COURSE TITLE	**LINUX ADMINISTRATION**
COURSE CODE	**05CA0303**
COURSE CREDITS	**4**

Objective:

1. Understand the concepts and procedures involved in managing disk partitions in Linux systems.
2. Describe the configuration and management of FTP (File Transfer Protocol) services in a Linux environment
3. Explain the setup and administration of NFS (Network File System) and YUM (Yellow dog Updater Modified) servers for efficient resource sharing and package management.

Course Outcomes: After completion of this course, student will be able to:

1. Describe the basic concepts, features, and components of Linux operating systems and their role in system administration
2. Configure and manage file permissions using ACL (Access Control Lists), and administer SELinux and firewalls for system security
3. Demonstrate the process of creating, managing, and troubleshooting disk partitions in Linux environments

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Installation** Installation of Red hat Enterprise Linux in Virtual Platform, Process Priority and " nice" Concepts, Managing Priority of Linux Processes, Schedule task using at & crontab, Regular Expressions with grep, Matching Text with grep	10
2	**ACL, SELINUX & FIREWALL ADMINISTRATION** Controlling Access to Files with Access Control Lists (ACLs), POSIX Access Control Lists (ACLs), Managing SELinux Security, Enabling and Monitoring Security Enhanced Linux	10
3	**MANAGING OF PARTITIONS IN LINUX** Adding Disks, Partitions, and File Systems to a Linux System, Managing Swap Space, Managing Logical Volume Management (LVM), Extending Logical Volumes	15

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Contents : Unit	Topics	Contact Hours
4	**INTRODUCTION OF SERVERS & PASSWORD BREAK** Installation of FTP server, Installation of YUM server, Installation of NFS server, Install OS using Kickstart	10
Total Hours		**45**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Unit 1** Install Red Hat Enterprise Linux (RHEL) on a virtual machine, Demonstrate how to check and modify process priority using nice and renice commands, Schedule tasks using at and crontab, and verify their execution, Use grep with regular expressions to filter text in log files, Implement different text-matching patterns using grep, sed, and awk	15
2	**Unit 2** Configure Access Control Lists (ACLs) to manage file permissions for multiple users, Demonstrate POSIX ACLs by setting specific user permissions on a directory, Enable and manage SELinux policies, enforcing security contexts, Monitor SELinux logs and troubleshoot security issues, Configure firewalld to allow and block specific ports/services	15
3	**Unit 3** Add a new disk and create partitions using fdisk and parted, Format and mount a partition with ext4, xfs, and btrfs file systems, Configure and manage swap space in Linux, Implement Logical Volume Management (LVM) and create volume groups, Extend and shrink a logical volume dynamically	15
4	**Unit 4** Install and configure an FTP server and verify file transfers, Set up a YUM repository server and install packages using YUM, Configure and test an NFS server for file sharing between Linux systems, Use Kickstart to automate the installation of Linux, Reset the root password using the Linux rescue model	15
Total Hours		**60**

Textbook :

1 Linux Administration: A Beginner's Guide, Wale Soyinka, McGraw-Hill, 2020

2 UNIX and Linux System Administration Handbook, Evi Nemeth et al, Pearson Education, 2017

References:

1 The Linux Command Line, The Linux Command Line, William E. Shotts, No Starch Press, 2019

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References:

2 Red Hat RHCSA/RHCE 8 Cert Guide, Red Hat RHCSA/RHCE 8 Cert Guide, Sander van Vugt, Pearson IT, 2020

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

1 Board Work
2 PPT
3 Demo

Supplementary Resources:

1 https://www.geeksforgeeks.org/linux-tutorial/

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