SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

FACULTY OF COMPUTER SCIENCE

Branch Name:	MCA
Program Code:	CS201
Course Name:	Operating System
Course Code:	3CS2010105T
Pre-requisite Course:	Basic knowledge of Computer Software and Hardware, Knowledge of Programming languages like C/C++.

Course Objective:

1. To understand of Basic Operating system and modern operating system,
2. To understand the concept of process Management and Inter process Communication.
3. To understand concept of deadlock, Paging and also learn about Input/output and Files Management
4. To understand the basics of LINUX Command for File and Directory.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
4	-	-	4	60	40	-	-	100

Course Contents			
Unit No	**Topic**	**Total Hours**	**Weightage (%)**
1	**Introduction :** What is Operating System?, Evolution of OS, Different Services of OS, Types of OS, Characteristics of Modern OS **Process Management :** Concepts of Process, Attributes of Process, Process Control Block, Processes and Threads, Process State, Uni-Processor Scheduling: Types of Scheduling, Algorithms.	12	25
2	**Inter Process Communication(IPC) :** Need of IPC, Concurrency, Race conditions, Critical Section, Mutual Exclusion Problem, Solution Approaches, Critical Region, Condition for Critical Region, **Semaphore** : Binary ,Counting, Monitors , **Message Passing**: Synchronous vs. Asynchronous Message Exchange. **Deadlock :** Deadlock Problem, Deadlock Characterization, Dealing with Deadlock, Deadlock Detection, Deadlock Prevention, Deadlock Avoidance: Banker's Algorithm for Multiple Resources.	12	25

3	**Paging & Virtual Memory:** Principle Of Operation, Page Allocation, H/W Support For Paging, Segmentation, Swapping, Performance Of Demand Paging, Page Replacement Algorithms **Input/output and Files Management:** **I/O Management**: I/O Devices, Organization of the I/O Function, OS Design Issues, I/O Buffering, Disk Scheduling. **File Management :** Overview, File Organization, File Directories, File Sharing, Record Blocking.	12	25
4	**Basic of Linux :** Introduction to Linx, Linux file system, shell with Types, kernel **LINUX COMMANDS**: Basic Commands: who, whoami , man, ps ,pwd,echo. file handling commands: cat,cp,mv,rm,wc Directory Handling Command: cd ,mkdir,rmdir	12	25

Text Books:

1. Operating System Concepts – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 8th edition, Wiley-India, 2009
2. Modern Operating Systems – Andrew S. Tanenbaum, 3rd Edition, PHI
3. Operating Systems: A Spiral Approach – Elmasri, Carrick, Levine, TMH Edition
4. Sumitabha Das, UNIX- Concepts and applications; 4th ed.; TMH Publication

References Books:

1. Stalling W, "Operating Systems", 7th edition, Prentice Hall India.
2. Silberschatz, A., Peter B. Galvin and Greg Gagne, "Operating System Principles", Wiley-Indian Edition, 8th Edition
3. Tanenbaum A.S., "Modern Operating Systems", 4th Edition, PHI.
4. Venkateshmurthy, Introduction to Unix and Shell Programming, Pearson Education (India)
5. Randal K. Michael, "Mastering Unix/Linux/Solaris Shell Scripting", Wiley India

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	To **understand** the Basic Concepts of Operating System and Architecture of Operating System.	2 Understanding
CLO2	To **study** the process management and the **concept** of Deadlock and clear his/her knowledge With Memory Management **techniques.**	1 Remembering 2 Understanding 3 Applying,
CLO3	To **understand** whole input/output management and distributed operating system architecture	2 Understanding,
CLO4	To **understand** the Concepts of Inter Process Communication and Classical IPC Problems.	2 Understanding,
CLO5	To **study** the Input/output and File Management **techniques.**	1 Remembering 2 Understanding
CLO6	Experiment **basic** management of processes, files and Directory using Linux system calls.	3 Applying,

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Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Outcomes(POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1		M	L	M		M	H	L	M		M		H	M
CLO2	M	L			H	L		L		M	L	L	M	M
CLO3		L	M		M	M		L	M	M		L	M	L
CLO4	L		M	L	M		M		L		L		M	M
CLO5	M	L		M	L			M		L		L	M	L
CLO6	M		M		L	M			M	M		L	L	M

H:High, M:Medium, L:Low