

# Institute of Technology

**Name of Program:** BTech CSE / BTech CSE-MBA / BTech AI&ML

**Course Type:** Core

**Semester: IV, Academic Year: 2025-26, Term: EVEN**

<b>Course Code &amp; Name</b>	<b>:</b>	<b>2CS506CC25-Operating Systems</b>
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<b>Sr. No</b>	<b>Practical Title</b>	<b>Hours</b>	<b>CO</b>
1	a) Getting acquainted with basic UNIX commands. b) Getting acquainted with UNIX filters. (Appendix – 1)	4	3
2	a) Write a shell script for performing the functions of a basic calculator. (Using decision making and case control structure). b) Write a shell script to generate the series of number multiply by 2. c) Write a shell script to generate all the combinations of 1, 2 and 3.	2	3
3	a) Write a shell script to keep 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 to compare the contents of two files. Instruction: Use diff, cmp, and comm to compare the content of the file and print the output with different options.	2	3
4	Write a shell script for implementing the following directory management functions: <ul style="list-style-type: none"><li>• Navigation using Absolute/ Relative Pathnames</li><li>• Listing Directories</li><li>• Creating Directories</li><li>• Modifying Directories</li></ul>	4	3
5	Write a shell script to perform basic DBMS functions: <ul style="list-style-type: none"><li>• Insert data in the file</li><li>• View all records of the file</li><li>• Search data from the file</li><li>• Sort the file</li><li>• Modify data in the file</li><li>• Delete a record</li></ul>	4	3
6	a) Write a shell script to print the reverse of an input number (do not use REV command) b) Write a shell script to check whether a given input is a valid email ID and URL or not c) Write a shell script to concatenate all the given files into a single file.	2	3
7	a) Write a program to implement the 'cp' command of Unix in the C language. b) Write a program to implement the 'cat' command of Unix in the C language.	2	3
8	Write a C program to simulate page replacement algorithms <ul style="list-style-type: none"><li>(a) FIFO (b) LRU</li></ul> Note: Read input from the file and make it dynamic.	2	3
9	a) Write a C program to demonstrate fork() and exec() system calls.	4	3

	b) Write a C program to implement the CPU scheduling algorithm (FCFS). Take the number of processes as the user input, along with the arrival time and service time for each process. Calculate the Turn Around Time(TAT) and Waiting Time(WT) for each process. Also, calculate the average TAT and WT.		
10	a) Demonstrate the concept of thread using ‘pthread’ library. b) Write a C program to simulate the producer-consumer problem using semaphores.	4	3
11*	Create a bootable pen drive and install your favourite OS.	4	3

\*Optional

### Appendix - 1

- Unix System Organisation
- Types of shells
- Linux Commands

who	who am i	touch	cat
cp	rm	mv	ls
ln	chmod	umask	pwd
mkdir	rmdir	cd	bc
bc -l	expr	factor	logname
uname	tty	date	df
du	ulimit	cal	wc
sort	cut	grep	awk
head	pg	more	tail
pipe ()	tee	ps	kill
nice	read	echo	I/O redirection
top	Bg	fg	jobs

- **Shell programming**
- Shell variables
- Arithmetic in shell script
- Decision-making instructions

- File test
- String test
- Numerical test
- Logical operators
- Case-control structures
- Loop control structures
- Creating users and groups
- Assigning users to particular groups