

# Basic Linux Usage and Administration

**Prerequisites:** Familiarity with using a computer and navigating file systems

**Duration:** 3 Days (8 Hrs/Day)

**Target Audience:** Non-developers, IT administrators, system administrators, and anyone looking to understand the fundamentals of Linux.

**Course Objective:** This course is designed for participants with little to no experience with Linux. It covers the core concepts, tools, and commands required to navigate and use a Linux system effectively. Participants will learn about the Linux filesystem, user and group management, basic shell commands, permissions, process management, and essential system administration tasks.

**Lab Requirement:** Koenig DC

## Module 1 - Introduction to Unix/Linux

Introduction to Unix and Linux

- Brief history of Unix/Linux
- Operating systems, UNIX flavours, UNIX features
- Unix market, OSS, GNU GPL, philosophy, distribution
- Linux features and architecture
- The Linux kernel

## Module 2 - Basic Linux Usage and Navigation

Logging in and out

Changing passwords

Introduction to Shells

Command line basics and file name completion

Basic commands ('whoami', 'date', 'uname', 'hostname')

On-line help and documentation ('man', 'info')

Keyboard Shortcuts and Navigation Efficiency

- Common keyboard shortcuts for command line productivity

**Lab:** Command line efficiently with keyboard shortcuts and basic commands

### **Module 3 - Working with Files, Directories, and the Linux Filesystem**

Files and Directories, Pathnames

Directory navigation, home directory

File manipulation commands ('cp', 'mv', 'rm')

Directory manipulation commands ('mkdir', 'rmdir')

Hidden files and viewing content ('ls -a')

Finding files ('grep', 'find', 'locate', 'whereis')

Piping and I/O redirection

Wildcard patterns and basic utilities ('sort', 'wc', 'head', 'tail')

Filesystem Concepts and Management

- Filesystem concepts, inodes
- Filesystem layout, FHS
- Hard and symbolic links
- Filesystem utilities ('mount', 'du', 'df')
- Archiving tools ('tar', 'gzip')
- Disk partitioning and management ('fdisk', 'gdisk', 'parted')

**Lab:** Practicing file and directory commands

**Lab:** Exploring filesystem structure, creating and managing links

**Lab:** Performing disk partitioning and archiving tasks

### **Module 4 - Users, Groups, and Permissions**

Users and groups concept

Understanding the super-user (root)

Assuming root privileges

User and group administration

Password Policies and Security

File Ownership and Permissions

- Setting permissions ('chmod', 'chown')

**Lab:** Creating, modifying, and deleting users and groups

**Lab:** Configuring password policies and performing security checks

## **Module 5 - Process Management and Scheduling**

Monitoring processes ('ps', 'top')

Managing background processes and priorities ('nice', 'renice')

Signals and process termination ('kill')

Process Scheduling and Job Management

- Understanding 'cron' jobs, 'at' command, and job scheduling

Concurrent Programming Concepts

- Overview of concurrency and its challenges

**Lab:** Monitoring and managing processes

**Lab:** Creating scheduled tasks with 'cron' and 'at'