

MAJOR SSC-III			
B. Sc (Information Technology)		Semester III	
Course Name: Operating systems		Course Code:	
Periods per week (1 Period is 60 minutes)		2	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2	50
	Internal		

Course Objectives:	
CO1: Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.	
CO2: Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.	
CO3: Analyze memory management techniques, concepts of virtual memory and disk scheduling.	
CO4: Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.	
CO5: Ability to apply CPU scheduling algorithms to manage tasks.	
CO6: Initiation into the process of applying memory management methods and allocation policies.	
CO7: Knowledge of methods of prevention and recovery from a system deadlock.	

Course Outcomes:
Learners will be able to
1. Understand the role of Operating System in the Computer System.
2. Use the different types of Operating System and their services.
3. Understand and Configure process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.

4.To distinguish among different operating systems and their services.
5. Apply virtual memory concepts.
6. Effectively use and manage secondary memory.
7. To implement system calls in linux.
8. To understand the different types of file management techniques and to differentiate among the different scheduling algorithms

UNIT	DETAILS
I	Operating System Overview: Introduction, , historical evolution of operating systems, ,Different Types of Operating System, Functions of the Operating System, Modern Operating Systems, Windows , Linux, Unix, Windows Commands and Linux Commands.
II	Threads, Concurrency: Process Definition, Process States, Foreground Processes, Background Processes, Mutual Exclusion, Process Synchronization, Different commands for Process management in Linux, Threads, Internal structure of thread, System Calls.
III	Concurrency: Deadlock and Starvation, Memory: Memory Management, Virtual Memory.
IV	Scheduling: CPU Scheduling and Real Time Scheduling.
V	Device and file management: Disk Scheduling, File management techniques, Case study of Linux, Unix and Window.

Suggested List of Practical's

1.	Installation and Configuration of virtual machine
a.	Installation of virtual machine software.
b.	Installation of Windows OS
c.	Installation of Linux OS
2.	Windows (DOS) Commands
a.	Date, time, prompt, md, cd, rd, and path.
b.	Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.
c.	Diskcomp, diskcopy, diskpart, doskey, echo
d.	Edit, fc, find, rename, set, type, ver
3.	Basic Linux Commands
a.	pwd ,cd, ls, absolute and relative paths,mkdir,rmdir
b.	File, touch, rm, cp, mv, rename, head, tail.
c.	cat , tac , more ,less, strings, chmod,date,cal,grep
d.	uptime,find,locate
4.	Process management and user related commands in linux
a.	ps,top,kill,pkill,bg,fg
b.	w, whoami,uname,man,df,du,free,whereis,which
5.	Working with Linux Text editors
a.	Gedit
b.	Vi editor: Command mode and Insert Mode
c.	Nano editor
d.	Pico editor
6.	Running C/C++/Python programs in Linux
7.	Introduction to Linux Shell Scripting
a.	Basic operators
b.	Decision Making
8.	Implementing Loops, regular expressions, command line arguments and Special variables.
9.	Implementation of System Calls.
10.	To implement CPU Scheduling algorithms.

11.	Linux shell script to perform different file operations.
a.	Reading the contents of the file.
b.	Counting characters, words and lines in a file.
c.	Display file contents.
d.	Frequency of a particular word in a file.

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Operating Systems – Internals and Design Principles	William Stallings	Pearson	9th	2009
2.	Operating System Concepts	Abraham Silberschatz, Peter B. Galvineg Gagne	Wiley	9th	2016
3.	Operating Systems	Godbole and Kahate	McGraw Hill	3rd	2009
4.	Systems Programming and Operating Systems	DhamDhere	McGraw Hill	2 nd	2009
5.	Linux Programming	Neil Mathew, Richard Stones	Wiley	4 th	2012

