

SCHEME OF COURSE WORK

Course Details:

Course Title	: Distributed Databases		
Course Code	:13IT1109	L T P C	: 4 0 0 3
Program:	: B.Tech.		
Specialization:	: IT		
Semester	: VIII		
Prerequisites	:Database Management Systems		
Courses to which it is a prerequisite	:Nil		

Course Outcomes (COs):

1	Describe architecture of distributed databases
2	Translate global queries into fragment queries
3	Explain concurrency control and reliability
4	Describe distributed object database management system
5	Define database interoperability and push based technologies

Program Outcomes (POs):

A graduate in information technology will be able to

1	Apply the knowledge of mathematics, science, engineering fundamentals and principles of Information Technology to solve problems in different domains.
2	Analyze a problem, identify and formulate the computing requirements appropriate to its solution.
3	Design and develop software components, patterns, processes, Frameworks and applications that meet specifications within the realistic constraints including societal, legal and economic to serve the needs of the society.
4	Design and conduct experiments, as well as analyze and interpret data.
5	Use appropriate techniques and tools to solve engineering problems.
6	Understand the impact of Information technology on environment and the evolution and importance of green computing.
7	Analyze the local and global impact of computing on individual as well as on society and incorporate the results in to engineering practice.
8	Demonstrate professional ethical practices and social responsibilities in global and societal contexts.
9	Function effectively as an individual, and as a member or leader in diverse and multidisciplinary teams.
10	Communicate effectively with the engineering community and with society at large.
11	Understand engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects.
12	Recognize the need for updating the knowledge in the chosen field and imbibing learning to learn skills.

Course Outcome versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1		S	M	M					M			
CO-2	S				M				M			M
CO-3		S		M		M			M			
CO-4		S	M	M			M				M	
CO-5		S		M				M		M		

S - Strongly correlated, *M* - Moderately correlated, *Blank* - No correlation

AssessmentMethods:

Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Features of Distributed versus Centralized Databases, Principles of Distributed Databases, Levels Of Distribution Transparency.	CO-1	How to perform horizontal fragmentation on the given database?	<ul style="list-style-type: none"> ▫ Lecture / Discussion ▫ Program execution 	Assignment & Seminar Mid-1 & Quiz-1
2	Reference Architecture for Distributed Databases, Types of Data Fragmentation.	CO-1			
3	Integrity Constraints in Distributed Databases, A Framework for Distributed Database design, Design of Database fragmentation & Allocation of Fragments, Translation of Global Queries to Fragment Queries: Equivalence Transformations for Queries.	CO-1&2	Explain the framework of distributed database design?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving 	
4	Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries, A Framework for Transaction Management.	CO-2	Explain about parametric queries?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving ▫ Program execution 	
5	Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions.	CO-2			
6	Architectural Aspects of Distributed Transactions, Concurrency Control Basics, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps.	CO-2& 3	Explain the technique of concurrency control based on time stamps?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving ▫ Program execution 	
7	Optimistic Methods for Distributed Concurrency Control, Reliability, Basic Concepts, Nonblocking Commitment Protocols.	CO-3			
8	Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency	CO-3	Explain about consistent view of the network?	<ul style="list-style-type: none"> ▫ Lecture / Discussion ▫ Program execution 	
9	Mid-Test 1				
10	Checkpoints And Cold Restart, Catalog Management in Distributed Databases, Authorization and Protection, Object Query Processing Architecture,	CO-3 & 4	Explain the concept of checkpoints and cold restart?	<ul style="list-style-type: none"> ▫ Lecture ▫ Discussion ▫ Problem solving 	Assignment & Seminar Mid-2 & Quiz-2
11	Query Processing Issues, Query Execution, and Cache Consistency.	CO-4	Explain about cache consistency?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving 	
12	Object Identifier Management, Transaction Management in Object DBMSs, Transactions as Objects	CO-4	Write in detail about Transaction Management in Object DBMSs?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving 	
13	Database Integration: Scheme Translation, Schema Integration	CO-5	Explain about schema translation?	<ul style="list-style-type: none"> ▫ Lecture ▫ Discussion 	
14	Query Processing, Query Processing Layers in Distributed Multi-DBMSs, Query Optimization Issues	CO-5	Explain about the query processing layers in Distributed multi DBMSs?	<ul style="list-style-type: none"> ▫ Lecture ▫ Discussion 	
15	Transaction and Computation Model, Multi database Concurrency Control	CO-5	Explain about multi database concurrency control?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving ▫ Program execution 	
16	Multi database Recovery, Object Management Architecture, CORBA and Database Interoperability, Distributed Component Model COM/OLE and Database Interoperability	CO-5	Explain about multi database recovery?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving ▫ Program execution 	
17	Delivery Schedule Generation, Client Cache Management, Propagating Updates.	CO-5	Explain in detail about Client Cache Management?	<ul style="list-style-type: none"> ▫ Lecture ▫ Problem solving ▫ Program execution 	
18	Mid-Test 2				
19/20	END EXAM				