Course Specification
(Bachelor)

Course Title:	**Fundamental of Database System**
Course Code:	340CIS-3
Program:	**Information System**
Department:	Information System
College:	**Computer Science and Information Systems**
Institution:	Najran University
Version:	
Last Revision Date	

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 (2, 1, 0))					
2. Course type					
A.	☐University	☒ College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (offered: 10th level/ 4th year					
4. Course General Description:					
Study of fundamentals concepts of Databases, architecture of Database Management Systems (DBMS), and database design and database programming language. Topics include: different database design models such as entity relationship and Object-Oriented data model; relational database theories including normalization, functional dependencies and conversion of E/R data model to relational databases; theoretical database programming language such as relational algebra and calculus; Structured Query Language (SQL) including Data Definition Language (DDL) and Data Manipulation Language (DML); advanced SQL covers sub-queries and views, triggers.					
5. Pre-requirements for this course (if any):					
6. Co-requisites for this course (if any):					
7. Course Main Objective(s):					
After successful completion of this course students should be able to: 1.Explain the general concepts of database, database system, data, DBMS, database design, database programming languages 2.Design the best E/R diagram data model for a realistic application 3.Construct an Object-Oriented data model for simple application 4.Create a normalized, well-structured relational data model by using database theories such as the conversion from E/R to set of relational tables and functional dependencies, canonical covers, decomposition and normalization techniques 5.Execute the SQL statements of data definition and data manipulation					

6.Solve simple queries by using the operations (selection, projection, join, Cartesian product) of the theoretical database language Relational Algebra
7.Accomplish a task assigned in a course group project
8.Present effectively the project work assigned as a team/member to range of audience

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	%100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	15
5.	**Others (specify)**	
Total		75

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Explain the general concepts of database, database system, data, DBMS, database design, database programming languages	K1	Lectures	Quiz Assignments Midterm Examination

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
				Final Examination
2.0	**Skills**			
2.1	Design the best E/R diagram data model for a realistic application	S2	Lectures, small group work, small group discussion	Quiz Assignments Midterm Examination Final Examination, Course project
2.2	Construct an Object-Oriented data model for simple application	S2	Lectures, small group work, small group discussion	Quiz, Assignments Final Examination
2.3	Create a normalized, well-structured relational data model using theories (normalization, etc.) of relational database	S4	Lectures, small group work, small group discussion	Quiz Assignments Final Examination
2.4	Execute the SQL statements of data definition and data manipulation	S2,S4	Lab Lectures, small group work, small group discussion	Lab Assignments, Midterm Examination, Mini Project
2.5	Solve simple queries by using the operations (selection, projection, join, Cartesian product) of the theoretical database language Relational Algebra	S2,S4	Lectures, small group work, small group discussion	Final Examination
3.0	**Values, autonomy, and responsibility**			
3.1	Accomplish a task assigned in a course group project	V1	small group work, small group discussion	Course Mini Project
3.2	Present effectively the project work assigned as a team/member to range of audience	V2	small group work, small group discussion	Course Mini Project
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Databases and DBMS	10
2.	Structured Query Language Statements(SQL)	30
3.	Data Modeling Using Entity Relationship Model (E/R)	4
4.	Relational Data Model and Relational Database Constraint	4
5.	Relation database design by ER and EE/R- to- Relation mapping	4
6.	Functional Dependencies	2
7.	Normalization	4
8.	The Relational Algebra and Relational Calculus	4
9.	Object Oriented Database	2
10.	Advanced SQL	3
11.	Project	10
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz	2rd week	10%
2.	Midterm	7th week	20%
3.	Lab assessment/Lab Report and errricies	6th week	7%
5.	Project	4th week	10%
6.	Final lab exam	12th week	10%
7.	Final Exam	15th week	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	Elmasri, Ramez and Navathe, Shamkant. Fundamentals of Database Systems. Boston: 7th Edition, 2016
Supportive References	Silberschatz, Korth, Sydarshan , Database System Concepts. McGraw-Hill. Either 5th edition 2005 or 4th edition, 2002.
Electronic Materials	https://www.w3schools.com/sql/
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		
Effectiveness of Students assessment		
Quality of learning resources		
The extent to which CLOs have been achieved		
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**17th Department Council**
REFERENCE NO.	**14460810-0976-00017**
DATE	**10/02/2025**