

Lesson Plan

Subject: Linux and Shell Programming
Semester: II

Subject Code: MCA-20-22

S.No	Topic	No. of Lectures	CO Covered	Teaching Methodology
1	Introduction to Linux: History, Basic features, architecture, distributions, installation	1	CO1	PPT
2	Logging in / Logging out, Linux directory structure, basic file types	1		PPT
3	File System: Introduction to files, Organization, Assessing File systems, Structure (boot block, etc.)	2		Board + PPT
4	Basic Linux Commands: Directory and File-oriented commands	1		Board + PPT
5	File Permissions: chmod, umask, chgrp, groups, General purpose commands	1		Demonstration + PPT
6	Advanced Linux Commands: File access and manipulation	1		Demonstration + PPT
7	File management and Compression: Disk-related commands (dd, du, df, etc.)	1	CO2	PPT
8	Compressing and uncompressing files: tar, gzip, bzip2	1		Board + Book
9	Process Management: Process states, transitions, orphan and zombie processes	2		Board + Book
10	Handling processes: foreground, background jobs, using cron, crontab, at, batch	2		Board + Book
11	Changing process priority, killing processes, handling signals	1		Board + Book
12	System Calls: File-related system calls (open, read, write, close)	1		Board + Book
13	System Calls (contd.): Process-related system calls (fork, exec, wait, exit)	1		Demonstration+ Book + Board

14	System Administration: Booting and shutting down, understanding the Linux boot process	2	CO3	Demonstration +PPT + Board
15	File System Management: Creating, mounting, and unmounting file systems	2		Board + Book
16	User Account Management: Creating, modifying, and deleting user accounts and groups	1		Demonstration +Book + Board
17	Networking Commands: ping, nslookup, telnet, netstat, route, ftp, rlogin	1		Book + Board
18	Debugging in Linux: C language compiler, the make command, debugging with gdb	1		Board + Notes
19	Pipes and Filters: Introduction to pipes, connecting processes, redirecting input and output	1	CO4	Demonstration +Book
20	Filters (contd.): grep, egrep, fgrep, sort, uniq, more, pr, cut, paste, tr	1		Demonstration +Book + Board
21	Shell Programming: Introduction to shell scripting, types of shells (Bourne, Bash, C)	2		Board + Demonstration
22	Shell Variables: Creating and using shell variables, exporting variables	1		Board + Demonstration
23	Conditional Statements: if-else, case, loops (for, while, until)	1		Board + Demonstration
24	Shell Meta Characters and Escape Mechanisms: Using special characters in scripts	1		Board + Demonstration
25	Shell Functions: Creating and using functions, passing arguments, return values	2		Board + Demonstration
26	String handling and arrays in shell programming	2		Board + Demonstration
27	Command Line Arguments: Handling input parameters in shell scripts	2		Board + Demonstration
28	Automation with Shell Scripts: Writing scripts to automate system tasks (backups, monitoring)	2		Board + Demonstration
29	Review and Recap: Overview of key commands, scripts, and system administration tasks	2	All COs	Review Session