


MANGALORE UNIVERSITY
DEPARTMENT OF M.Sc. COMPUTER SCIENCE

CSH 453: ADVANCED DATABASE SYSTEMS		
Hours/Week: 4		I.A. Marks: 30
Credits : 4		Exams. Marks: 70
<u>Course Outcomes:</u>		
CO1: Explain the features of database management systems and Relational database. CO2: Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra. CO3: Create and populate a RDBMS for a real life application, with constraints and keys, using SQL. CO4: Retrieve any type of information from a data base by formulating complex queries in SQL. CO5: Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database. CO6: Build indexing mechanisms for efficient retrieval of information from a database.		
	UNIT-I	12 Hrs.
OBJECT AND OBJECT RELATIONAL DATABASES: Concepts for Object Databases: Object Identity – Object structure – Type Constructors – Encapsulation of Operations – Methods – Persistence – Type and Class Hierarchies – Inheritance – Complex Objects – Object Database Standards, Languages and Design: ODMG Model – ODL – OQL – Object Relational and Extended – Relational Systems: Object Relational features in SQL/Oracle – Case Studies.		
	UNIT-II	12 Hrs.
PARALLEL AND DISTRIBUTED DATABASES : Database System Architectures: Centralized and Client-Server Architectures – Server System Architectures – Parallel Systems- Distributed Systems – Parallel Databases: I/O Parallelism – Inter and Intra Query Parallelism – Inter and Intra operation Parallelism – Design of Parallel Systems- Distributed Database Concepts - Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control – Distributed Query Processing – Case Studies		

	UNIT-III	12 Hrs.
<p>INTELLIGENT DATABASES: Active Databases: Syntax and Semantics (Starburst, Oracle, DB2)- Taxonomy- Applications Design Principles for Active Rules- Temporal Databases: Overview of Temporal Databases-TSQL2- Deductive Databases: Logic of Query Languages – Datalog- Recursive Rules-Syntax and Semantics of Datalog Languages- Implementation of Rules and Recursion- Recursive Queries in SQL- Spatial Databases- Spatial Data Types- Spatial Relationships- Spatial Data Structures Spatial Access Methods-Spatial DB Implementation.</p>		
	UNIT-IV	12 Hrs.
<p>ADVANCED DATA MODELS : Mobile Databases: Location and Handoff Management - Effect of Mobility on Data Management -Location Dependent Data Distribution - Mobile Transaction Models -Concurrency Control -Transaction Commit Protocols- Multimedia Databases- Information Retrieval- Data Warehousing-Data Mining- Text Mining.</p> <p>EMERGING TECHNOLOGIES : XML Databases: XML-Related Technologies-XML Schema- XML Query Languages- Storing XML in Databases-XML and SQL- Native XML Databases- Web Databases- Geographic Information Systems- Biological Data Management- Cloud Based Databases: Data Storage Systems on the Cloud- Cloud Storage Architectures-Cloud Data Models- Query Languages- Introduction to Big Data-Storage-Analysis.</p>		
<p>REFERENCE BOOKS:</p> <ol style="list-style-type: none"> 1. Elmasri and Navathe, Fundamentals of Database Systems 5th Edition, Addison-Wesley, 2007. 2. Raghuram Ramakrishnan and Johannes Gehrke, Database Management Systems ,3rd Edition, McGraw-Hill, 2003. 3. Data Base System Concepts, Silberschatz, Korth and Sudharshan, 5th Edition, McGraw Hill, 2006. 4. C.J. Date, A. Kannan, S. Swamynatham, An Introduction to Database Systems, 8th Edition, Pearson Education, 2006. 		