

## **CSE325:OPERATING SYSTEMS LABORATORY**

L:0 T:0 P:2 Credits:1

**Course Outcomes:** Through this course students should be able to

CO1 :: Understand and Implement shell programming to do basic OS tasks.

CO2 :: Study various system calls in order to utilize them effectively.

CO3 :: Demonstrate various process management related tasks.

CO4 :: Develop multithreaded processes using pthread library.

CO5 :: Apply the various synchronization problems to ensure data consistency using mutex and semaphores.

CO6 :: Analyze different inter process communication strategies.

### **List of Practicals / Experiments:**

#### **Process creation and threading**

- Creating processes
- Creating Threads
- Process duplication using fork()
- Creating threads using pthread
- Environment variables
- Replacing process image using execvp

#### **Inter-process communication**

- Pipes, popen and pclose functions
- Stream pipes, passing file descriptors
- Shared memory
- Message passing
- Remote Procedure calls

#### **Introduction to Linux**

- Basic Linux Commands: ls, cat, man, cd, touch, cp, mv, rmdir, mkdir, rm, chmod, pwd
- System Calls: Read, Write, Open
- Lseek

#### **Synchronization**

- Synchronization with Mutexes
- Synchronization with semaphores
- Race Condition

#### **shell programming**

- variables
- standard input/output redirection
- shell arithmetic
- flow control and decision making

#### **File and directory management using system calls**

- File related system calls (open, read, write, lseek, close)

- Directory related system calls (opendir, readdir, closedir etc)

**Text Books:** 1. BEGINING LINUX PROGRAMMING by NEIL MATHEW & RICHARD STONES, WILEY

**References:** 1. OPERATING SYSTEM CONCEPTS by ABRAHAM SILBERSCHATZ, GALVIN, WILEY  
2. UNIX CONCEPTS AND APPLICATIONS by SUMITABHA DAS, Tata McGraw Hill, India