SEMESTER	1
Paper Number	MCMS 4112
Paper Title	Advanced Database Management System and Data Warehousing
No. of credits	6
Theory / Composite	Composite
No. of periods assigned	Th: 4 Pr: 4
Name of faculty member(s)	
Course description / objectives	On completion of this course, the students will be able to: 1. understand the significance of transactions and learn techniques to ensure proper management of transactions 2. analyse various concurrency control techniques 3. recognize the importance of recovery and discover various solutions to recover from failure 4. learn about various means to optimize a query 5. discover the benefits of distributed databases and learn about the applications in real world scenarios 6. understand the technical and functional differences between a transactional database and a historical database 7. realize the different design paradigms to deal with data warehouse 8. conceptualize the algorithms to process data from a data warehouse 9. comprehend association between a data warehouse and data mining
Syllabus	**Theory – 60 marks** Transaction Management and Concurrency Control: States of Transaction, ACID properties, consistency model, storage model, cascading rollback, recoverable schedules. Concurrency: Schedules, testing for serializability, Lock-based protocols-Two-phase locking protocol, Timestamp based protocol, optimistic techniques, deadlock handling. Recovery: Failure classification, storage hierarchy, log-based recovery, shadow paging. Query processing and optimization: Steps of query processing, query interpretation, equivalence of expression, estimation of cost, join strategies Distributed Database: Principles of distributed database, levels of distribution transparency, data fragmentation, replication and allocation techniques. Data warehousing: Basic Concepts, OLTP, Advantages and Drawbacks of Data Warehouse, Data Warehouse Architecture. Data Warehouse Schema: Star, Snowflake, Fact Constellation. Data Marts: Basic concepts, Advantages and drawbacks, Components. Data Warehouse Design: Different views of designs, processes of design. On-line Analytical Processing: Concepts of OLAP, Multidimensional Data Model; OLAP Operations. **Lab – 40 marks**

Reading/Reference Lists	1. Elmasri,Navathe,Fundamentals of Database System,3/e,Pearson Education 2. Korth, Silberschatz :Database System Concepts, McGrawHill 3. Ceri and Pelagatti, Distributed Databases: Principles and System: McGrawHill 4. "Data Mining: Concepts and techniques", J Han and M Kamber, Third Edition, Elsivier
Evaluation	Total – 100 (Theory – 60, Practical – 40) Theory – CIA – 10 Semester Examination – 50