FACULTY OF COMPUTER SCIENCE

Master of Computer Application (Integrated) (Sem-II)

In Effect from Academic Year 2023-24

Branch Name:	IMCA
Program Code:	CS301
Course Name:	OPERATING SYSTEM
Course Code:	1CS3010204T
Pre-requisite Course:	Basic knowledge of Computer Software and Hardware, Knowledge of Programming language like C.

Course Objective:
1. To understand of the Basic of operating system,
2. To understand the concept of process, concurrency,
3. To understand the concept of inter Process Communication.
4. To understand concept of deadlock, Memory Management, Input/output and File Management.

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, Data structures, Processes and Threads, Process State, Uni-Processor Scheduling: Scheduling, Types of Scheduling, Scheduling Algorithms.	12	25
2	**Inter Process Communication(IPC) :** Need of IPC, Concurrency, Race conditions, Critical Section, Mutual Exclusion Problem, Solution Approaches, Algorithmic 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	**Memory Management :** Memory Management Requirements, Memory Partitioning, Multiprogramming With Fixed partitions **Paging:** Principle Of Operation, Page Allocation, H/W Support For Paging, Segmentation, Swapping.	12	25

4	**Input/output and Files :** I/O Management and Disk Scheduling: I/O Devices, Organization of the I/O Function, OS Design Issues, I/O Buffering, Disk Scheduling, RAID, Disk Cache. **File Management :** Overview, File Organization, File Directories, File Sharing, Record Blocking, Secondary Storage	12	25

Text Books:

1. Operating System Concepts – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 8th edition, Wiley-India, 2009
2. Mordern Operating Systems – Andrew S. Tanenbaum, 3rd Edition, PHI
3. Operating Systems: A Spiral Approach – Elmasri, Carrick, Levine, TMH Edition

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.

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	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 3 Applying,
CLO6	To Study about Modern Operating system with use of Modern operating system techniques	2 Understanding,

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Out comes(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