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**Syllabus**

**BSc Faculty of Computer Science and Engineering**

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| --- | --- | --- | --- | --- |
| **Subject** | **DATABASE SYSTEMS** | | | |
| **Type** | **Semester** | **ECTS** | **Code** |
| OBLIGATIVE (O) | 3 | 5 |  |
| **Course Lecturer** | Erzen Talla, MSc | | | |
|  |  | | | |
| **Course Assistants** | Elton BOSHNJAKU, cand.MSc | | | |
| **Aims and Objectives** | This course offers students the study of Database Systems, Defining Requirements for the Database systems, including Database Design with Entity Relationship-Based Models, Relational Modelling, and Using SQL and Relational Algebra.  The student will power with knowledge at modelling databases from conceptual and physical levels of design, then be able to develop database schemas that enforce data integrity. Including knowledge in creating and manipulating of SQL operation to enforce those operation of database schemas. | | | |
| **Prerequisite(s)** | Recommended: concepts of system requirements, knowledge of defining objects but not necessarily | | | |
| **Learning Outcomes** | Upon completion of the course, the student should be able to:   * Understand and understand the functions offered by Database Management Systems, as well as the choice of DBMS for creating real applications. * Knowledge of modelling conceptual and logical level of database design. Use the entity-relationship model (E-R& EE-R) and E-R diagrams * Implement a relational database schema using Structured Query Language (SQL), to create and manipulate tables, indexes, and views. * Create and use simple, intermediate and complex queries in SQL. | | | |
| **12 Weeks**  **Course Content** | **Course Plan**  **Unit I:** *overview of database system concepts*  Course Presentation / Introduction of database systems.  **Unit II:** *SQL Basics*  SQL Basic operation, data types, Implementing Query processing using the Cartesian product, SQL Aggregation Functions  **Unit III:** *Relational data models and Database Design Concepts*  The process of designing and modelling data (ERD), E-R Diagram, Weak Entities. EER (Generalization and Specialization), Relational Model and Logical Database Design, Functional dependencies and Normalization of Database Tables.  **Unit IV**: *Intermediate SQL*  Implementation of Structure Query Language & Relational Algebra (Set Operations)*,* SQL: Data Definition Language, DML: SQL, Authorization, Integrity Constraints, Tables etc. Null Values. JOINs Relations, Subquery  **Unit V:** *Advanced SQL*  with/ views  PL/SQL concepts: Store Procedures | | | |
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| **Teaching/Learning Methods** | **Teaching/Learning Activity** | | | **Weight (%)** |
| 1. Lectures | | | 20% |
| 1. Seminar 2. Group Project | | | 0%  25% |
| 1. Laboratory Exercises | | | 20% |
| 1. Self Study | | | 35% |
| **Assessment Methods** | **Assessment Activity** | **Number** | **Week** | **Weight (%)** |
|  |  |  |  |
| 1. Group Project (2-4 students) | 1 | 8,10,13 | 40% |
|  |  |  |  |
| 1. Final Exam |  |  | 50% |
| 3 Assignments |  |  | 10% |
| 1. Participation in lectures and exercises are not mandatory. 2. Retake students are not required to attend lectures but are required to complete all planned activities (parts of the project).   5.1 Retake- students who do not complete projects will be assessed as follows:   * 70-79 points grade 6 Six * 80-89 points grade 7 Seven * 90-100 points grade 8 Tete | | | |
| **Course resources** | **Resources** | | | **Number** |
| 1. Classes | | | 1 |
| 1. Laboratory | | | 1 |
| 1. Moodle | | | 1 |
| 1. Software: Microsoft SQL Server Management Studio, | | | 1 |
| 1. Projector | | | 1 |
| **ECTS Workload** | **Activity** | | **Weekly hrs** | **Total workload** |
| 1. Lecture | | 2 | 30 |
| 1. Seminars | |  |  |
| 1. Laboratory | | 2 | 30 |
| 1. Practice in industry | |  |  |
| 1. Independent learning | | 5 | 88 |
| 1. Final Exam | | 1 | 2 |
| **Literature/References** | * DATABASE SYSTEM CONCEPTS, 7th ED, Abraham Silberschatz, Henry F. Korth, S. Sudarshan. * DATABASE SYSTEMS: DESIGN, IMPLEMENTATION, AND MANAGEMENT, 13th ED by Carlos Coronel and Steven Morris | | | |
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