



## Future Academy Higher Future Institute for Specialized Technological Studies

# **Course Specification**

## 1- Course information:

Course Code:	INM353
Course Title:	Database System2
Year/level	3rd
Academic Programs	Computer Science Program (B.Sc.)
Contact hours/ week	4

## 2- Course aims:

This course aims to give students in depth information about system implementation techniques, data storage, representing data elements, database system architecture, the system catalog, query processing and optimization, transaction processing concepts, concurrency control techniques, database recovery techniques, database security and authorization, enhanced data models for advanced applications, temporal databases, deductive databases, database technology for decision support systems, distributed databases and client server architecture, advanced database concepts, and emerging technologies and applications.

## 3- Intended learning outcomes of the course (ILOs):

## a- Knowledge and understanding:

### On successful completion of this course, the student should be able to:

al- Recognize the fundamental concepts of file and database management

a2- Describes the basic concepts of relational database design, database models, systems architectures and languages

- a3- Discuss/explain the concepts of Disk Storage
- a4- Discuss/explain Indexing Structures for Files
- a5- Know and understand the principles and techniques of query processing and optimization
- a6- Recognize the basics of transactions in a database
- **b- Intellectual skills:**

### On completing this course, the student should be able to:

b1- Solve a wide range of problems related to the analysis, design and construction of computer systems

b2- Analyze the requirements of a range of computer-based systems and examine the

design alternatives based on the constraints imposed by society, organizations, and technology

b3- Integrate and evaluate information and data from a variety of sources

b4- Be creative in the solution of problems and in the development of database designs

### c- Professional and practical skills:

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

c1- Design and implement database systems

- c2- Use appropriate database design methodology
- c3- Implement different indexing files on database

c4- Use the (DBMSs) effectively through Strategies for Query Processing and optimization

#### d- General and transferable skills:

#### On successful completion of this course, the student should be able to:

d1- Work effectively with database owners and for database users

d2- Display an integrated approach to the deployment of communication skills

d3- Display personal responsibility by working to multiple deadlines in relation to the course requirements

d4- Write and deliver coherent and structured technical reports

## 4- Course contents

<b>Topics/units</b>	Number	of hours	ILO's					
L L	Lecture	Practical						
	hours	hours						
Revision on Database system	2	2	a1,a2,b1,c1,d1					
concepts and architecture								
Overview of Physical Storage								
Media – Cache, RAM, HD, SSD								
Disk Storage, Basic File	2	2	a3,c2					
Structures								
Hashing, and Modern Storage	2	2	a3,c3					
Architectures								
Indexing Structures for Files and	2	2	a4,b2					
Physical Database Design	2	2	a4,b2					
Storage & Indexing problem	2	2	b3					
solving								
Mid-semester exam								
Strategies for Query Processing	2	2	a5,b4,c4					
Query Optimization	2	2	a5,b4					
Basics of Transaction Processing	2	2	a6					
Concepts and Theory								
Review and Project discussion	2	2	c1,c4,d2,d3,d4					
End of semester exam								

## **5-** Teaching and learning methods

Methods										ILC	)'s								
	a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Lectures	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓					
Training visits							✓	✓	✓	✓									
Practical							✓	✓	✓	✓									
sections																			
Self-learning											✓	✓	✓	✓					
Summer training																			
Assays and		~						✓		✓				✓					
reviews																			
Discussion																			
groups																			

# 6- Teaching and learning methods for Low-achieving students

- Extra teaching hours for those who need help
- Use non simulation hybrid e-learning: (videos, presentation, or pdf files uploaded)
- More quizzes to assess their ability for understanding the course
- Encourage the team work for those students with other advanced ones to increase their participation and understanding

# 7- Student assessment

Assessment	Time	Grade	ILOs
method		weight (%)	
Written exam		60%	
Practical exam		15%	
Oral exam			
Mid-term exam		10%	
Others		15%	

# 8-List of references

8.1. Student notebooks:

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### 8.2. Essential textbooks:

Fundamentals of Database Systems, Ramez Elmasri, Shamkant B. Navathe, 7<sup>th</sup> edition, ISBN-13: 9780133970777, Pearson, 2015.

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8.3. Recommended textbooks:

Database Management systems (3<sup>rd</sup> ed.), Ramakrishanan, R., and Gehrke, J., ISBN-13: 978-0071231510,McGraw-Hill: New York, 2003.

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8.4. Journals, Periodical and Reports ......etc.

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8.5. Websites

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**Course Coordinator: Dr. Manal Ahmed** 

Head of department: Assoc. Prof. Yasser Foaad

Date: