FUTURE UNIVERSITY IN EGYPT
FACULTY OF COMPUTERS AND INFORMATION TECHNOLOGY

ISY 211 Database I

Course information:

Course code & number: ISY 211	**Course title: Database I**
Pre requisite: CSC 112	**Co requisite: None**

Instructor information:

Name: Awad Khalil Email: softeng8@gmail.com
Office hours: Monday from 1:00 to 3:00 pm

Teaching Assistant Information:

Name: Mahmoud Sami Email: msami.fci@gmail.com
Office hours:

Course description as it appears in the catalog:

Basic concepts, database system environment, DBMS components and architecture, database design process, high-level data models, ER and EER models, the relational data model, relational languages, SQL, Data Definition Language (DDL), Data Manipulation Language (DML), introduction to functional dependencies and normalization, social and ethical context of databases.

Course outcomes:

Upon successful completion of this course, the students will be able to:

- Demonstrate knowledge and understanding of the database system concepts, and DBMS functions & architecture
- Demonstrate knowledge and understanding of a generic procedure to design a database system
- Analyze and define the data requirements of a database
- Model the data requirements in the Entity-Relationship Data Model
- Demonstrate knowledge and understanding of relational data model
- Demonstrate knowledge and understanding of the relational integrity constraints
- Design a database in the relational data model
- Use SQL/DDL to create and maintain a relational database.
- Use SQL/DML to perform data processing operations (Insert, Update, Delete, and Select) on relational database
- Use SQL/DCL to enforce data security, control data processing operations and manage user accounts.
- Apply techniques of database analysis, design and implementation using a RDBMS (Oracle)
- Research on emerging applications of database systems

Course topics and contents:

Week #	Topic
1	Basic Concepts of Database Systems
2	Database Models and Languages
3	Data Modeling Using the ER Model.
4	The Relational Data Model
5	ER-to-Relational Mapping

6	Database Design Applications
7	**Midterm Exam I**
8	Data Processing Operations
9	Relational Language: Structured Query Language (SQL)
10	Data Definition Language (DDL) of SQL
11 & 12	Data Manipulation Language (DML) of SQL
13	**Midterm Exam II**
14	Database Security
15	Data Security Statements in SQL
16	**Final exam**

Research Project

In this activity, students are encouraged to work in groups of 2 or 3 at most. Each group is asked to write a research paper and deliver a ppt presentation on one the following topics:

1. MySQL
2. Big Data Analytics
3. Extended Entity Relationship Data Model (EER)
4. Transaction Processing, Concurrency, Recovery, and Backup Controls in DBMS.
5. Automated Database Design Tools (UML & Rational Rose)
6. Real-time Databases
7. Spatial Databases
8. Temporal Databases
9. Multi-media Databases
10. Mobile Databases
11. GIS Databases
12. Distributed databases
13. Active/Deductive Databases
14. XML Databases
15. Object-Relational DBMSs (SQL3) and OODBMSs
16. Data Mining and Knowledge Discovery
17. Data Warehousing
18. On-Line Analytical Processing (OLAP)
19. Database Security

Application Project

Design and development of a database application using Oracle.

Course assessment details:

Research/Presentation	10%
First Midterm Exam	15%
Second Midterm Exam	15%
Quizzes & Assignment	10%
Lab Project	10%
Final Exam	40%
Total	**100%**

Course texts, instructional material and learning resources:

Author	**Title**	**ISBN -13**	**Year/ Edition**	**Publisher**
Ramez Elmasri and Shamkant Navathe	Fundamentals of Database Systems	978-0136086208	2010, 6th	Pearson