Elective Course 1: Database Management & Data warehouse Management

Course Type:	Elective	Course Credits:	2
Course Code:	S3PE509	Course Duration:	30 Hours

Course Objective:

- To understand the introduction, Meaning and Definition of Database, Database Environment
- To understand the Data Models : The importance of data models, Basic building
- Understand applications of Database Management System(DBMS) & RDBMS
- To understand the Object-Relational Database Management System(ORDBMS)
- Overview of Structured Query Language and application DBMS to business

Course Outcomes:

- CO1: Understand the basic concepts of Database and Database Environment
- CO2: Create the data models.
- CO3: Understand the concepts of DBMS, types of DBMS keys and integrity constraints.
- CO4: Understand the basic concepts of distributed Database, RDBMS and ORDBMS.
- CO5: Apply SQL in DBMS
- CO6: Understand concepts of Security and Integrity In SQL and concepts of Data warehousing and Data mining

Unit/ Module	Content	CO Mapping	Hours Assigned
1	Introduction, Meaning and Definition of Database, Database Environment, Working of a Simple Centralized Database System, Tradition al File Systems vs. Modern Database Management Systems, Properties of Database, Types of Database Users, Advantages of using DBMS	CO1, CO2	3

2	Data Models: The importance of data models, Basic building blocks, Business rules, The evolution of data models Hierarchical, Network, Relational, Entity-Relationship model: entity and entity sets, relationship, constraints, E-R diagrams and issues.	CO2, CO3	3
3	Database Management System(DBMS) Basic concepts : data, information, metadata, definition of DBMS, Components, entities, attributes, relationships, Data dependency Keys : Super key, Candidate key, Primary key, Alternate key, Foreign key Integrity Constraints: Entity Integrity, Referential Integrity ,DBMS three level(Logical, Conceptual, Physical) Advantages and disadvantages of DBMS, Database system environment and utilities Client/Server Architecture : two and three tier architecture	CO3	3
4	Distributed Databases: Introduction to Distributed DBMS Concepts, Client-Server Model, Data Fragmentation, Replication, and Allocation Techniques for Distributed Database Design	CO4, CO5	3
5	Relational Database Management System (RDBMS): Definition, Meaning, and Introduction, Merits and demerits, Relational Database design: features of good relational database design, atomic Domain and Normalization (1NF, 2NF, 3NF, BCNF).	CO3, CO4	3

6	Object-Relational Database Management System(ORDBMS): Introduction, Basics of Object Oriented Design (OOD), Characteristics- Advantages-Object oriented development- Objects and Object classes-Object Oriented data Model, Object oriented databases, Object Relational Database Management Systems	CO3, CO4, CO5	3
7	Structured Query Language: SQL: Introduction, SQL, Multi table Queries, Nested Queries or Sub queries, Multiple Row Nested Queries, Data Manipulation Language, The Create Table Statement	CO4, CO5	3
8	Security and integrity: Introduction, Security and Integrity Violations, Authorization, Granting of Privileges, Security Specification in SQL	CO6	3
9	Data warehousing, Multidimensional Data Models, Data Warehouse Architecture, ROLAP,MOLAP, HOLAP, OLAP and OLTP	CO4 CO5	3
10	Data Mining, Data Pre-processing, Data Marts, Cluster Analysis, Decision Making.	CO6	3

Textbooks:

1. Data Warehousing, Data Mining and OLAP by Alex Berson and Stephen J. Smith. Tata McGraw–Hill Edition, 2007
2. Rob, Coronel, “Database Systems”, Seventh Edition, Cengage Learning.
3. Database management system by Navate
4. Database management by E.F Codd
5. Database Management Systems by Raghu Ramakrishnan
6. Introduction to Database Management Systems by Kahate

Reference Books:

1. Database System and Concepts by A Silberschatz, H Korth, S Sudarshan,

McGraw-Hill
2. Database Management Systems by P.S.Gill
3. Database System Concepts by Silberschatz
4. Database Management Systems by Bipin Desai
5. Principles of Database Systems by J.D.Ullman

Elective Course 2: Big Data , Business Analytics & FinTech

Course Type:	Elective	Course Credits:	2
Course Code:	S3PE510	Course Duration:	30 Hours

Course Objective:

- To introduce foundational concepts and applications of big data and business analytics in finance.
- To equip students with skills to utilize analytical tools and techniques for financial decision-making.
- To develop practical abilities to harness big data for strategic advantage and customer insights in financial services.
- To foster critical understanding of fintech innovations, digital payment systems, and technology-driven financial solutions.
- To cultivate analytical capabilities to evaluate the impact of fintech trends on traditional financial services.

Course Outcomes:

- CO1: Understand the fundamental concepts and importance of big data and business analytics and FinTech..
- CO2: Analyse big data architectures, tools, and technologies for data processing.
- CO3: Evaluate data analytics techniques, predictive modelling, and machine learning applications and FinTech.
- CO4: Apply big data analytics and FinTech in decision-making and business intelligence.
- CO5: Explore emerging trends and challenges in big data, FinTech, analytics-driven businesses.

Unit/ Module	Content	CO Mapping	Hours Assigned
1	Introduction to Big Data and Business Analytics - Basics of big data and Business Analytics its	CO1,	4