

Track F (System Administrations)

Course 15. Linux System Administration

Sl. No.	Modules	Hours
1	Basic of Linux Administration	50
2	Fundamentals of Networking	40
3	System Administration	130
4	Management Development Program	60
5	Project	40
	Total	320

Eligibility: Any Engineering /Science graduate with mathematics up to 10+2 level

Prerequisite: Candidate should have basic knowledge of computer, Operating system and networking fundamentals with logical approach.

Course Focus: The objective of this course is to provide the student with an expertise in OS Administration.

Detailed Syllabus

Basic of Linux Administration (50 Hours)

- Introducing Linux
- Installing Linux
- History
- Distributions
- Devices and Drives in Linux
- File system Hierarchy
- Components: Kernel, Distribution, XFree86, Sawfish, Gnome.
- GNOME Basics. Changing the desktop background, adding menu items, plugins.
- Changing the screen resolution
- Evolution - the default e-mail client in Fedora.
- Mozilla - Web browser
- OpenOffice - Productivity tools. Word processor, spreadsheet, presentation software.
- gaim - Chat application
- XScreensaver
- How user preferences are stored in your home directory
- Updating your system with up2date / yum.
- How to restart X11: Ctrl-Alt-Backspace
- The command-line (shells, tab completion, cd, ls)
- file management: cd, df, find, locate
- nano, the text editor that replaces pico.
- man pages - the help system
- ssh - secure text-based connectivity to other machines. Demonstrate X-Forwarding.
- Handling compressed archives with zip and tar.
- GNU screen - The ability to resume command-line sessions from anywhere.
- Adding users, groups

- su - the obsoleted way to become the root user.
- sudo - the modern way to run processes as another user.
- Changing users' passwords with the passwd command.
- Printing with CUPS.
- Installing new software with yum (if Fedora) or YaST (if SUSE)
- Installing new software with rpm
- Installing webmin for easy web based systems administration

Fundamentals of Networking (40 Hours)

- Introduction to computer Networking
- Categories of Networking according to size (LAN,WAN,DAN,MAN)
- Types of connections
- Network classifications (Wired, Wireless)
- Network Hardware Devices (Hub, Switch, Modem, Router, Bridge, firewall etc)
- TCP/IP overview
- IP addressing, IPv6, Sub-netting, super-netting
- Planning and Implementing
- Architecture of Internet and intranet
- Port Security
- Spanning tree Protocol
- Troubleshooting

System Administration (130 Hours)

- logfiles. Using tail -f to watch /var/log/messages
- Configuring Kerberos authentication
- Explaining file permissions, including setuid.
- How to enable and disable services
- ntp - Setting up time synchronization
- Setting DNS settings by editing /etc/resolv.conf
- Changing XFree86 settings in /etc/XFree86/XFree86.conf
- **Apache and MySQL administration**
 - About the Apache webserver.
 - About the MySQL database engine.
 - About the PHP scripting language.
 - Enabling the Apache with PHP and MySQL services
 - Using MySQL Administrator
 - PHPMyAdmin - web based administration and query console for MySQL.
 - Adding a MySQL user in phpmyadmin
 - Installing WordPress - a popular blogging software that uses MySQL.
 - Installing Coppermine - a popular photo gallery software that uses MySQL.
- **Windows Integration**
 - Connecting to your Linux machine from Windows using PuTTY and WinSCP.
 - WINE - free Windows API compatibility layer, for running Windows applications in Linux. We will use mIRC as a sample application.
 - Samba basics.
 - Configuring Samba to authenticate using ADS
 - rdesktop - Windows Terminal Server Client.

- smbclient - an FTP-like client for SMB shares
- smbmount - Mounting samba shares to a local directory (explain mount)
- smb4k

- **Automation**
 - cut - cutting out the good parts of your input
 - sort - sorting files
 - uniq - finding the unique lines in a set of input
 - sed - searching and replacing
 - tail, head
 - find -exec - running a command on a large set of files
 - Writing a shell script
 - Scheduling tasks with cron.

- **System Administration**
 - Mounting disks
 - Killing processes with kill
 - Fetching files with wget
 - Compiling software: configure, make, make install, fstab
 - Reviewing find and du for finding out where your disk space went to.
 - Single user mode
 - X: Networking Tools
 - ping - check if a host is online
 - traceroute - see your hops between hosts
 - telnet - diagnostics
 - nmap - seeing what ports are open on a host
 - xinetd - the "internet super server". TCP/IP service manager.
 - lsof - list open ports and files
 - ethereal - Packet Sniffer Extraordinaire.

- **Customizing your user environment**
 - symbolic links
 - The Z Shell
 - aliases, including -s types in zsh.
 - variables
 - PATH
 - prompts
 - Terminal transparency
 - adding things to your X startup

Management Development Program

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview

Project