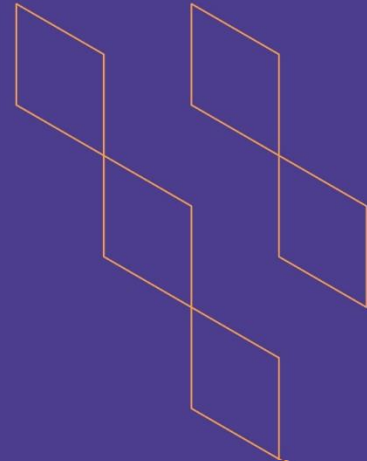




T-104
2022

Course Specification



Course Title: **Database Concepts and Design**

Course Code: ITEC-211

Program: BS in Information Technology and Security

Department: Information Technology & Security

College: **Computer Science & Information Technology**

Institution: Jazan University

Version: **1**

Last Revision Date: 31 December 2022



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A. General information about the course:

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 – 5 Year 2

4. Course general Description

This course aims to discuss the basic concepts and designs of the database. It covers topics such as database system architecture, data model, levels of abstraction, data independence, and concurrency control. It focuses on how to design databases for given problems, and how to use database effectively, including ER modelling, key and participation constraints, weak entities, class hierarchies, aggregation and conceptual DB design using the ER model. Relational model: creating and modifying relation using query language, enforcing integrity constraints, ER to relational and view. Schema refinement and normal forms: Functional dependencies, reasoning about functional dependencies, normal forms, decompositions, and normalization. Relational Queries: Relation algebra operation and commercial query languages. Students will be trained on one of the software tools: Oracle, Sybase, and DB2.

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

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

7. Course Main Objective(s)

- Understand and discuss the concepts of database design
- Design a conceptual data model and logical database model, convert the logical database designs to physical designs and develop the physical database
- Evaluate a set of queries using relational algebra operations
- Be able to execute a set of queries using query language

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	40	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	20
2.	Laboratory/Studio	20
3.	Field	
4.	Tutorial	
5.	Others (specify) – Self Study	5
	Total	45

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	Describes the basic concepts of relational database design, database models, systems architectures and languages.	K1	Visual & Verbal [Lectures / Presentations]	Exams
1.2	Demonstrate database system concepts and architectures, database terminology, and the use of DBMS languages	K2	Visual & Verbal [Lectures / Presentations]	Exams
2.0	Skills			
2.1	Analyze and design the conceptual data model using the EntityRelationship Model for a mini world problem	S1	Visual & Verbal [Lectures / Presentations]	Assignment
2.2	Convert the conceptual database designs to relational database schema applying different constraints on them	S2	Visual & Verbal [Lectures / Presentations]	Exams
2.3	Evaluate a set of query and relational algebra operations using query language	S3	Visual & Verbal [Lectures / Presentations]	Assignment
2.4	Apply functional dependencies and normalization concepts on relational database	S4	Visual & Practical [Lab Session]	Lab Exam
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate the ability to function in a group to design a mini-world (UoD) database.	V2	Active participation Class as Group Activity	Group Project & Presentation

C. Course Content

No	List of Topics	Contact Hours
1.	Chapter 1: Database and Database Users	4T+2P
2.	Chapter 2: Database System Concepts and Architecture	4T+2P
3.	Chapter 3: The Relational Data Model and Relational Database Constraints	4T+2P
4.	Chapter 4: Data Modeling Using the Entity-Relationship (ER) Model	4T+6P
5.	Chapter 5: Relational algebra	4T+6P
6.	Chapter 6: Functional Dependencies and Normalization for Relational Databases (Self-Study)	5 Hrs
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mini-Project	4	20
2.	Mid-ex	5	15
3.	Quiz	6	05
4.	Lab Exam	10	20
5.	Final Exam	11	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, R., Navath,S., and Navath, B., "Fundamentals of Database Systems" , Pearson New International Edition, 7th Edition, ISBN-10: 0133970779 ISBN-13: 9780133970777, 2016
Supportive References	Carlos Coronel, Steven Morris, Peter Rob. "Database Systems: Design, Implementation, and Management". Eleventh Edition, Course TechnologyCengage Learning, 2015.
Electronic Materials	
Other Learning Materials	



2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom / Lab
Technology equipment (Projector, smart board, software)	Projector, Smart Board, SysML, UML tools and Security penetration testing tool.
Other equipment (Depending on the nature of the specialty)	Microphone, Speaker, Camera, Streaming

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	In-Direct
Effectiveness of students assessment		
Quality of learning resources	Track Leaders	Direct
The extent to which CLOs have been achieved	HOD / QAU	Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	MEETING NO. 1, AGENDA NO. 2
DATE	13/09/2022

