

NIRMA UNIVERSITY

Institute:	Institute of International Study
Name of Programme:	Bachelor of Science (Computer Science and Engineering) [2+2 Dual Degree]
Faculty	Faculty of Technology & Engineering
Course Code:	2CS506
Course Title:	Operating Systems
Course Type:	Core
Year of Introduction:	2023-24

L	T	Practical Component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLO):

At the end of the course, students will be able to -

1. illustrate basic components and services of operating systems (BL2)
2. analyse the mechanism of operating systems to handle I/O devices and file management (BL4)
3. evaluate the mechanism of operating systems to handle processes and memory (BL5)
4. develop programmes using operating system interface (BL6)

Syllabus:

Total Teaching hours: 30

Unit	Syllabus	Teaching hours
Unit-I	Introduction to Operating System: Operating system services, Operating system objectives and functions, types of operating system	03
Unit-II	Process Management: Process states, process description, process control, process control block, scheduling algorithms, performance evaluation of the algorithms	08
Unit-III	Threads and Concurrency: Threads, Mutual exclusion, inter-process communication, deadlock	07
Unit-IV	Memory Management: Memory management requirements, partitioning, paging, segmentation, virtual memory	08
Unit-V	I/O Management and Files: disk scheduling, RAID, file management	04

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents

- Suggested Readings/References:**
1. A.S.Tannenbaum, Modern Operating Systems, TMH Publications.
 2. William Stallings, Operating Systems, PHI.
 3. Silberschiltz, Galvin and Greg Gange, Operating System, Willey India.
 4. Peterson, Operating System Concepts, Addition-Wesley Longman Publishing Co.
 5. Milan Milenkovic, Operating System Design & Concepts, Mc Graw Hill.
 6. Sumitabha Das, UNIX : Concepts and Applications, McGraw Hill Education
 7. Yashwant Kanetkar, UNIX Shell Programming, BPB Publications



Suggested List of Experiments:	Sr. No.	Title	Hours
	1	a) Getting acquainted with basic UNIX commands. b) Getting acquainted with UNIX filters.	04
	2	Write a shell script for performing the functions of a basic calculator. (Using decision-making, case-control structure, and bc command).	02
	3	a) Write a shell script to compare the contents of two files. b) Write a shell script to generate all the combinations of 1, 2 and 3.	02
	4	(a) Write a shell script to keep on accepting lines of text and write the text into a data file until the user inputs "end". The script should count the number of lines input and display them. (b) Write a shell script which receives two filenames as arguments and compare two files and delete the second file if both files are same	02
	5	Write a shell script that imitates head and tail commands (without using head and tail commands).	02
	6	a) Write a shell script to delete all the lines containing the word entered by the user in the files supplied as arguments to this shell script. b) Write a shell script to concatenate all given file into a single file.	02
	7	Write a shell script for implementing directory management.	04
	8	Write a shell script for performing basic functions related to DBMS.	04
	9	Write a C program to implement a system call using the fork () and Exec () function.	04
	10	Write a C program to implement grep command.	04
Suggested Case List:	-NA-		