

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Nahrain University/ College of Science
2. University Department/Centre	Computer Science department
3. Course title/code	Database systems I
4. Program(s) to which it contributes	B.Sc. in Computer Science
5. Modes of Attendance offered	Full Time
6. Semester/Year	Second Semester/ Third year
7. Number of hours tuition (total)	30 Theory + 30 Practical
8. Date of production/revision of this specification	1/10/2022
9. Aims of the Course	
	<ul style="list-style-type: none">- Understanding database management principles and main components- The ability to design and implement correct database- Understanding the relational algebra for retrieving the required data from a database- Writing simple to moderate SQL queries

10- Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

- A1. Understanding how database management systems works
- A2. Understanding the goals of using database
- A3. Understanding the principles of data integrity and modeling
- A4. Learning how to design relational database with correct relationships
- A5. Learning writing queries using SQL

B. Subject-specific skills

- B1. Database systems requirement analysis and design skills
- B2. The ability to represents the design using ER diagram
- B3. The ability to write and understand SQL statements

Teaching and Learning Methods

- Lectures, discussions, questions and practicing

Assessment methods

- Exams, Quizzes, Homework, attendance, discussion

C. Thinking Skills

- C1. Asking: Seeking new information
- C2. Deduce and Conclude.
- C3. Compare.
- C4. Discussion

D. General and Transferable Skills (other skills relevant to employability and personal development)

- D1. The ability to automate manual systems which is a desirable skill for computer related jobs

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2		Information, Database, Database Management System. •Objectives of DBMS. •File-Based System •Drawbacks of File-Based System	Describe, Discuss, and practice	Class Activity
2	2		•ANSI/Spark Data Model, Abstraction, Data Independence, Levels of Abstraction, Database Instances, Database Schema	=	Class Activity and Quiz
3	2		• Components and Interfaces of Database Management System (Hardware, Software, Data, Procedure, People Interacting with Database, Data Dictionary)	=	Class Activity and Quiz
4	2		• Functional Components of Database System Structure •Storage Manager • Database Architecture		Class Activity and Quiz
5	2		•Overview of Database Design •Data Modeling Using the Entity-Relationship Model •ER Diagram •Classification of Entity Sets •Attribute Classification •Relationship Degree • Relationship Classification	=	Class Activity and Quiz
6	2	Mid exam 1			
7	2		•Relational Model •CODD'S Rules •Relational Model Properties •Relation Schema and Relation Instance •Concept of Key •Relational Integrity and Constraints	=	Class Activity and Quiz
8	2		•Relational Algebra •Role of Relational Algebra in DBMS •Relational Algebra Operations	=	Class Activity and Quiz

			<ul style="list-style-type: none"> • Selection, Projection, Union, Intersection, Difference 		
9	2		<ul style="list-style-type: none"> • Cartesian Product Operation • Join Operations • Types of Join Operation • Natural Join • Equi Join • Theta Join • Outer Join <p>Examples of Relational Algebra Queries</p>	=	Class Activity and Quiz
10	2		<ul style="list-style-type: none"> • Structured Query Language • Introduction • Commands in SQL • Data Definition Language • Creating a Database • Data types in SQL • Creating, Altering, and Deleting Tables <p>Ensuring Data Validity with Constraints</p>	=	Class Activity and Quiz
11	2		<ul style="list-style-type: none"> • Speeding Up Results with Indexes • Data Manipulation Language • Inserting New Data • Updating Data • The WHERE Clause • The Logical Operators AND and OR • Deleting Data 	=	Class Activity and Quiz
12	2	Mid exam 2			
13, 14	4		<ul style="list-style-type: none"> • Extracting Information Using the SELECT Statement • Returning Only Distinct Rows • Using Aliases • Filtering Results with the WHERE Clause • Logical Operators • NOT Operator • BETWEEN Operator • LIKE Operator • IN Operator • Ordering Results • Selecting Data from More Than One Table 	=	Class Activity and Quiz
15	2		Examples and review		

12. Infrastructure	
<p>Required reading:</p> <ul style="list-style-type: none"> · CORE TEXTS · COURSE MATERIALS · OTHER 	<ul style="list-style-type: none"> • S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management Systems", Springer, 2007. • Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", 4th Edition, Addison Wesley, 2003. • Raghu Ramakrishnan , Johannes Gehrke, "Database Management Systems", 3rd Edition, McGraw Hill, 2003. • Paul Wilton, John W. Colby, "Beginning SQL", Wiley Publishing, Inc. 2005.
<p>Special requirements (include for example workshops, periodicals, IT software, websites)</p>	<p>Microsoft Access</p>
<p>Community-based facilities (include for example, guest Lectures , internship , field studies)</p>	