Course Specification
(Bachelor)

Course Title	**Database Systems**
Course Code:	**CIT 1305**
Program:	**Bachelor in Information Technology**
Department:	**Department of Information Technology**
College:	**Faculty of Computers and Information Technology**
Institution:	**University of Tabuk**
Version:	**1.0**
Last Revision Date:	**27 July 2022**

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A. General information about the course:

1. Course Identification

1. Credit hours:					
(4 CHrs. – Four-Credit Hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6/3rd Year)					
4. Course general Description:					
This course focuses on basic concepts in database system such as conceptual modelling, databases and database users, database architecture, data modelling using the entity-relationship model, the relational data model and relational database constraints, relational mapping and algebra, SQL and view, functional dependencies (1) and (2), and Normalization.					
5. Pre-requirements for this course (if any):					
Data Structure and Algorithms (CSC-1204)					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
Upon the completion of this course the students will be able to: ● Acquire Knowledge of basic concepts of databases and RDBMS. ● Describe, analyze and apply a conceptual database modeling technique. ● Understand relational database languages ● Apply SQL to create tables and generate queries ● Understand the basics of database design methodology. ● Produce well-structured and normalized database. ● Implement and test a database application with suitable interface using a relational DBMS. ● Gain work experience in a lab project as a team member or leader.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	**45**	**60%**
2	LAB Sessions	**30**	**40%**
3	E-learning		
4	Hybrid ● Traditional classroom ● E-learning		
5	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 PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Define and describe the databases terminologies.	K1	Lectures. Textbooks and References. Supplemental materials. In class discussions. Office hours.	Midterm and Final exams. Assignments. Quizzes. Projects.
1.2	Recognize and state the fundamentals, concepts, architectures, and issues of databases.	K2		
1.3	Write concrete SQL statements.	K3		
2.0	**Skills**			
2.1	Analyze, Design, and develop several data models.	S1	Lectures. Textbooks and References. Supplemental materials. In class discussions. Case studies/Tasks.	Midterm and Final exams. Assignments. Quizzes. Projects.
2.2	Criticize and evaluate data models.	S2		
2.3	Create and manipulate databases Using SQL.	S3		
2.4	Design and develop well-structured and normalized databases.	S4		
3.0	**Values, autonomy, and responsibility**			
3.1	Acquire and demonstrate the professional and ethical issues in the Database Systems Environment.	V2	In class discussions. Assignments/Projects Presentations.	Evaluating students' work (in the class discussions, Projects Assignments, & Presentations).
3.2	Communicate and work (effectively, ethically, and professionally) (Individually and	V2		

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	in groups/teamwork) to accomplish the assigned tasks.			

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Databases: Some common uses of database systems LAB: Introduction to DBMSs and MySQL Environment	5
2.	Introduction to Databases: File-Based System: Characteristics and Problems LAB: Installing MySQL Server and Workbench	5
3.	Introduction to Databases: Database System: Approach and Components LAB: Introduction to SQL (Structured Query Language)	5
4.	Database Environment: ANSI-SPARC Three-level database architecture LAB: SQL Statements Types and Constrains	5
5.	Database Environment: Data Models and Functions of a DBMS LAB: Manipulating DATABASES: SQL CREATE, DROP, Show DBs Statements.	5
6.	Database Environment: Multi-User DBMS Architectures LAB: Manipulating DATA: SQL SELECT, SELECT DISTINCT Statements.	5
7.	The Relational Model: Terminology and Concepts LAB: SQL WHERE Clause and Operations, SQL ORDER BY statements.	5
8.	The Relational Model: Relational Keys and Views LAB: SQL TOP, LIMIT or ROWNUM Clause, and SQL MIN() and MAX() Functions	5
9.	Entity-Relationship Modelling: ER Model Overview and Concepts LAB: SQL COUNT(), AVG() and SUM() Functions, SQL LIKE, IN, BETWEEN Operators, and SQL Aliases.	5
10.	Entity-Relationship Modeling: Diagrammatic technique for displaying ER models using Unified Modeling Language (UML). LAB: Manipulating TABLES: SQL CREATE, DROP, Show Table Statements.	5
11.	Entity-Relationship Modeling: Structural Constraints, Relational Mapping, and Problems with ER Models LAB: Manipulating TABLES: TRUNCATE and ALTER TABLE Statements. SQL Tables Constraints and Keys.	5
12.	Relational Algebra LAB: SQL Joins (INNER, FULL/OUTER, LEFT, & RIGHT) join, and SQL UNION Operator, GROUP BY Operator.	5
13.	Functional Dependencies (Part 1) LAB: Manipulating DATA: SQL INSERT, DELETE, & UPDATE Statements.	5
14.	Functional Dependencies (Part 2) LAB: Lead-in Forms, Reports, & triggers (Part 1)	5
15.	Normalization (1NF, 2NF, and 3NF) LAB: Lead-in Forms, Reports, & triggers (Part 2)	5
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Three Quizzes	3, 10, and 14	10%
2.	Midterm Test-1	5 - 6	10 %
3.	Midterm Test-2	11 - 12	10 %
4.	DB Design Project (3 Phases)	7, 9 and 12	10 %
5.	LAB Work(Assignment, Quiz, Final Exam)	7, 11 and 15	20%
6.	Final Exam	16-17	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	• Database Systems a Practical Approach to Design, Implementation, and Management. 6th ed, Thomas Connolly and Carolyn Begg, Addison Wesley, 2019 (Pearson Education Limited) • Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems, 7th Edition, 2016 (Pearson Education Limited).
Supportive References	• Jeffrey A. Hoffer, V. Ramesh, HeikkiTopi, Modern Database Management 10th Edition, ISBN 0136088392 9780136088394, Prentice Hall, ©2011
Electronic Materials	• Detailed Slides when necessary
Other Learning Materials	• TBD

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms and LABs
Technology equipment (projector, smart board, software)	Data Show
Other equipment (depending on the nature of the specialty)	Each student should has a laptop with the required DBMSs

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching	Faculty, Program Leaders, and Advisory Board	Both Direct and Indirect
	Students	Indirect
Effectiveness of Students Assessment	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Both Direct and Indirect
Quality of Learning Resources	Faculty, Students, and Advisory Board	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
The Extent to which CLOs have been Achieved	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Direct (as in section B) and Indirect/Surveys
	Students	Indirect

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	