COURSE CODE	COURSE TITLE	L	T	P	C
1151CS108	OPERATING SYSTEMS	3	0	0	3

Course Category: Program Core

A. Preamble :

In this course will be discussing about address spaces, system call interface, process/threads, inter process communication, deadlock, scheduling, main memory, virtual memory and file systems.

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1151CS102	Data Structures

C. Related Courses:

Sl. No	Course Code	Course Name
1	1151CS110	Computer Organization and Architecture
2	1151CS105	System Software

D. Course Outcomes :

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
CO1	Explain the operating system program, structures and operations with system calls	K2
CO2	Apply the process management concept for real time problems.	K3
CO3	Illustrate CPU scheduling algorithms and to handle the deadlock for the given situation.	K2
CO4	Explain the concepts of various memory management techniques.	K2
CO5	Summarize the storage concepts of disk and file.	K2

E. Correlation of COs with POs :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS03
CO1	L	M	M											L	L
CO2	L	H	M	M	M		L	M	L		L	M	M	H	H
CO3	L	H	M	M	L				L				M	H	H
CO4	L	M	M	M	L			M				L	M	M	M
CO5	L	M	M	L		L						L		M	M

H- High; M-Medium; L-Low

F. Course Content:

UNIT I OPERATING SYSTEMS OVERVIEW L – 9

Operating system overview: Objectives – functions - Computer System Organization-Operating System Structure - Operating System Operations- System Calls, System Programs.

UNIT II PROCESS MANAGEMENT L – 9

Processes: Process Concept - Process Scheduling - Operations on Processes – Inter process Communication. Process Synchronization: The Critical-Section Problem - Semaphores - Classic Problems of Synchronization – Monitors. Case Study: Windows 10 operating system

UNIT III SCHEDULING AND DEADLOCK MANAGEMENT L – 9

CPU Scheduling: Scheduling Criteria - Scheduling Algorithms. Deadlocks: Deadlock Characterization - Methods for Handling Deadlocks - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock. Case Study: MAC operating system

UNIT IV STORAGE MANAGEMENT L – 9

Main Memory: Swapping - Contiguous Memory Allocation, Segmentation, Paging. Virtual Memory: Demand Paging - Page Replacement - Allocation of Frames - Thrashing. Case Study: Android operating system

UNIT V STORAGE STRUCTURE L – 9

Mass Storage Structure: Disk Structure - Disk Scheduling - Disk Management. File-System Interface: File Concepts, Directory Structure - File Sharing – Protection. File System. Case Study: Linux operating system

TOTAL : 45 Periods

G. Learning Resources

i. Text Books:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", 9th Edition, John Wiley and Sons Inc., 2012.
2. Richard Petersen, "Linux: The Complete Reference", 6th Edition, Tata McGraw-Hill, 2008.

ii .Reference Books:

1. Andrew S. Tanenbaum, "Modern Operating Systems", 4th Edition, Prentice Hall, Wesley, 2014.
2. William Stallings, "Operating Systems – Internals and Design Principles", 7th Edition, Prentice Hall, 2011.
3. Harvey M. Deitel, "Operating Systems", 7th Edition, Prentice Hall, 2003.
4. D M Dhamdhere, "Operating Systems: A Concept-Based Approach", 2nd Edition, Tata McGraw-Hill Education, 2007.
5. Charles Crowley, "Operating Systems: A Design-Oriented Approach", Tata McGraw Hill Education", 1996.

iii. Online Resources:

1. http://www.tutorialspoint.com/operating_system/
2. http://www.mu.ac.in/myweb_test/MCA%20study%20material/OS%20- %20PDF.pdf
3. http://codex.cs.yale.edu/avi/os-book/OS8/os8c/slide-dir/PDF-dir/ch2.pdf

http://www.freebookcentre.net/CompuScience/Free-Operating-Systems-Books-Download.html