

**Linux Fundamentals**

**Course Number:** LNX-114  
**Duration:** 4 days

**Overview**

This Linux training class teaches attendees the fundamental tools and concepts of Linux and Unix and how to use the command line. Beginners develop a solid foundation in Linux, while advanced users discover patterns and fill in gaps in their knowledge.

**Prerequisites**

All students should be comfortable with computers. No familiarity with Linux or other Unix operating systems is required.

**Materials**

All Linux training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computer for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will be fine.

**Objectives**

* Manipulate files
* Master basic and advanced filesystem features
* Use I/O redirection and pipes to control the follow of data
* Search and manipulate text using regular expressions
* Manage jobs and processes
* Master use the standard Linux text editors
* Automate tasks with shell scripts
* Manage software packages

**Outline**

* Introduction: What is Linux?
  + Unix and its Design Principles
  + FSF and GNU
  + The Linux Kernel
  + Linux Kernel and Versioning
  + Linux Distribution types and families
* Login and Exploration
  + Logging In
  + Running Programs
  + Interacting with Command Line
  + Desktop Graphical Environments
  + Gathering Login Session Info
  + Gathering System Info
  + Uptime & w
  + Using the root account
  + Switching User Contexts (sudo)
  + Help from Commands and Documentation (man,info,pinfo)
  + Getting Help Within the Graphical Desktop (yelp)
* The Linux Filesystem
  + Filesystem Support
  + Linux Filesystem Features
  + Filesystem Hierarchy Standard
  + Navigating the Filesystem (ls,find,which,whereis)
  + Displaying Directory Contents
  + Filesystem Structures
  + Determining Disk Usage With df
  + Determining Disk Usage (GUI)
  + File Ownership
  + Default Group Ownership
  + File and Directory Permissions
  + File Creation Permissions with umask
  + SUID and SGID on files
  + SGID and Sticky Bit on Directories
  + Changing File Permissions
  + User Private Group Scheme
* Manipulating Files
  + Directory Manipulation
  + File Manipulation
  + Deleting and Creating Files
  + Nautilus Graphical File Manager
  + Hard and Symbolic Links
  + Displaying Files contents
  + Producing File Statistics
  + Searching the Filesystem (find, locate)
* Shell Basics
  + Role of Command Shell
  + Communication Channels
  + File Redirection
  + Piping Commands Together
  + Filename Matching
  + File Globbing and Wildcard Patterns
  + Brace Expansion
  + Shell and Environment Variables
  + Key Environment Variables
  + General Quoting Rules
  + Nesting Commands
* Archiving and Compression
  + Archives with tar
  + The gzip Compression Utility
* Text Processing
  + Searching Inside Files
  + The Streaming Editor
  + Text Processing with  awk/nawk/gawk
  + Replacing Text Characters
  + Text Sorting
  + Extracting Columns of Text
  + Combining Files and Merging Text
  + Comparing File content
* Regular Expressions
  + Regular Expression Overview
  + (Standard) Regular Expressions
* Text Editing
  + Text Editing
  + Nano
  + gedit
  + vi and Vim
* Messaging
  + Electronic Mail (mail, mailx)
  + Sending Email with sendmail
  + broadcasting with wall and mesg
* Command Shells
  + Shells
  + Identifying the Shell
  + Changing the Shell
  + Configuration Files
  + Script Execution
  + Shell Prompts
  + Bash: Bourne-Again Shell
  + Bash: Configuration Files
  + Bash: Command Line History
  + Bash: Command Editing
  + Bash: Command Completion
  + Bash: "shortcuts"
  + Bash: prompt
  + Setting Resource Limits via ulimit
* Introduction to Shell Scripting
  + Shell Scripts Features and Layout
  + Shell Script Template
  + Positional Parameters
  + Input & Output
  + Doing Math
  + Exit Status
  + Conditional Statements
  + Flow Control: case
  + for, while and until Loops
* Process Management and Job Control
  + What is a Process?
  + Process Lifecycle
  + Process States
  + Viewing Processes
  + Signals
  + Tools to Send Signals
  + create a daemon process with nohup
  + Managing Processes
  + Job Control Overview and Commands
* At and Cron
  + Automating Tasks
  + at/batch
  + cron
  + The crontab Command
  + crontab Format
  + /etc/cron.\*/ Directories
* Managing Software
  + Downloading files with wget and curl
  + Managing Software Dependencies
  + Using the yum/dnf command
  + Using yum history
  + Configuring Yum
  + Yum Repositories
* The Secure Shell (SSH)
  + Secure Shell
  + OpenSSH Client & Server Configuration
  + Accessing Remote Shells
  + Transferring Files
  + SSH Key Management
* Mounting Filesystems
  + Filesystems Concept Review
  + Mounting Filesystems
  + NFS
  + SMB
  + Filesystem Table (/etc/fstab)
  + AutoFS
* Printing
  + Common UNIX Printing System (CUPS)
  + Defining a Printer
  + Standard Print Commands
* Conclusion