1. Subject Code: **CO202** Course Title: **Database Management System**
2. Contact Hours : L: 3 T: 0 P: 2
3. Examination Duration (ETE)(Hrs.) : Theory 3 Hrs Practical 0
4. Relative Weightage : CWS 15 PRS 15 MTE 30 ETE 40 PR 0
5. Credits : 4
6. Semester : IV
7. Subject Area : DCC
8. Pre-requisite : Data Structures
9. Objective : To provide knowledge about the principles, concepts and applications of Database Management System.
10. Details of Course

S.No.	Contents	Contact Hours
1.	**Introduction:** Database system concepts and its architecture, Data models schema and instances, Data independence and database language and interface, Data definition languages, DML. Overall database structure. **Data modeling using Entity Relationship Model:** E.R. model concept, notation for ER diagrams mapping constraints, Keys, Concept of super key, candidate key, primary key generalizations, Aggregation, reducing ER diagrams to tables, extended ER model.	7
2.	**Relational Data Model and Language:** Relational data model concepts, integrity constraints, Keys domain constraints, referential integrity, assertions, triggers, foreign key relational algebra, relational calculus, domain and tuple calculus, SQL data definition queries and updates in SQL.	7
3.	**Data Base Design:** Functional dependencies, normal forms, 1NF, 2NF, 3NF and BCNF, multi-valued dependencies fourth normal form, join dependencies and fifth normal form. Inclusion dependencies, lossless join decompositions, normalization using FD, MVD and JDs, alternatives approaches to database design.	6

4.	**File Organization, Indexing and Hashing:** Overview of file organization techniques, Indexing and Hashing- Basic concepts, Static Hashing, Dynamic Hashing, Ordered indices, Multi-level indexes, B-Tree index files, B+- Tree index files, Buffer management **Transaction processing concepts:** Transaction processing system, schedule and recoverability, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recovery from transaction failures, deadlock handling.	8
5.	**Concurrency Control Techniques:** Locking Techniques for concurrency control, time stamping protocols for concurrency control, concurrency control in distributed systems. multiple granularities and multi-version schemes.	8
6	**Case Studies:** Commercial databases, Oracle, Postgress, MySQL	6
TOTAL		**42**

11. Suggested Books

S.No.	Name of Books / Authors/ Publishers
Text Books	
1	Elmasri, Navathe,"Fundamentals of Database systems", Addision Wesley
2	Korth, Silbertz, Sudarshan,"Data base concepts", McGraw-Hill.
Reference Books	
1.	Ramakrishna, Gehkre, "Database Management System", McGraw-Hill
2	Date C.J.,"An Introduction to Database systems"

1. Subject Code: **CO204** Course Title: **Operating Systems Design**
2. Contact Hours : L: 3 T: 0 P: 2
3. Examination Duration (ETE)(Hrs.) : Theory 3 Hrs Practical 0
4. Relative Weightage : CWS 15 PRS 15 MTE 30 ETE 40 PR 0
5. Credits : 4