

*Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.*

Academic Program Specification Form For The Academic

*University: University of Baghdad
College : Al_Khwarizmi College of Engineering
Number Of Departments In The College :5
Date Of Form Completion :8/2/2024*

*Dean's Name
Date : / /*

*Dean's Assistant For
Scientific Affairs*

*Date : / /
Signature*

*The College Quality Assurance
And University Performance
Manager*

*Date : / /
Signature*

*Quality Assurance And University Performance Manager
Date : / /
Signature*

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme 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 is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Programme Title	DataBase Design
4. Title of Final Award	
5. Modes of Attendance offered	attendance is according to the university rules in 2023-2024
6. Accreditation	Abet
7. Other external influences	
8. Date of production/revision of this specification	Feb/2024
9. Aims of the Programme	
<ol style="list-style-type: none">1) To understand the different issues involved in the design and implementation of a database system.2) To study the physical and logical database designs, database modelling, relational, hierarchical, and network models3) To understand and use data manipulation language to query, update, and manage a database4) To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server (Database Server), Data Warehousing.	

To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals

At the completion of the course, students will be able to...

A1. What is the DataBase

A2. What are the DBMS, file system, Relational Model, Entity Relationship model, Normalization , Advanced Data model and etc....

A3. Analyze and identify the problems of the file system and Relational model, Entity Relationship model and etc....

A4. Able to design the file system, Relational Model, Entity Relationship model, Normalization , Advanced Data model and etc....

B. The skills goals special to the programme .

B1. In addition to the measurable student learning outcomes listed above, students enrolled in DataBase Design Course will be required to demonstrate their more in-depth knowledge of the course material by

B2. Study Real Data and solving additional, more challenging exam problems.

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

Seminar -- 5%
Quizzes --10%
Lab -- 20
Midterm --15%
Final -- 50%

C. Affective and value goals

C1. Ability to identify any business rules of the required system.

C2. Ability to Design and implement of any Database of any system by using different models.

C3. Ability to optimize any old database systems.

Teaching and Learning Methods

Assessment methods

Seminar -- 5%
Quizzes --10%
Lab -- 20
Midterm --15%
Final -- 50%

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

D1. Learn the Mysql and Sql software.

D2. Ability to design and conduct experiments.

Teaching and Learning Methods

Assessment Methods

Seminar -- 5%
 Quizzes --10%
 Lab -- 20
 Midterm --15%
 Final -- 50%

11. Programme Structure

11. Programme Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
Third		DataBase Design		Bachelor Degree Requires (4) credits

13. Personal Development Planning

1. Provide strong foundation in mathematical, scientific and engineering fundamentals necessary to analyze, formulate and solve engineering problems in the field of Information and Communication Engineering.
2. Enhance the skills and experience in defining problems in Information and Communication Engineering design and implement, analyzing the experimental evaluations, and finally making appropriate decisions.
3. Enhance their skills and embrace new Information and Communication Engineering Technologies through self-directed professional development and post-graduate training or education.

14. Admission criteria .

According to the rules of Ministry of Higher Education and Scientific Research in Iraq.

15. Key sources of information about the programme

1. Books
2. Trusted Internet sources related to the Program
3. Papers.

TEMPLATE FOR COURSE SPECIFICATION

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 programed specification.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Course title/code	DataBase Design
4. Modes of Attendance offered	attendance is according to the university rules in 2023-2024
5. Semester/Year	2023-2024
6. Number of hours tuition (total)	75
7. Date of production/revision of this specification	Feb/2024
8. Aims of the Course	
	5) To understand the different issues involved in the design and implementation of a database system. 6) To study the physical and logical database designs, database modelling, relational, hierarchical, and network models 7) To understand and use data manipulation language to query, update, and manage a database 8) To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server (Database Server), Data Warehousing. 9) To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a

DBMS.

9. Learning Outcomes, Teaching ,Learning and Assessment Methode

B. Cognitive goals

At the completion of the course, students will be able to...

A1. What is the DataBase

A2. What are the DBMS, file system, Relational Model, Entity Relationship model, Normalization , Advanced Data model and etc....

A3. Analyze and identify the problems of the file system and Relational model, Entity Relationship model and etc....

A4. Able to design the file system, Relational Model, Entity Relationship model, Normalization , Advanced Data model and etc....

B. The skills goals special to the programme .

B1. In addition to the measurable student learning outcomes listed above, students enrolled in DataBase Design Course will be required to demonstrate their more in-depth knowledge of the course material by

B2. Study Real Data and solving additional, more challenging exam problems.

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

Seminar -- 5%

Quizzes --10%

Lab -- 20

Midterm --15%

Final -- 50%

C. Affective and value goals

C1. Ability to identify any business rules of the required system.

C2. Ability to Design and implement of any Database of any system by using different models.

C3. Ability to optimize any old database systems.

Teaching and Learning Methods

Assessment methods

Seminar -- 5%

Quizzes --10%

Lab -- 20

Midterm --15%

Final -- 50%

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

D1. Learn the Mysql and Sql software.

