



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Computer Science and Engineering	Year of Regulation	2019-20
Department	Computer Science and Engineering	Semester	V

Course Code	Course Name	Credit Structure				Marks Distribution		
		L	T	P	C	Continuous Evaluation	Lab Test/Viva	Total
CS351	Operating Systems Lab	0	1	2	2	70	30	100
Course Objectives	To introduce the components of operating system	Course Outcomes	CO1	Able to learn the fundamentals of Operating Systems				
	To analyse the process scheduling and execution		CO2	Able to acquire knowledge about different process scheduling techniques.				
	To describe the structure of main memory, virtual memory		CO3	Able to solve process synchronization and deadlock handling strategies				
	To describe the function of file systems		CO4	Able to acquire knowledge about different memory management techniques and page replacement algorithms.				

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	2	0	0	0	0	0	0	0	0	0	0	0	2	1	0
2	CO2	2	1	1	1	0	0	0	1	0	0	1	1	2	1	1
3	CO3	2	2	2	1	0	0	0	0	0	0	0	1	2	1	1
4	CO4	2	2	2	2	0	0	0	0	1	0	1	1	1	1	1

SYLLABUS

No.	Content	Hours	COs
I	Basic Commands of UNIX, Shell Programming, Implementation of CPU scheduling algorithms, Performance Comparison of CPU scheduling algorithms. Implementation of IPC.	12	CO1 CO2 CO3 CO4
II	Implementation of Peterson's Solution, Semaphores, Monitors	06	
III	Classical Process Coordination & Synchronization Problems like, Bounded Buffer, Producer-Consumer, Readers-Writers, Dining philosophers, The Cigarette-Smokers Problem, Dining-Philosophers Solution Using Monitors	10	
IV	Implementation of Deadlock Avoidance Algorithms, Detection Algorithms	04	
V	Implementation of contiguous memory allocation techniques, Paging Techniques, Page Replacement Algorithms, Disk Scheduling Algorithms	04	
	To be done necessarily as mini-project group-wise in groups of at least two/three students.		
Total Hours		36	

Essential Readings

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, "Operating System Concepts", 9th Edition, John Wiley & Sons Inc. 2012.
2. Andrew S Tanenbaum, "Modern Operating Systems", 4th Edition, Prentice Hall. 2014
3. William Stallings, "Operating System: Internals and Design Principles", 9th Edition, Pearson, 2018.

Supplementary Readings

1. Harvey M. Deitel, Paul J. Deitel, David R. Choffnes, "Operating System", 3rd Edition, Pearson, 2013.
2. D M Dhamdhere, "System Programming and Operating Systems", 2nd Edition, Tata McGraw Hill, 2009.
3. Gary Nutt, "Operating Systems: A Modern Perspective", 2nd Edition, Addison Wesley, 2001.
4. Achyut S Godbole, "Operating Systems", 3rd Edition, Tata McGraw Hill, 2010.