



Course Specification

(Bachelor)

Course Title: **Concepts of Database Systems**

Course Code: **351-CCN-3**

Program: **Bachelor of Science in Computer Networks**

Department: **Networks and Communications Engineering**

College: **Computer Science and Information Systems**

Institution: **Najran University**

Version: **1.0**

Last Revision Date: **Feb 2025**



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

A. University College Department Track Others
 B. Required Elective

3. Level/year at which this course is offered: (Level 6 / Year 3)

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):

No

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

No

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 <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures [2 contact hours × 15 weeks]	30
2.	Laboratory/Studio [2 contact hours × 15 weeks]	30
3.	Field	
4.	Tutorial [1 contact hour × 15 weeks]	15
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 the general concepts of database, database system, data, DBMS, database design, database programming languages	K1, K2	Lectures	Quiz Assignments Midterm Examination Final Examination
1.2				
...				
2.0	Skills			





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
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 Project Mini
3.2	Present effectively the project work assigned as a team/member to range of audience	V2	small group work, small group discussion	Course Project Mini
...				





C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Databases and DBMS	3
2.	Structured Query Language Statements(SQL)	15
3.	Data Modeling Using Entity Relationship Model (E/R)	6
4.	Relational Data Model and Relational Database Constraint	6
5.	Relation database design by ER and EE/R- to- Relation mapping	8
6.	Functional Dependencies	4
7.	Normalization	12
8.	The Relational Algebra and Relational Calculus	4
9.	Object Oriented Database	4
10.	Advanced SQL	8
11.	Project	5
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	2 rd week 8 th week	10%
2.	Midterm	6 th week	20%
3.	Lab assessment/Lab Report	5 th week	6%
4.	Assignments	5 th week	6%
5.	Project	7 th week	8%
6.	Final lab exam	15 th week	10%
7.	Final Exam	16 th to 18 th 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

Other Learning Materials

2. Required Facilities and equipment

Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	Lecture Rooms with 30 seats and a whiteboard or a smartboard. Laboratory with 30 seats and Computer devices. DB softwares.
<p>Technology equipment (projector, smart board, software)</p>	Desktop/ Laptop computer Multimedia Projector
<p>Other equipment (depending on the nature of the specialty)</p>	A File cabinet to keep Class Stuff, Markers, papers and student Files, and a printer to print program screenshots.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, instructors and peer review	<ul style="list-style-type: none"> - Online course survey: By the end of each semester, students give their opinions about many factors in the course. They give feedback about teaching strategies, assessment methods, textbooks, instructors, etc. - Feedback about Course Learning Outcomes (CLOs): A course survey is distributed to students to get their opinions about the CLOs.
Effectiveness of students' assessment	Instructor, faculty, and student	<ul style="list-style-type: none"> - Discussion with other faculty members about students' understanding and the best way of teaching them. - Peer consultation on teaching - Discussions within the group of faculties teaching the same course before
Quality of learning resources	Instructor and Faculty	<ul style="list-style-type: none"> - Describe the relationship between the course's topics and CLOs. - Course syllabus must be distributed in the first week. It should contain the necessary information about the course (CLOs, assessment methods, descriptions, etc.) - Feedback from the students about the understanding of lectures in academic advising hours. - Analysis of the critical topics with real-life examples and preparation of good effective PPT slides.



Assessment Areas/Issues	Assessor	Assessment Methods
		<ul style="list-style-type: none"> - By suggesting good teaching methodologies - Ensure that all students participate in the class. - Encourage students to attend during office hours to clarify their doubts.
The extent to which CLOs have been achieved	Peer and instructor	<ul style="list-style-type: none"> - The course coordinator has to approve the exams and grades of students in exams. - The curriculum committee will review all courses by the end of each semester and approve actions and improvements plan to be carried out. - Getting feedback from the students who will pass the course and work in the practical field. - The vice dean and the dean of the college have to approve the final grades.
the planning arrangements for periodically reviewing course effectiveness and planning for improvement	Instructor	<ul style="list-style-type: none"> - Each semester, the instructor has to teach the course according to the previous course materials (Course specification, report, improvement plan, etc.). - By the end of each semester, the instructor must prepare a course file which contains all activities and practices taken in the course. Achievements of CLOs can be used if the students' levels improved or not

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	NETWORK AND COMMUNICATIONS ENGINEERING DEPARTMENT COUNCIL
REFERENCE NO.	14450824-0482-00014
DATE	5/3/2024

