

Faculty of Computers and Information Technology

Database System-1

Information :

Course Code : IS211

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Faculty of Computers and Information Technology

Instructor Information :

| Title | Name | Office hours |
|--------------------|--|--------------|
| Lecturer | MOHAMED ATTIA MOHAMED ABDELGAWAD | 5 |
| Assistant Lecturer | Mohamed Mahmoud Hasan Hamada | 1 |
| Teaching Assistant | Yomna Alaa Elsayed Aly Darwish | |
| Teaching Assistant | Salma Essam Eldin Ali Mohamed Mohamed Yassin | |
| Teaching Assistant | Hanan Hossam Eldeen Mohamed Abdelaziz | |

Area Of Study :

Introduce basic concepts of database systems.
 Learn how to design, construct and manage databases.
 Illustrate different components of a database management system
 Present the database development process
 Develop the relational data model
 Use Structured Query Language (SQL)
 Gain hands-on experience to understand the concepts and techniques for designing and implementing forms, queries, reports and using a popular database management system (DBMS) and object-oriented programming language.
 Use effectively communication skills.

Description :

The main objective of this course is to provide students with the background to design, implement, and use database management systems. Topics Include: 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 :

a. Knowledge and Understanding: :

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|-----|--|
| 1 - | Explain the specifications and components of Database systems. |
| 2 - | Comprehend the functionalities of Database management systems. |
| 3 - | Explain the relational data model. |
| 4 - | Explain the relational algebra as a formal language to manipulate relational data. |
| 5 - | Comprehend data modeling and database designing. |
| 6 - | Discuss the correspondence between Relational algebra and SQL. |

b. Intellectual Skills: :

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|-----|---|
| 1 - | Convert data models. |
| 2 - | Formulate relational algebra expressions/SQL statements. |
| 3 - | Express real-world environment in data models (database design skills). |
| 4 - | Discover Entity Relationship Model to design databases. |
| 5 - | Convert ER Models to relational models. |
| 6 - | Normalize Database Tables. |
| 7 - | Construct SQL language to define and manipulate relational databases. |

c. Professional and Practical Skills: :

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|-----|--|
| 1 - | Form and use Structured Query Language (SQL) in database construction and data manipulation. |
| 2 - | Hand on some well-known database management systems. |
| 3 - | Design database using specific software. |
| 4 - | Form design and implement database. |
| 5 - | Report on design and implement database. |

d. General and Transferable Skills: :

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|-----|---|
| 1 - | Enhance work presentation skills. |
| 2 - | Develop problem solving skills. |
| 3 - | Demonstrate communication skills. |
| 4 - | Work coherently and successfully as a part of a team. |
| 5 - | Enhance data and information retrieval skills |

ABET Course outcomes :

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|-----|--|
| 1 - | Define basic concepts of database systems, including history, basic architecture, data models and design, and applications |
| 2 - | Design, construct and manage databases |
| 3 - | Illustrate different components of a database management system |
| 4 - | Present the database development process |
| 5 - | Implement a database following the relational data model |
| 6 - | Use Structured Query Language (SQL) |
| 7 - | Apply the concepts and techniques for designing and implementing forms, queries, reports and using a popular database management system (DBMS) |

Course Topic And Contents :

| Topic | No. of hours | Lecture | Tutorial / Practical |
|--|--------------|---------|----------------------|
| Introduction to database systems | 4 | 2 | 2 |
| File processing and database systems | 4 | 2 | 2 |
| Database system components and characteristics | 4 | 2 | 2 |
| Relational data Model | 4 | 2 | 2 |
| Relational Algebra and an introduction to SQL | 4 | 2 | 2 |
| The Entity Relationship Model | 4 | 2 | 2 |
| Data modelling and database designing | 4 | 2 | 2 |

Course Topic And Contents :

| Topic | No. of hours | Lecture | Tutorial / Practical |
|---|---------------------|----------------|-----------------------------|
| Data modelling and database designing | 4 | 2 | 2 |
| Mid Term Exam | 2 | | |
| Converting ER model to relational model | 4 | 2 | 2 |
| Converting ER model to relational model | 4 | 2 | 2 |
| Database tables and normalization | 4 | 2 | 2 |
| Database Administration | 4 | 2 | 2 |
| Final Exam | 2 | | |

Teaching And Learning Methodologies :

Interactive Lectures including Discussions

Practical Lab Sessions

Case Studies

Brain Storming and Problem Solving

Course Assessment :

| Methods of assessment | Relative weight % | Week No | Assess What |
|------------------------------|--------------------------|----------------|--------------------|
| Assignments | 5.00 | 2 | |
| Practical Exam | 10.00 | 12 | |
| Presentations | 5.00 | 10 | |
| Quizzes | 5.00 | 5 | |
| Team Work Projects | 5.00 | 11 | |
| Written Final Exam | 40.00 | 14 | |
| Written Midterm Exam (s) | 30.00 | 9 | |

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Recommended books :

Connolly & Begg Database Systems, A practical approach to Design, implementation, and management Pearson, last edition.
ISBN-13: 978-0133970777 ISBN-10: 0133970779

Web Sites :

www.ekb.eg