Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Science Department	QF01/0408-3.0E

Faculty	Faculty of Science and Information Technology	Department	Computer Science
Course number	**0112251**	Course title	Database(1)
Number of credit hours	3	Pre-requisite/co-requisite	Object Oriented Programming

Brief course description:
This course provides a 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.

	Course goals and learning outcomes
Goal 1	The ability to identify the basics of database development process
Learning outcomes	1.1 The student should identify problems in the design of file-based information systems that stimulate the use of the database system 1.2 The student should recognize the database development process 1.3 The student should recognize the basic data structures needed to process and manage the databases
Goal 2	The ability to analyze, design, and build effective and reliable software
Learning outcomes	2.1 The student should use databases and employ them to create various computer applications 2.2 The student should use, apply, and implement SQL 2.3 The student should recognize variety of entity relationship diagrams (ERD), and extended entity relationship diagrams (EERD) 2.4 To produce and create tables and databases, and map the ERDs and EERDs to their equivalent database schemes 2.5 To revise and correct all errors and remove anomalies in tables and databases (data normalization)
Textbook	1. **Database Systems: Design, Implementation, and Management**, 12th edition, Course Technology, 2016, by Carlos Coronel, Steven Morris. **ISBN-13: 978-1305866799, ISBN-10: 1305866797**
Supplementary references	1. **Database System Concepts**, 6th edition, McGraw Hill, 2010, by Abraham Silberschatz, Henry F. Korth, and S.Sudarshan. **ISBN: 0-07-352332-1** 2. **Guide to Oracle 10g**, 5th edition, Course Technology, 2006, by Joline Morrison, Mike Morrison, Rocky Conard. **ISBN-13: 978-0-619-21629-0, ISBN-10: 0-619-21629-8** 3. **Database Systems: Models, Languages, Design, and Application Programming**, 6th ed, Pearson Inc., 2011, by Ramez A. Elmasri, Shamkant Navathe. **ISBN-13: 978-0-13-214498-8, ISBN-10: 0-13-214498-0** 4. **Concepts of Database Management**, 7th edition, Course Technology, 2012, by Philip J. Pratt, Joseph J. Adamski. **ISBN-13: 978-1-111-82591-1, ISBN-10: 1-111-82591-2**

Course timeline				
Week	**Number of hours**	**Course topics**	**Pages (textbook)**	**Notes**
01	**1** **1** **1**	**Introduction to Databases** • Database-System Applications • Purpose of Database Systems • View of Data	Ch1: 1-9	**Ref 1**
02	**1** **1** **1**	**Introduction to Databases (*cont*)** • Database Languages • Relational Databases • Database Design	Ch2: 9-20	**Ref 1**
03	**1** **1** **1**	**Creating and Modifying Database Tables** – Oracle 10g Data Types – Constraints	Ch2: 41-84	**Ref 2**
04	**1** **1** **1**	**Creating and Modifying Database Tables (*Cont.*)** – Creating Database Tables – Viewing Information About Tables – Modifying and Deleting Database Tables	Ch2: 41-84	**Ref 2**
05	**1** **1** **1**	**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 **Using SQL Queries to Insert, Update, Delete, and View Data** – Retrieving Data from a Single Database Table	Ch3: 85-106 Lesson A Ch3: 121-148 Lesson B	**Ref 2**
06	**1** **1** **1**	**Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** – Retrieving Data from a Single Database Table – Using Calculations in SQL Queries **Revision**	Ch3: 121-148 Lesson B	**Ref 2**
07	**1** **1** **1**	**First Exam 20%** **Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** – Oracle 10g SQL Group Functions	Ch3: 121-148 Lesson B	**Ref 2**

		– Formatting Output		
08	**1** **1** **1**	**Using SQL Queries to Insert, Update, Delete, and View Data (*Cont.*)** – Joining Multiple Tables – Creating Nested Queries	Ch3: 158-188 Lesson C	**Ref 2**
09	**1** **1** **1**	**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	Ch3: 158-188 Lesson C	**Ref 2**
10	**1** **1** **1**	**SQL: Data Manipulation** – ANY and ALL – EXISTS and NOT EXISTS **Database Design and the E-R Model** – Overview of the Design Process – The Entity-Relationship Model – Constraints	Ch3: 91-92 Ch7: 259-320	**Ref 1**
11	**1** **1** **1**	**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	Ch7: 259-320	**Ref 1**
12	**1** **1** **1**	**Database Design and the E-R Model (*Cont.*)** – Extended E-R Features – Alternative Notations for Modeling Data – Other Aspects of Database Design **Mapping a Conceptual Design into a Logical Design** – Relational Database Design Using ER-to-Rational Mapping Mapping EER Model Constructs to Relations	Ch7: 259-320 Ch8: 270-285	**Ref 1** **Ref 3**
13	**1** **1** **1**	**Mapping a Conceptual Design into a Logical Design (*Cont.*)** – Mapping EER Model Constructs to Relations **Revision**	Ch8: 270-285	**Ref 3**

		Second Exam 20%		
14	**1 1 1**	**Database Design 1: Normalization** – Functional Dependence – Keys – First Normal Form – Second Normal Form – Third Normal Form – Incorrect Decomposition	Ch5: 155-172	**Text Ref 4**
15	**1 1 1**	**Revision**		
16	**1 1 1**	**Revision** **Final Exam 50%**		

Theoretical course evaluation methods and weight	Participation = 10% First exam 20% Second exam 20% Final exam 50%	**Practical (clinical) course evaluation methods**	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%

Approved by head of department		**Date of approval**	

Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Fadel "Moh'd Kamel" Altamimi	Office Number	
Phone number (extension)		Email	dr.fadel@zuj.edu.jo
Office hours			