

Branch Name:	Computer Engineering (Software Engineering)
Program Code:	ET203
Course Title:	Distributed Computing Practical
Course Code:	2ET2030103P
Pre-requisite Course:	- - -

Course Objective:

The objectives of this course are:

- To provide students with contemporary knowledge in distributed computing.
- To describe the various design issues in a distributed computing systems.
- To provide knowledge on principles and practice underlying in the design of distributed systems.
- To equip students with skills to design a distributed application.

Teaching and Examination Scheme:

Teaching and Examination Scheme:													
Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	—	—	—	—	10	25	10	25	50

Course Contents:

Unit No	Topics	Total Hours
1	Develop a Distributed application using socket. Application consists of a server which takes an integer value from the client, calculates its factorial and returns the result to the Client program.	02
2	Develop an application using RPC.	02
3	Design a distributed application using RMI where client submits two strings to the server and server returns the concatenation of the given strings.	02
4	Implement distributed telephone directory using Java RMI Programming. Implement concurrency control to distributed telephone directory.	02
5	Implementing election algorithm for synchronization	02
6	Implement Task assignment and load balancing scheme.	02
7	Implement two phase commit protocol.	02
8	Design a Distributed Application using Message passing Interface for remote computation.	02
9	Study the design of a Gnutella client	02
10	Develop distributed enterprise application	02
11	Design web service in java.	02
12	Install Hadoop and implement a program to make use of map-reduce model.	02
13	Install Globus toolkit and implement any program on it.	02

Reference Books:

- ☐ Distributed Operating Systems Concepts and Design by Pradeep K. Sinha (PHI)
- ☐ Distributed Systems Concepts and Design Fifth Edition George Coulouris, Jean Dollimore and Tim Kindberg, Addison-Wesley Inc./Pearson Education
- ☐ Distributed Computing – Principles and Applications, by M. L. Liu (Pearson)
- ☐ Distributed Systems Principles and Paradigms by Andrew S. Tanenbaum and Maarten Van Steen (PHI)
- ☐ Distributed Computing: Principles, Algorithms, and Systems, Ajay Kshemkalyani and Mukesh Singhal

List of Open-Source Software/learning website:

- ☐ <https://www.cs.uic.edu/~ajayk/DCS-Book>
- ☐ <http://cs-www.cs.yale.edu/homes/aspnes/classes/465/notes.pdf>
- ☐ <http://nptel.ac.in/courses/106106107/>

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Analyze various components of distributed computing systems	Understanding (1) Applying (1)
COL2	classify distributed shared memory models	Applying (1)
COL3	analyze algorithms for coordination, communication, synchronization in distributed systems	Applying (3)
COL4	Integrate OS and programming language concepts to solve/implement the (distributed) components of the systems	Applying (2)
COL1	Analyze various components of distributed computing systems	Understanding (1) Applying (1)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M		M											
CLO2	H	M			M							L				
CLO3	H	M	M		M											
CLO4	M	M	M		M							L				
CLO5	M	M										L				

H: High, M: Medium, L: Low