Course code	Course Title	L	T	P	C
BITE303P	Operating Systems Lab	0	0	2	1
Pre-requisite	BITE201L, BITE201P	Syllabus version			
		1.0			

Course Objectives:

1. To simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
2. To provide necessary skills for developing and debugging programs in Linux environment.

Course Outcomes:

1. Able to build shell program for process and file system management with system calls.
2. Able to implement and analyze the performance of different algorithm of Operating Systems like CPU scheduling, page replacement policies & deadlock avoidance.
3. Able to understand gcc compiler, and the high-level structure of the Linux kernel both in concept and source code.

	Indicative Experiments	Hours
1.	Study of various Linux Shell Commands & Monitor the behaviour of operating system (kernel) using proc (process information pseudo-file system) utility and shell programming.	2 Hours
2.	Write programs using the following system calls of Unix/Linux operating system - fork, exec, getpid, exit, wait, stat, open, read, write, close, fcntl, seek, opendir, readdir.	2 Hours
3.	Implementation of Shared memory and Inter-process communication using pipes.	3 Hours
4.	Implement multi-threading using the Pthread library.	3 Hours
5.	Simulation of CPU scheduling algorithms- FCFS, SJF, Priority and Round Robin.	3 Hours
6.	Solutions to process synchronization problems using semaphore functions like sem_wait(), sem_post etc.	3 Hours
7.	Implement Banker's algorithm for Deadlock avoidance	3 Hours
8.	Implement the following memory allocation methods for fixed partition a. First Fit b. Worst Fit c. Best Fit	2 Hours
9.	Implement the following page replacement algorithms a. FIFO b. LRU c. LFU	3 Hours
10	Simulate the following disk scheduling algorithms a. FCFS b. SSTF c. SCAN	3 Hours
11.	Implement the following File allocation methods a. Sequential b. Indexed c. Linked	3 Hours
	Total Laboratory Hours	30 hours

Mode of Assessment: Continuous Assessments, Final Assessment Test

Recommended by Board of Studies	20-05-2022		
Approved by Academic Council	No. 66	Date	16-06-2022