

COURSE NAME: Linux Server Administration

Total T-L Hours= 90

T-L hours/week = 4+2

Total Marks = 150

Internal Marks = 50 (PT-1:10, PT-2:10, TW:10, Practical(internal): 20)

External Theory Marks = 70

External Practical Marks = 30

Number of CO's = 4, Number of LO's = 14

Course Outcome 1	Understand basics of Linux Operating System and File System concepts	Teach Hrs	Marks
Learning Outcome 1	Discuss the history and development of Linux Operating System.	6	10
Contents	Basic Concepts of Operating Systems, Kernel, shell. Unix Operating System, Understanding Open Source, Linux Origins, Distributions, Linux Principles, Linux vs windows.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Learning Outcome 2	Understand Linux usages and basic linux commands	6	10
Contents	Logging in to a Linux System, Switching between virtual consoles and the graphical environment, changing your password, the root user, Editing text files, Getting Help, The whatis command, The – help Option. Some basic commands: echo, type, bc, cal, date, cat, cd, chgrp, chmod, cp, file, find, grep, egrep, fgrep, head, just, lpq, lpr, lprm, cancel, ls, ls-l, mkdir, more, page, mv, pwd, passwd, rm, rmdir, tail, touch.		
Method of Assessment	PROGRESSIVE TEST -1 (INTERNAL)		
Learning Outcome 3	Discuss File and Directory related commands	6	10
Contents	Linux File Hierarchy Concepts, Some Important Directories, Current Working Directory, Absolute and Relative Pathnames, command related to files and directory, Changing Directories, Listing Directory Contents, Copying, Moving, Renaming, Creating and Removing Files & Directories, Determining File Content. Hard Links, Symbolic (or soft) Links, The Seven Fundamental File types, Archiving Files, Compressing, Creating, Listing and Extracting File.		
Method of Assessment	PROGRESSIVE TEST -2 (INTERNAL)		
Learning Outcome 4	Understand Linux File System Management	6	10
Contents	Creation of Partition and File Systems, I-nodes, EXT2, EXT3 & EXT4 File Systems, converting Ext2 to Ext3 file systems, reverting back from Ext3 to Ext2 file systems, Checking Free Space, fdisk, mount, umount commands, working with etc/fstabe.		
Method of Assessment	TERM WORK (INTERNAL)		
Course Outcome 2	Implement Linux OS based server configuration, management and administration.	Teach Hrs	Marks
Learning Outcome 5	Installing Linux as a server	6	20
Contents	Hardware Requirements, Methods of installation, Installing Fedora, Installing Ubuntu, Installing RedHat.		
Method of Assessment	PRACTICAL (INTERNAL)		

Learning Outcome 6	Describe Software Package Management.	6	10
Contents	Securing single-user mode (su login), Shutting down and rebooting the system, RPM Package Manager, Installing and Removing Software, rpm Queries, rpm Verification, about yum, using yum, searching packages/files, configuring local Repositories, start/stop/check the status of network services, Configure networking and hostname resolution statically or dynamically		
Method of Assessment	PRACTICAL (EXTERNAL)		
Learning Outcome 7	Execute commands to monitor system processes and resources	8	10
Contents	Processes: basic concepts, the properties of a process, Parent processes and child processes, killing processes and sending signals to a process (kill, killall, xkill), Finding Processes, Scheduling Priority, Altering Scheduling Priority, Interactive Process management tools, Job Control, scheduling a Process to execute later, Crontab, File format, Different run levels. Identify CPU/memory intensive processes.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Course Outcome 3	Explain the role of system administration, various utilities and networking services in Linux.	Teach Hrs	Marks
Learning Outcome 8	Identify the functions of system administration	6	10
Contents	Common Administrative tasks, identifying administrative files – configuration and log files. Role of system administrator, managing user accounts–adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance, file security, password and permissions, becoming super user using su.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Learning Outcome 9	Understand the booting of Kernel and system information.	6	10
Contents	Boot Loader-GRUB, LILO, Kernel and source code of the kernel, Bootstrapping, Kernel configuration, the init Process, Enabling and Disabling services. Host name, managing drives and media, creating and editing disk partitions & sizes, backup and restore files, disk usage analyzer, Utility in GUI.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Learning Outcome 10	Explain network configuration	6	10
Contents	Setting up and managing computer network, Modules and Network Interfaces, Network Device Configuration utilities, IP aliasing, Setting Up NIC at Boot Time, Managing Routes, Simple Usage, Displaying Routes, Static and Dynamic Routing.		
Method of Assessment	PRACTICAL (EXTERNAL)		
Learning Outcome 11	Explain network services	6	10
Contents	Server –side setup, configuration, and basic administration of common networking services: Samba, DNS, NIS, Apache, SMB, DHCP, Sendmail, FTP Other common services: tftp, pppd, proxy.		
Method of Assessment	End Sem Theory (EXTERNAL)		

Course Outcome 4	Apply Linux networking concept to setup a small network.	Teach Hrs	Marks
Learning Outcome 12	Understand networking services: Domain Name System (DNS) and File Transfer Protocol	6	10
Contents	Working principal of DNS, Domain and Host Naming Convention, Installation of DNS Server, DNS Toolbox: -host, dig, nslookup, whois, nsupdate, configuring the clients, FTP: vsftpd, starting and testing FTP server.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Learning Outcome 13	Understanding Apache Server and Internet Services	8	10
Contents	HTTP protocol, starting Apache at boot time, Testing the installation, Configuring Apache server, Troubleshooting Apache. Mail Server: SMPT, POP and IMAP basics and settings. Secure Shell: Public key cryptography, OpenSSH and OpenBSD, Network File Systems (NFS), Network Information Services (NIS) SAMBA server.		
Method of Assessment	End Sem Theory (EXTERNAL)		
Learning Outcome 14	Setup a small network using networking services	8	10
Contents	Setup a small network in your lab and connect to that network. Implement Internet Protocol Service. ifconfig, ping, traceroute, netstat, hostname, nslookup, route, host, arp, iwconfig, etc.		
Method of Assessment	PRACTICAL (EXTERNAL)		