

Branch Name:	Computer Engineering (Software Engineering)
Program Code:	ET203
Course Title:	Real Time Operating Systems Practical
Course Code:	2ET2030106P
Pre-requisite Course:	Fundamentals of Operating Systems

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:

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.	Implement Cooperative scheduling.	06
2.	Implement following Preemptive scheduling; 2.1 Rate-monotonic scheduling 2.2 Round-robin scheduling 2.3 Fixed priority pre-emptive scheduling, an implementation of preemptive time slicing 2.4 Fixed-Priority Scheduling with Deferred Preemption 2.5 Fixed-Priority Non-Preemptive Scheduling 2.6 Critical section preemptive scheduling 2.7 Static time scheduling	06
3.	Design a Programs to simulate scheduling algorithms – EDF (Earliest Deadline First)	06
4.	Design a Programs to simulate scheduling algorithms – LRT (Least Release Time)	06
5.	Design a Programs to simulate scheduling algorithms – LST (Least Slack Time)	06

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	Understand the structure of various types of Scheduling Real-Time Tasks	Understanding (1) Applying (1)
COL2	Assess and design fault tolerant systems	Applying (1)
COL3	Understand the dynamic behavior of various Real-Time Databases.	Applying (3)
COL4	Understand software and system design process for microcontroller based real time systems, comprehend intricacies of real time databases, apply programming skills to develop real time systems	Applying (3)
COL5	Understand the Real-Time Communication.	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