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 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20CS4T01	OPERATING SYSTEMS	4	AI&ML-A&B		2023-2024	02-01-2024

OPERATING SYSTEMS

COURSE OUTCOMES

CO1	Define the Basic concepts about Operating System and its functions.
CO2	Describe Process management, CPU scheduling and Deadlock
CO3	Analyze Memory management
CO4	Describe and Implement File systems & Disk Structures.
CO5	Perform Case Study on LINUX, WINDOWS and Android OS.

Unit	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
UNIT-I: OPERATING SYSTEMS OVERVIEW						
I	**CO1:** Define the Basic concepts about Operating System and its functions.	1.1	OS Concepts – Evolution of OS	T1	1	Chalk, Talk
		1.2	OS Structures- Kernel, Shell	T1	1	
		1.3	Operating-System Services	T1	1	
		1.4	System Calls, Types of System Calls	T1	1	
		1.5	System Structure	T1	1	
		1.6	UNIX- Introduction-Architecture	T1	1	
		1.7	Logging In, Filesand Directories	T1	1	
		1.8	Input and Output, Programs and Processes	T1	1	
		1.9	Error Handling	T1	1	
		1.10	User Identification	T1	1	
		1.11	Time Values	T1	1	
		1.12	System Calls and	T1	1	

			Library Functions			
		1.13	Command-Line Arguments	T1	1	
		1.14	UNIX File API'S	T1	1	
					Total	**14**
UNIT – II: PROCESS MANAGEMENT						
II	**CO2:** Describe Process management, CPU scheduling and Deadlocks.	2.1.	**Process:** Concept, Operations on Processes	T1	1	Chalk, Talk
		2.2	Inter Process Communication	T1	1	
		2.3	Threads-Multithreading Models Threading Issues, Pthreads.	T1	1	
		2.4	**Synchronization:** The Critical-Section Problem	T1	1	
		2.5	Peterson's Solution, Synchronization Hardware, Semaphores	T1	1	
		2.6	Critical Regions, Monitors, Classic Problems of Synchronization	T1	1	
		2.7	**Process Scheduling:** Basic Concepts, Scheduling Criteria	T1	1	
		2.8	Scheduling Algorithms-CPU (Uniprocessor) scheduling algorithms	T1	1	
		2.9	Multiprocessor and Real-time scheduling algorithms.	T1	1	
		2.10	**Deadlocks:** Characterization – Prevention	T1	1	
		2.11	Avoidance - Detection and Recovery	T1	1	
Total					**11**	
UNIT – III: MEMORY MANAGEMENT						
III	**CO3:** Analyze Memory management	3.1	Basic Memory Management, Swapping	T1	1	Chalk, Talk
		3.2	Contiguous Memory Allocation	T1	1	
		3.3	Virtual Memory Concept	T1	1	

		3.4	Demand Paging - Page Interrupt Fault	T1	1	
		3.5	Page Replacement Algorithms	T1	1	
		3.6	Segmentation – Simple, Multi-level	T1	1	
		3.7	Segmentation with Paging	T1	1	
		3.8	Memory Management.	T1	1	
Total					**08**	
UNIT – IV: INFORMATION MANAGEMENT						
IV	**CO4:** Describe and Implement File systems & Disk Structures.	4.1	**File system Interface:** The concept of a file, Access Methods	T1	1	Chalk, Talk
		4.2	Directory structure, File system mounting, file sharing, protection	T1	1	
		4.3	**File System implementation**: File system structure	T1	1	
		4.4	Allocation methods, free-space management	T1	1	
		4.5	**Mass-storage structure**: Overview of Mass-storage structure	T1	1	
		4.6	Disk structure, disk attachment, disk scheduling	T1	1	
		4.7	Disk Management, Swap-Space Management	T1	1	
		4.8	RAID Structure	T1	1	
				Total	**8**	
UNIT – V: CASE STUDY						
V	**CO5:** Perform Case Study on LINUX,	5.1	The Linux System	T1	1	Chalk, Talk
		5.2	Microsoft Windows 7	T1	1	
		5.3	Android Software Platform: Android Architecture	T1	1	

	WINDOWS and Android OS.	5.4	Operating System Services	T1	1	
		5.5	Android Runtime Application Development	T1	1	
		5.6	Application Structure.	T1	1	
				Total	**6**	

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, –Operating System Concepts‖, 10th Edition, John Wiley and Sons Inc., 2018.
2	William Stallings, —Operating Systems– Internals and Design‖, 7th Edition, Prentice Hall, 2016.
3	Alex A Aravind, Operating Systems-S Halder, Second Edition, Pearson Education, 2016.
4	Andrew Tanenbaum, Herbert Bos, –Operating Systems‖, 4th Edition, 2015.

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Ann McIver McHoes Ida M. Flynn, –Understanding Operating Systems‖ Sixth Edition, Course Technology-Cengage Learning, 2011.
2	Andrew S. Tanenbaum, –Modern Operating Systems‖, Second Edition, Addison Wesley, 2001
3	Andrew S.Tanenbaum,AlbertS.Woodhull-Amherst,Operating Systems Design and Implementation‖, Third Edition, Prentice Hall, 2006.
4	W. Richard Stevens, –Advanced Programming in UNIX Environment‖, 2nd Ed, Pearson Education, 2005.
5	Terrence Chan, –UNIX System Programming Using C++‖, Prentice Hall India, 1999.

E-Resources:

1	http://nptel.iitm.ac.in/courses/Webcourse-contents/IIScBANG/Operating%20Systems/New_index1.html
2	https://www.geeksforgeeks.org/courses

		Name	Signature with Date
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Principal