Course Title	Database Management Systems				
Course Code	CSE310				
Course Type	Compulsory				
Level	Bachelor (1st cycle)				
Year / Semester	3rd Year / 5th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours/14 weeks	Laboratories / week	None
Course Purpose and Objectives	This course aims to provide information on database management; hierarchical, relational, and network models for logical design. An emphasis to Relational database systems design is given. Students will get exposed to Relational Algebra and SQL as well as in database administration including reliability, security and integrity.				
Learning Outcomes	Upon succesful completion of this course students should be able to: • Distinguish between the various Database Management Systems models • List the various steps that are implemented in designing Relational Database Systems • Create, organize and manipulate databases using correct procedures such as Entity-Relationship diagrams, functional dependencies and table normalization • Describe database techniques such as security, system recovery, transaction processing and concurrency control • Build queries using the Structured Query Language, relational algebra and relational calculus • Use Microsoft SQL Server in a real project for implementing a database • Manipulate data in Microsoft SQL Server • Understand data storage in Microsoft SQL Server • Manage and administer Microsoft SQL Server • Get exposed to contemporary topics in Data Management				
Prerequisites	CSE200	Co-requisites	N/A		
Course Content	An introduction to database management systems from the users point of view. Define what a database system is, explain operational data of a DBS, data independence, discuss the architecture for a database system and distributed databases. Data Modelling using the Entity-Relationship (ER) Model and Enhanced-ER (EER) Model Concepts, Inheritance, Super/Sub Classes.				

	Data structures and corresponding operators. An introduction to the three different approaches; object-relational approach; Usage of the higher level operators with selected examples. Relational Data model; A more in-depth analysis of the relational data structure including definition of the modelling concepts and notation of the relational model, identification of integrity constraints, update operations and their effects on integrity constraints. Structured Query Language (SQL); Introduction to a comprehensive database language. Statements for data definition, query, and update. Relational algebra; An introduction to the relational algebra using the traditional set operations, attribute names for derived relations and special relational operations. Relational Calculus; Tuple and Domain relational calculus. Query By Example (QBE); Overview of another relational language. Functional Dependencies and Normalization for Relational Databases; Designing guidelines for Relation Schemes, Functional dependencies, General Definitions of First, Second and Third Normal Forms, Boyce-Codd Normal Form (BCNF). Security and Authorization, System Recovery, Transaction Processing, Concurrency Control. Microsoft SQL Server: Microsoft SQL, Transact-SQL, Administering, securing, backing-up MS SQL Server. Permissions in MS SQL Server, data dictionary, built-in functions, database roles, database views, MS SQL Server database storage and indexing Contemporary issues in Data Management
Teaching Methodology	Face – to – face
Bibliography	Elmarsi & Navathe, FUNDAMENTALS OF DATABASE SYSTEMS, Addison Wesley Database Administration Fundamentals, Microsoft Official Academic Course in Database Fundamentals, Exam 98-364 Ramakrishnan & Gehrke, Database Management Systems, McGraw-Hill Silberschatz, Korth, Sudarshan, Database System Concepts, McGraw Hill

Assessment	Final Examination	45%
	Midterm Examination	25%
	Coursework	20%
	Class Participation and attendance	10%
		100%
Language	English	