

## 3/4 B.Tech - FIRST SEMESTER

**IT5T1****UNIX****Credits: 3****Lecture: 3 Periods/week****Internal assessment: 30 marks****Practice/Interaction: 1Period/week****Semester end examination: 70 marks****Objectives:**

- To Use the UNIX environment efficiently and to analyze the basic Unix Shell utilities.
- To acquire knowledge on UNIX file system along with File and directory operations.
- To get familiar with UNIX Process management and signal management.

**Outcomes:**

Students will be able to

- Understand the structure of UNIX environment and its accessing using basic commands.
- Learn Shell programming and employ Shell Scripts.
- Understand the File structure, Directories and their associated system calls with examples.
- Gain knowledge on Unix Process.
- Understand the concept of signals and Inter process communication.

**Prerequisites**

C Programming.

**Syllabus:****Unit-I**

Introduction To Unix File System, Vi Editor, Basic Utilities, File Handling Utilities, Security And File Permissions, Process Utilities, Disk Utilities, Text Processing Utilities and Backup Utilities (Detailed Commands to be Covered are who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, unlink, chmod, ps, du, df, mount, umount, find, umask, unmask, ulimit, , w, finger, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, tar, gzip, cpio)

**Unit- II**

Working With The Bourne Shell: What Is Shell, Shell Responsibilities, Pipes and Input Redirection, Output Redirection, here Documents, The Shell as A Programming Language, Shell Meta Characters, Shell Variables, Shell Environment, Control Structures, Shell Script Examples.

**Unit-III**

Unix File structure, Directories, Files and Devices, System calls, Library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, octl, dup, dup2, system calls. File Handling System Calls using Standard I/O (fopen, fclose, fflush, fseek, fgetc, getchar, fputc, putc, putchar, fgets, gets), Directory handling system calls (opendir, readdir, closedir, rewinddir, seekdir, telldir)

**Unit-IV**

Unix process: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, System call interface for process management, (fork, exit, wait, waitpid, exec, system)

**Unit-V**

Signals: Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions. Introduction to Inter process communication: pipes, FIFOs

**Text Books:**

1. Unix and shell Programming- Behrouz A. Forouzan, Richard F. Gilberg.Thomson
2. Advanced Programming in Unix Environment- Richards Stevens

**Reference Books:**

1. Unix and Shell Programming - Yaswant Kanetkar
2. Advanced Unix Programming -NB Venkateswarlu,BS Publications, 2<sup>nd</sup> Edition

**e-Learning Resources:**

1. <http://nptel.ac.in/courses/106108101/>
2. <http://sites.harvard.edu/~lib215/lectures/>
3. <http://elearning.vtu.ac.in/CS36.html>
4. <http://www.doc.ic.ac.uk/~wjk/UnixIntro/>
5. <http://ptgmedia.pearsoncmg.com/images/9780321637734/samplepages/0321637739.pdf>