SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi Accredited by NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956 Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY
TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
23CS4T01	Operating Systems	IV	CBS	5	2024-25	16-12-2024

COURSE OUTCOMES

1	Define the Basic concepts about Operating System and its functions. (K1, K2)
2	Describe Process management and CPU scheduling. (K2)
3	Illustrate synchronization tools, conditions for deadlock and their possible solutions (K3)
4	Analyze Memory-Management and virtual memory Management Strategies (K3)
5	Implement File systems & protection techniques. (K4)

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO – 1	1.1	Operating Systems Overview	T1,T2	1	Chalk & Board Power point presentation Assignment Test
		1.2	Introduction	T1,T2	1	
		1.3	Operating system functions	T1,T2	1	
		1.4	Operating systems operations	T1,T2	1	
		1.5	Computing environments	T1,T2	1	
		1.6	Free and Open-Source Operating Systems	T1,T2	1	
		1.7	System Structures: Operating System Services	T1,T2	1	
		1.8	User and Operating-System Interface	T1,T2	1	
		1.9	System calls Types of System Calls	T1,T2	1	
		1.10	System programs	T1,T2	1	
		1.11	Operating system Design and Implementation	T1,T2	1	
		1.12	Operating system structure	T1,T2	1	
		1.13	Building and Booting an Operating System	T1,T2	1	
		1.14	Operating system debugging	T1,T2	1	
				Total	14	
II	CO – 2	2.1	Process Management System – Introduction	T1,R1	1	
		2.2	Process Concepts	T1,R1	1	

SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by
NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

		2.3	Process scheduling	T2,R2	1	Chalk & Board
		2.4	Operations on processes	T2,R2	1	
		2.5	Inter-process communication	T2,R2	1	
		2.6	Threads and Concurrency	T2,R2	1	Power point presentation
		2.7	Multithreading models	T2,R2	1	
		2.8	Thread libraries, Threading issues	T1,T2	1	
		2.9	CPU Scheduling: Basic concepts	T1,T2	1	Assignment
		2.10	Scheduling criteria	T1,T2	1	
		2.11	Scheduling algorithms- FCFS, SJF	T1,T2	1	Test
		2.12	Scheduling algorithms- Priority Scheduling & Round-Robin	T1,T2	1	
		2.13	Multiple processor scheduling	T1,T2	1	
			Total	13		
III	CO – 3	3.1	Synchronization Tools – Basic concepts	T1,T2	1	
		3.2	The Critical Section Problem	T1,T2	1	
		3.3	Peterson's Solution	T1,T2	1	Chalk & Board
		3.4	Mutex Locks	T1,T2	1	
		3.5	Semaphores	T1,T2	1	
		3.6	Monitors	T1,T2	1	Power point presentation
		3.7	Classic problems of Synchronization	T1,T2	1	
		3.8	Deadlocks - Introduction	T1,T2	1	
		3.9	System Model	T1,T2	1	Assignment
		3.10	Deadlock characterization	T1,T2	1	
		3.11	Methods for handling Deadlocks	T1,T2	1	Test
		3.12	Deadlock prevention	T1,T2	1	
		3.13	Deadlock avoidance	T1,T2	1	
		3.14	Deadlock detection	T1,T2	1	
		3.15	Recovery from Deadlock	T1,T2	1	
Content beyond syllabus		3.16	Concurrency Control and Deadlock	T1,T2	1	
			Total	16		
IV	CO – 4	4.1	Memory-Management Strategies: Introduction	T1,T2	1	Chalk & Board
		4.2	Contiguous memory allocation	T1,T2	1	
		4.3	Paging	T1,T2	1	
		4.4	Structure of the Page Table	T1,T2	1	Power point presentation
		4.5	Swapping	T1,T2	1	
		4.6	Virtual Memory Management: Introduction	T1,T2	1	Assignment
		4.7	Demand paging, Copy-on-write	T1,T2	1	Test
		4.8	Page replacement algorithm: First In	T1,T2	1	

SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

V				First Out (FIFO)		
			4.9	Least Recently Used (LRU) and Optimal algorithms	T1,T2	1
			4.10	Allocation of frames, Thrashing	T1,T2	1
			4.11	Storage Management: Overview of Mass Storage Structure	T1,T2	1
			4.12	HDD Scheduling	T1,T2	1
				Total	12	
V	CO – 5		5.1	File System: File System Interface: File concept	T1,R1	1	Chalk & Board
			5.2	Access methods	T1,R1	1
			5.3	Directory Structure	T1,R1	1
			5.4	File system Implementation: File-system structure	T1,R1	1
			5.5	File-system Operations	T1,R1	1
			5.6	Directory implementation	T1,R1	1
			5.7	Allocation method, Free space management	T1,R1	1
			5.8	File-System Internals: File- System Mounting	T1,R1	1
			5.9	Partitions and Mounting, File Sharing	T1,R1	1
			5.10	Protection: Goals of protection	T1,R1	1
			5.11	Principles of protection, Protection Rings	T1,R1	1
			5.12	Domain of protection, Access matrix	T1,R1	1
				Total	12	
				CUMULATIVE PROPOSED PERIODS	67	

Note: Column "Chalk & Board / Power point presentation / Assignment / Test" spans section V rows 5.1–5.12.

Text Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Operating System Concepts, 10th Edition, John Wiley, 2018.
2	Tanenbaum A S, Modern Operating Systems, 4th Edition, Pearson, 2016

Reference Books:

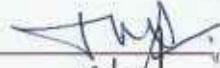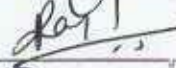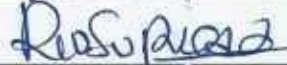| S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	William Stallings, Operating Systems– Internal and Design Principles, Ninth Edition, Pearson Education, 2019.
2	D.M Dhamdhere, Operating Systems: A Concept Based Approach, 3rd Edition, McGraw-Hill, 2013.

SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by
NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

Web Details:

1	https://nptel.ac.in/courses/106/106/106106144/
2	http://peterindia.net/OperatingSystems.html
3	https://www.javatpoint.com/operating-system
4	https://codex.cs.yale.edu/avi/os-book/OS10/practice-exercises/index-solu.html
5	https://www.tutorialspoint.com/operating_system/os_overview.htm

		Name	Signature with Date
i.	Faculty	Mr. MNVL Narayana	
ii.	Module Coordinator	Mr. Ch Rama Krishna Raju	
iii.	Programme Coordinator	Dr. RVVSV Prasad	

Principal