



Course Specification

(Bachelor)

Course Title: **Introduction to Databases**

Course Code: **IS1220**

Program: **Bachelor of Information Systems**

Department: **Information systems**

College: **College of Computer and Information Sciences**

Institution: **Imam Mohammad Ibn Saud Islamic University**

Version: **1**

Last Revision Date: **July 10th, 2025**

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A. General information about the course:

1. Course Identification

1. Credit hours: 4 credit hours (lectures: 3, lab: 2)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: 2nd Year

4. Course general Description:

This course covers fundamental concepts of database systems. These concepts include database modeling and design, relational model, relational algebra, brief introduction SQL, entity relationship model, mapping to relational schema, normalization, and some more recent developments such as NoSQL and big data.

5. Pre-requirements for this course (if any):

IS1130, CS1242

6. Co-requisites for this course (if any):

No Co-requisites

7. Course Main Objective(s):

The aim of the course is to introduce the concept of database, its purpose and advantages to the students. Relational model, normalization, ER diagrams, relational databases, and SQL. It will be taught as well as more recent developments such as NoSQL and big data in order to enforce theoretical and practical understanding of the course to build a complete database system.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3 hours/week (classroom) 2 hours/week (Lab)	100%
2	E-learning		
3	Hybrid		



No	Mode of Instruction	Contact Hours	Percentage
	- Traditional classroom - E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Explain fundamental database concepts, including purpose, advantages, models, and their relevance to secure information systems	K1(P), K2(I)	Class Lectures	Quiz1, Midterm, Final
2.0	Skills			
2.1	Formulate and execute SQL queries to manipulate and retrieve data from relational databases.	S1(I), S4(I)	Class Lectures with practical session	Quiz 2, Final, Project
2.2	Design entity-relationship (ER) and enhanced ER diagrams	S2(P)	Class Lectures with practical session	Midterm, Final, Project



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	based on informal requirements.			
2.3	Transform conceptual data models into relational schemas using ER/EER-to-relational mapping techniques, considering their implications on data quality, usability, and organizational effectiveness.	S2(P), S3(I)	Class Lectures with practical session	Midterm, Final, Lab assignment, Project
2.4	Apply normalization techniques to evaluate and improve database schema design	S4(I)	Class Lectures with practical session	Final, Lab Assignment, Project
3.0	Values, autonomy, and responsibility			
3.1	Collaborate effectively within a team to design and present database solutions.	V1(I), V3(I)	Class Discussion, Lecture	Project

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Database Systems	4+2
2.	Data Modelling Using the Entity-Relationship (ER) Model & UML Notations	8+2
3	The Enhanced Entity-Relationship (EER) Model	6+2
4	The Relational Data Model and Relational Database Constraints	6+2
5	Relational Database Design by ER- and EER-to-Relational Mapping	4+2
6	The SQL Database Language	8 + 16
7	Relational Algebra	2+2
8	Basics of Functional Dependencies and Normalization for Relational Databases	4 + 2
9	NOSQL Databases and Big Data Storage Systems	3
Total		75



D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz	3,11	10%
2.	Midterm Exam	8	20%
3.	Assignment	7	10%
4	Group Project	15	20%
5	Final Exam	16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Fundamentals of Database Systems, 7th Edition, Ramez Elmasri and Shamkant B Navathe, Pearson, 2016. ISBN 13: 9781292097619 ISBN 10: 1292097612
Supportive References	- <i>Database System Concepts, 7th Edition, Abraham Silberschatz Professor, Henry F. Korth and S. Sudarshan, The McGraw-Hill Companies 2019.</i> ISBN 13: 9780078022159 ISBN 10: 0078022150 - <i>Modern Database Management, Global Edition, 13th edition Jeff Hoffer ; Ramesh Venkataraman ; Heikki Topi , Pearson, 2019,</i> ISBN 13: 9781292263359 SBN 10: 1292263350
Electronic Materials	Blackboard website that will contain all study guides & materials -Oracle Database Express Edition Installation Guide for Microsoft Windows (https://cutt.ly/DhgPNMN). - Installing and Starting Oracle SQL Developer for Microsoft Windows (https://cutt.ly/Nhn2mbE).
Other Learning Materials	<i>Fundamentals of Database Systems. Laboratory Manual 1. Rajshekhar Sunderraman Georgia State University.</i>

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. At least 30 seats 2. A projector connected to a PC preferably with Internet connection 3. Sliding board



Items	Resources
Technology equipment (projector, smart board, software)	<i>Enough computers in the lab, projector and Oracle database 21c and oracle developer software application for all students</i>
Other equipment (depending on the nature of the specialty)	N/A

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect using course evaluation survey
Effectiveness of Students assessment	Faculty members	Direct method using TOS file
Quality of learning resources	Students and Faculty	Indirect using course evaluation survey and faculty survey
The extent to which CLOs have been achieved	Faculty members	Direct method using TOS file
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	IS CURRICULUM APPROVAL & DEVELOPMENT COMMITTEE IS QAC / / IS COUNCIL
REFERENCE NO.	
DATE	

