



Shoubra Faculty  
of Engineering

## Model No.12 Course Specifications : Database Design

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**University** : Benha university

**Faculty** : Shoubra Faculty of Engineering

**Department** : Electrical Engineering Department

### 1- Course Data

Course Code : ECE323C

Course Title : Database Design

Study Year : Third Year

Specialization : Computer Engineering

Teaching Hours:

Lecture : 3

Tutorial : 2

Practical :

### 2- Course Aim

For students undertaking this course, the aims are to:

- 2.1- Demonstrate the database development process and environment
- 2.2- Understand the different techniques of modeling business data (Relational & Object-oriented)
- 2.3- Implement the logical design using the Structured Query Language (SQL)

### 3- Intended Learning Outcomes of Course (ILOS)

#### a- Knowledge and Understanding

On completing this course, students will be able to:

- a-1. Understand the Database Development Process and Environment. (mapped to a-2 of the program ILOs)
- a-2. Understand the basics of Logical Database Modeling. (a-4)
- a-3. Explore modern trends in the Database Design. (a-8)
- a-4. Learn business and management principles relevant to the field of Database Design. (a-7)
- a-5. Understand the concepts and techniques of the physical Database Design. (a-17)

#### b- Intellectual Skills

At the end of this course, the students will be able to:

- b-1. Think in a creative and innovative way in Designing the Database of any Information System. (b-3)
- b-2. Select an appropriate technique for Modeling the Database of the system. (b-1)
- b-3. Select the appropriate ICT tools to implement the Logical Database Design. (b-8)

- b-4. Design the Database Schemas and Programs to implement the Database Design. (b-12)
- b-5. Select the latest technology available in designing and implementing the System Database. (b-16)

**c- Professional Skills**

On completing this course, the students are expected to be able to:

- c-1. Create and/or re-design a system Database (Logical and Physical). (c-3)
- c-2. Use appropriate analytical tools, techniques, and software packages to develop the system Database. (c-6)
- c-3. Use appropriate specialized computer software tools and packages to implement the system Database. (c-15)
- c-4. Write and test computer programs to handle and manage the system Database. (c-16)
- c-5. Integrate technical professionalism and ethical responsibility. (c17)

**d- General Skills**

At the end of this course, the students will be able to:

- d-1. Collaborate effectively within multidisciplinary team. (d-1)
- d-2. Demonstrate efficient IT capabilities. (d-4)
- d-3. Search for information and engage in life-long self learning discipline. (d-7)

**4- Course Contents**

No.	Topics	Hours
1	Data Base Design Concepts	3
2	the database development process	3
3	modeling data in the organization (ERD)	3
4	the enhanced ER model (EERD)	3
5	the enhanced ER model and business rules	3
6	Logical Database Design and The Relational Data Model	3
7	Data Normalization	3
8	Midterm Exam	
9	Physical Database Design	3
10	Introduction to SQL	3
11	Advanced SQL (Multi-tables Query)	3
12	Advanced SQL (Subquery)	3
13	object-oriented data modeling	3
14	Oral Exam	3
15	Final Exam	

## 5- Teaching and Learning Methods

- 5.1- Lectures
- 5.2- laboratory
- 5.3- Class activity
- 5.4- Assignments

## 6- Teaching and Learning Methods of Disables

- 6.1- not available

## 7- Student Assessment

### a- Student Assessment Methods

1	Assignments to assess knowledge and intellectual skills.
2	Quiz to assess knowledge, intellectual and professional skills.
3	Mid-term exam to assess knowledge, intellectual, professional and general skills.
4	Project to assess the Professional skills
5	Oral exam to assess knowledge and intellectual skills.
6	Final exam to assess knowledge, intellectual, professional and general skills.

### b- Assessment Schedule

No.	Assessment	Week
1	Assignments	2, 5, 9, 11
2	Quizzes	4, 6, 10, 12
3	Mid-term exam	8
4	Oral exam & Project	14
5	Final exam	15

### c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	10 %
Final_Term Examination	60 %
Oral Examination	10 %
Project	10 %
Semester work	10 %

Other types of assessment	0 %
Total	100 %

## 8- List of References

### a- Course Notes

- 1- Course Slides

### b- Books

- 1- "MODERN DATABASE MANAGEMENT", by Jeffrey A. Hoffer, Mary B. Prescott, Fred R. McFadden, Latest Edition, , Prentice Hall.
- 2- "Database Systems: Design, Implementation, & Management, 11th Edition",By Carlos Coronel and Steven Morris, 2013, Cengage Learning.

### c- Website

- 1- Oracle OTN website(Latest Edition)

- **Course Coordinator :** Associate Prof. Abdulwahab Alsammak

- **Head of Department :** Prof. Dr. Sayed Abo-elseoud Ward



Shoubra Faculty  
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## Model No.11A Course Specifications : Database Design

**University :** Benha university

**Faculty :** Shoubra Faculty of Engineering

**Department :** Electrical Engineering Department

**Matrix of Knowledge and Skills of the course**

No .	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Data Base Design Concepts	1	a1	b1	c2	d3
2	the database development process	2	a1, a4	b1	c2	d3
3	modeling data in the organization ERD	3	a2, a4	b2	c1,c2,c5	d1,d2
4	the enhanced ER model EERD	4	a2,a3,a4	b2, b5	c1,c2,c5	d1,d2
5	the enhanced ER model and business rules	5	a2,a3,a4	b2, b5	c1,c2,c5	d1,d2
6	Logical Database Design and The Relational Data Model	6	a2,a3,a4	b2, b5	c1,c2,c5	d1,d2
7	Data Normalization	7	a2,a3,a4	b2, b5	c1,c2,c5	d1,d2
8	MidTerm Exam	8				
9	Physical Database Design	9	a2, a5	b4, b5	c2,c3	d2, d3



## Matrix of course content and ILO's

Course content	A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2	D 3
Data Base Design Concepts	✓			✓		✓						✓						✓
the database development process	✓			✓		✓						✓						✓
modeling data in the organization ERD		✓	✓	✓			✓			✓	✓	✓			✓	✓	✓	
the enhanced ER model EERD		✓	✓	✓			✓			✓	✓	✓			✓	✓	✓	
Logical Database Design and The Relational Data Model		✓	✓	✓			✓			✓	✓	✓			✓	✓	✓	
Physical Database Design		✓			✓				✓	✓		✓	✓				✓	✓
Introduction to SQL		✓	✓					✓		✓			✓	✓	✓		✓	✓
Advanced SQL		✓	✓					✓		✓			✓	✓	✓		✓	✓
object-oriented data modeling	✓	✓	✓					✓	✓	✓		✓	✓	✓			✓	✓
object-oriented Database development	✓	✓	✓					✓	✓	✓		✓	✓	✓			✓	✓

## Matrix of course aims and ILO's

Course aims	A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C1	C2	C 3	C 4	C 5	D 1	D 2	D 3
Demonstrate the database development process and environment	✓			✓		✓						✓						✓
Describe the different techniques of modeling business data	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	✓	✓	✓
Implement the logical design using the Structured Query Language (SQL)		✓	✓					✓		✓			✓	✓	✓		✓	✓

**Course coordinator:** Associate Prof. Abdulwahab Alsammak

**Course instructor:** Associate Prof. Abdulwahab Alsammak

**Head of department:** Prof. Dr. Sayed Abo-elseoud Ward