D2. Ability to design and conduct experiments.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	<p>Introductory Concept of DBMS:</p> <ul style="list-style-type: none"> • Concept & Overview of DBMS • Data Models • Data Independence • Database Languages • Database Administrator • Database Users 	Introduction to Data Base	Classroom with whiteboard and Lab	Quizzes
2	2	<ul style="list-style-type: none"> • Three Schema architecture of DBMS • Database architectures and classification • Mapping. 	Introduction to Data Base	Classroom with whiteboard and Lab	Quizzes
3	2	<p>Entity-Relationship Model</p> <ul style="list-style-type: none"> • ER model constraints • Types of keys <p>Entity Integrity: Selecting Primary Keys</p> <ul style="list-style-type: none"> • Natural Keys and Primary Keys • Primary Key Guidelines • When to Use Composite Primary Keys • When to Use Surrogate Primary Keys 	Entity Relationship (ER) Modeling	Classroom with whiteboard and Lab	Quizzes
4	2	<p>Relationships within the Relational Database</p> <ul style="list-style-type: none"> • The 1:M Relationship • The 1:1 Relationship • The M:N Relationship • Design issues 	Entity Relationship (ER) Modeling	Classroom with whiteboard and Lab	Quizzes
5	2	<ul style="list-style-type: none"> • Weak Entity Sets • Extended E-R features • Generalization, Specialization, Aggregation 	Entity Relationship (ER) Modeling	Classroom with whiteboard and Lab	Quizzes
6	2	<ul style="list-style-type: none"> • Translating E-R model into Relational model. • E-R Diagram with examples 	Entity Relationship (ER) Modeling	Classroom with whiteboard and Lab	Quizzes
7	2	<p>Functional Dependencies:</p>	Functional Dependencies	Classroom with	Quizzes

		<ul style="list-style-type: none"> • Use of functional Dependencies • Types of functional Dependencies • Armstrong's Axioms, closures, Equivalence of FDs • Lossless and dependency preserving decompositions • Canonical cover, 		whiteboard and Lab	
8	2	Normalization <ul style="list-style-type: none"> • Normalization using functional dependencies, • First Normal Forms, • Second Normal Forms • Third Normal Forms, • Boyce/Codd Normal Form 	Functional Dependencies	Classroom with whiteboard and Lab	Quizzes
9	2	<ul style="list-style-type: none"> • Multivalued Dependencies and Fourth Normal Form • Join Dependencies and Fifth Normal Form 	Functional Dependencies	Classroom with whiteboard and Lab	Quizzes
10	2	Relational Model: <ul style="list-style-type: none"> • The relational Model • The catalog Types • Relational Algebra • Fundamental operations • Additional Operations 	The Relational Database Model	Classroom with whiteboard and Lab	Quizzes
11	2	<ul style="list-style-type: none"> • SQL fundamentals • DDL,DML,DCL PL/SQL Concepts • Cursors, Stored Procedures • Stored Functions, Database • Integrity – Triggers 	The Relational Database Model	Classroom with whiteboard and Lab	Quizzes
12	2	Transaction Processing Concepts: <ul style="list-style-type: none"> • Transaction Management • ACID properties, • serializability of Transaction, • Testing for Serializability and • concurrency control 	Transaction Processing	Classroom with whiteboard and Lab	Quizzes
13	2	<ul style="list-style-type: none"> • Lock based concurrency control:2Phase Locking protocol • Deadlock prevention 	Transaction Processing	Classroom with whiteboard and Lab	Quizzes

		<ul style="list-style-type: none"> • detection & recovery • Time stamping methods • Database recovery management: log based recovery. 			
14	2	<p>Big Data introduction</p> <ul style="list-style-type: none"> • Big data: definition and taxonomy • Big data value for the enterprise • Setting up the demo environment • First steps with the Hadoop “ecosystem” <p>Exercises</p>	Big Data	Classroom with whiteboard and Lab	Quizzes
15	2	<p>The Hadoop ecosystem</p> <ul style="list-style-type: none"> • Introduction to Hadoop • Hadoop components: MapReduce/Pig/Hive/HBase • Loading data into Hadoop • Handling files in Hadoop • Getting data from Hadoop <p>Exercises</p>	Big Data	Classroom with whiteboard and Lab	Quizzes

11. Infrastructure

<p>Required reading:</p> <ul style="list-style-type: none"> · CORE TEXTS · COURSE MATERIALS · OTHER 	<p>Text book 1 : C. Coronel and S. Morris, Database Systems, Design, Implementation, And Management, 12th ed.</p> <p>Text book 2 : T. Connolly and C. Begg, Database systems :A Practical Approach to Design, Implementation, and Management, 6th ed. .</p> <p>Text book 3 : Plunkett T., B. Macdonald, et al., Oracle Big Data Hand Book, Oracle Press, 2013.</p> <p>LAB : Mysql Software</p>
<p>Special requirements (include for example workshops, periodicals, IT software, websites)</p>	<p>1- http://web.stanford.edu/class/cs145/</p> <p>2-http://freevideolectures.com/Course/2280/Database-Design</p> <p>3-https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-830-</p>

	<u>database-systems-fall-2010/</u>
Community-based facilities (include for example, guest Lectures , internship , field studies)	Summer training, Scientific visits.