COURSE CODE	COURSE TITLE	L	T	P	C
1151IT105	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, memory, virtual memory, file systems.

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150CS201	Problem Solving using C
2	1151IT103	Computer Organization and Digital Design

C. Related Courses:

Sl. No	Course Code	Course Name
1	1152IT114	Unix and Shell Programming
2	1152IT122	Open Source Computing
3	1152IT112	Virtualization Technologies
4	1152IT120	Distributed Computing

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	Analyze the process management concept for the given situation.	K3
CO3	Handle the deadlock and get knowledge about CPU scheduling.	K3
CO4	Explain the different storage management for the given situation.	K2
CO5	Explain the mass storage structure and file system Interface.	K2

E. Correlation of COs with POs :

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

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.

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