Program :	**Diploma in Computer Engineering**	
Course Code : **6131B**		Course Title: **Server Administration**
Semester : **6**		Credits: **4**
Course Category: **Program Elective**		
Periods per week: **4 (L:4 T:0 P:0)**		Periods per semester: **60**

Course Objectives:

- Provide knowledge on advanced system administration concepts
- Introduce installation and configuration of Internet and Intranet Services

Course Prerequisites:

Topic	Course code	Course name	Semester
Basic System Administration commands		System Administration Lab	5
Operating System Concepts		Operating System	5

Course Outcomes :

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Illustrate the basic system administration in Linux	14	Applying
CO2	Demonstrate Single Host Administration	15	Applying
CO3	Illustrate the Networking in Linux	15	Applying
CO4	Illustrate the installation of Intranet Services	14	Applying
	Series Test	2	

CO – PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						
CO2	3						
CO3	3						
CO4	3						

3-Strongly mapped,   2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Illustrate the basic system administration in Linux**		
M1.01	Explain the technical summary of Linux Operating Systems.	2	Understanding.
M1.02	Illustrate the installation of Linux in a Server Configuration.	2	Understanding
M1.03	Demonstrate the Power, Control, and Flexibility of Linux command line.	6	Applying
M1.04	Illustrate the management of software and applications in Linux	2	Applying.
M1.05	Illustrate the concepts of Linux Kernel	2	Applying.

Contents:

Linux Operating System: Distributions, Open source software and GNU, GNU Public License, Advantages of Open Source Software, Difference between Linux and Windows.

Linux Server installation: Hardware and Environmental Considerations, Server Design, Methods of Installation.

Command Line: Introduction to BASH, Command Line Shortcuts, Development Tools, Files - File Types - File Ownership - and File Permissions, File Management and Manipulations, Editors, Miscellaneous Tools.

Managing Software: Debian package management system, Software Package Management in Ubuntu, Compile and install GNU software

Linux Kernel: Kernel, Kernel Source, Building and Patching Kernel

CO2	Demonstrate Single Host Administration		
M2.01	Illustrate the management of users and groups	3	Applying.

M2.02	Illustrate booting and shutting down the system.	3	Applying.
M2.03	Demonstrate File Management aspect of Linux System.	3	Applying.
M2.04	Illustrate Process Controlling in Linux	4	Understanding
M2.05	Explain Linux Syslog and Log files	2	Understanding
	Series Test – I	1	

Contents:

Managing Users and Groups: Normal & Super user - UID & GID, Becoming root- su and sudo, User information files – Command Line User Management - GUI User Managers – Users and Access Permissions – Create, modify and delete users and groups using useradd, groupadd, usermod, groupmod, userdel, groupdel.

Booting and Shutting down: Bootstrapping, Boot Loaders, GRUB – GRUB multi boot configuration, Booting single user mode with GRUB, Startup scripts, Rebooting and Shutting down.

File Systems : Makeup of File Systems, Mounting and Unmounting Local Disks, The /etc/fstab file, Using fsck.

Controlling Process: Components of Process, Process Life cycle, Signal, Kill and Killall, Process State, nice and renice, ps, top, The proc file system, strace, runaway process.

Linux Syslog and Log files: Linux log policies, Linux Log files, Syslog

CO3	**Illustrate the Networking in Linux**		
M3.01	Illustrate the network configuration in Linux	6	Applying
M3.02	Illustrate the configuration of FTP server, Apache Web Server and Secure Shell Server	9	Applying

Contents:

Network Configuration: Modules and Network Interfaces, Network Configuration Utilities, Example of using network configuration utilities, Managing Routes – Route configuration, Displaying routes, Configure a sample router, Choosing IP address by Linux, Hostname Configuration.

FTP Server: Mechanics of FTP, Installing and configuring vsftpd, starting and testing the FTP server, Customizing FTP Server.

Apache Server: Understanding HTTP, Installing Apache Server, Starting up and Shutting down Apache, Configuring Apache Server.

Secure Shell: Public key cryptography, ssh versions, installing ssh server, server startup and shutdown, sshd configuration file, using openssh

CO4	Illustrate the installation of Intranet Services		
M4.01	Illustrate the installation and configuration of NFS, Samba, DHCP Server	9	Understanding
M4.02	Illustrate the configuration of Printers	3	Understanding
M4.03	Illustrate the Backup Services	2	Understanding
	Series Test – II	1	

Contents:

NFS : Mechanics of NFS, Components of NFS, Enabling NFS in Ubuntu, Configuring NFS server and Client, Common uses of NFS.

Samba: Mechanics of Samba, installation and administration, mounting remote samba shares, Samba users, Authenticating against a windows server.

DHCP Server: Mechanics of DHCP, Installation and configuration of DHCP server and client.

Printing : Printing Technologies, CUPS system,Adding Printers, CUPS administration, Client side printing tools.

Backup : Evaluating Backup needs, Command line backup tools,

Text / Reference

T/R	Book Title/Author
T1	Wale Soyinka, **Linux Administration: A Beginner's Guide**, McGraw-Hill Education, 7th Ed.
R1	Evi Nemeth,Garth Snyder, **UNIX and Linux System Administration Handbook,** Addison-Wesley, 5th Ed.
R2	Raphaël Hertzog and Roland Mas, The Debian Administrator's Handbook

Online Resources

Sl.No	Website Link
1	https://www.tutorialspoint.com/linux_admin/index.htm
2	https://www.linode.com/docs/guides/linux-system-administration-basics/
3	https://www.linuxfoundation.org