

Course Specifications

Course Title:	Fundamentals of Database Systems
Course Code:	340CIS-3
Program:	Information Systems
Department:	Information Systems
College:	Computer Science and information systems
Institution:	Najran University







Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	
1. Course Description	3
2. Course Main Objective	3
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment5	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support6	
F. Learning Resources and Facilities6	
1.Learning Resources	6
2. Facilities Required	6
G. Course Quality Evaluation7	
H. Specification Approval Data7	

A. Course Identification

1. Credit hours:		
3 (2, 1, 0)		
2. Course type		
a. University College $$ Department $$ Others		
b. Required $$ Elective		
3. Level/year at which this course is offered: 8 th level/ 3 th year		
4. Pre-requisites for this course (if any): NA		
5. Co-requisites for this course (if any): NA		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	20
2	Laboratory/Studio	20
3	Tutorial	10
4	Others (specify)	
	Total	50

B. Course Objectives and Learning Outcomes

1. Course 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

2. Course Main Objective

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

3. Co i	urse Learning Outcomes	
	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	Describe the concepts of database, database system, data, DBMS,	K1
	database design, database programming languages	
1.2	Explain relational data model of relational database	K2
1.3		
1		
2	Skills:	
2.1	Design the best E/R diagram data model for a realistic application	S2
2.2	Construct an Object-Oriented data model for simple application	S2
2.3	Create a normalized, well-structured relational data model using theories (normalization, etc.) of relational database	S4
2.4	Execute the SQL statements of data definition and data manipulation	S2, S4
2.5	Solve simple queries by using the operations (selection, projection, join, Cartesian product) of the theoretical database language Relational Algebra	S2, S4
3	Values:	
3.1	Accomplish a task assigned in a course group project	V1, V2
3.2		
3.3		
3		

C. Course Content

No

List of Topics

Contact Hours

1	Introduction to Databases and DBMS	10
2	Structured Query Language Statements (SQL)	4
3	Data Modeling Using Entity Relationship Model (E/R)	8
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	6
8	The Relational Algebra and Relational Calculus	4
9	Object Oriented Database	2
10	Advanced SQL	4
11	Project	2
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe concepts of database, database system, data, DBMS, database design, database programming languages	Lectures	Quiz Assignments Midterm Examination
1.2	Explain relational data model of relational database		Final Examination
2.0	Skills		
2.1	Design the best E/R diagram data model for a realistic application	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	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	Lectures, small group work, small group discussion	Quiz Assignments Final Examination
2.4	Execute the SQL statements of data definition and data manipulation	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	Lectures, small group work, small group discussion	Lab Assignments, Midterm Examination, Mini Project, Final Examination
3.0	Values		
3.1	Accomplish a task assigned in a course group project	small group work, small group discussion	Course Mini Project

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz	2 rd week	10%
2	Midterm	6 th week	20%
3	Lab assessment	5 th week	5%
4	Assignments	5 th week	5%
5	Project	4 th week	10%
6	Final lab exam	12 th week	10%
7	Final Exam	13 th week	40%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- weekly office hours + appointments
- weekly academic advising hours
- Extra weekly 2 office hours prior to exams.
- Tutorials are also provided to the students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Elmasri, Ramez and Navathe, Shamkant. Fundamentals of Database Systems. Boston: 7th Edition, 2016	
Essential References	Silberschatz, Korth, Sydarshan, Database System Concepts. McGraw-	
Materials	Hill. Either 5th edition 2005 or 4th edition, 2002.	
Electronic Materials	https://www.w3schools.com/sql/	
Other Learning	CDs accompanied with the text book, power point lectures and essential references	
Materials	Use SQL for Lab	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Room B-58 Laboratory A-16L

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, PCs.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	 Printer is important in the lab to print reports and some snapshots. Projector and PC for the lab instructor is required

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Online course survey	Students	Indirect
Focus group discussion with small groups of students.	Instructor	Direct
Extent of achievement of course learning outcomes	instructor	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify) Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Council
Reference No.	14440729-0182-00018
Date	1444/08/01