
7	**3. Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** Oracle 10g SQL Group Functions Formatting Output	Lectures	Supplementary reference 2 Pages: 121-148
8	**3. Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** Joining Multiple Tables Creating Nested Queries	Lectures	Supplementary reference 2 Pages: 158-188
9	**3. Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** Creating Nested Queries Using Set Operators to Combine Query Results Creating and Using Database Views	Lectures	Supplementary reference 2 Pages: 158-188

10	**3. SQL: Data Manipulation** ANY and ALL EXISTS and NOT EXISTS	Lectures	Supplementary reference 1 Pages: 91-92
11	**7. Database Design and the E-R Model** Overview of the Design Process The Entity-Relationship Model Constraints	Lectures	Supplementary reference 1 Pages: 259-320
12	**7. Database Design and the E-R Model (*Cont.*)** Constraints Removing Redundant Attributes in Entity Sets Entity-Relationship Diagrams Reduction to Relational Schemas Entity-Relationship Design Issues Extended E-R Features	Lectures	Supplementary reference 1 Pages: 259-320
13	**7. Database Design and the E-R Model (*Cont.*)** Extended E-R Features Alternative Notations for Modeling Data Other Aspects of Database Design	Lectures	Supplementary reference 1 Pages: 259-320
14	**8. Mapping a Conceptual Design into a Logical Design** Relational Database Design Using ER-to-Rational Mapping Mapping EER Model Constructs to Relations Mapping EER Model Constructs to Relations	Lectures	Supplementary reference 3 Pages: 270-285
15	**5. Database Design 1: Normalization** Functional Dependence Keys First Normal Form Second Normal Form Third Normal Form Incorrect Decomposition	Lectures	Supplementary reference 4 Pages: 155-172
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.**