Faculty of Engineering & Technology
Bachelor of Technology (B. Tech)
(W. E. F.: 2023-24)

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Name of Faculty	:	Faculty of Engineering & Technology
Name of Program	:	Bachelor of Technology (B. Tech)
Course Code	:	2BCT01
Course Title	:	Linux Hands on Training
Type of Course	:	Professional Core (PC)
Year of Introduction	:	2023-24

Prerequisite	:	-
Course Objective	:	• To use Linux operating system knowledge for solving real world problem statements. • To get familiar with the design, architecture and installation of Linux OS. • To understand concepts of booting process, File system, working with files and directories, Editors and Filters/ Text processing commands of Linux OS. • To understand basic concepts to manage the user, group of user's accounts on a system or on a network. • To get familiar with shell scripting or program Linux system.
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Understand fundamental concepts of Linux operating system.
	CO2	Apply concepts of Linux operating system in order to solve the real-life problems.
	CO3	Analyze the processes, file system and system directories in Linux operating system
	CO4	Understand the working of Linux based system to manage the user or group of users in a network.
	CO5	Construct solutions for engineering problems by using shell script programming in Linux.

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			**Credits**	**Examination Marks**				
				Theory Marks		**Practical Marks**		**Total Marks**
L	**T**	**P**	**C**	**SEE**	**CIA**	**SEE**	**CIA**	
3	0	2	4	70	30	30	20	150

*Legends: **L**-Lecture; **T**–Tutorial/Teacher Guided Theory Practice; **P** – Practical, **C** – Credit, **SEE** – Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.))*

Course Content

Module No.	Topics	Teaching Hours	Weightage (%)	Mapping with CO
1	Introduction to Linux:-Linux Foundation, Linux requirements, Linux Components, Distributions, Features. Linux architecture, Kernel, Difference between Windows and Linux. Configuration & customizations of Linux, Linux structure, and Installation	2	5%	CO 1
2	Installation:-Different ways to install Linux, Linux installation (CentOS7 - Recommended), CentOS vs. CentOS stream, Take a snapshot of VM.	4	10%	CO 1 CO 2
3	Boot Process:-The boot process, Partitioning, dual boot, Virtual memory and swap space disk partition (df, fdisk), Adding swap space.	2	5%	CO 1 CO 2
4	Basic Commands:-Basic Linux Commands, ECHO and EXPR command, Set and unset a variable, Header of a shell script (#!).	2	5%	CO 2
5	File Management:-File system structure, Navigation commands (cd, ls and pwd) Absolute and relative Paths, Creating files and directories (touch, cp, mkdir) Working with Files & Directories: Linux file types, find, locate, Changing Password, cp, rm, mv, mkdir, rmdir)	2	5%	CO 2 CO 3
6	File Display Commands:-cat, less, more, head, tail) redirection, Files and directory permissions (chmod), File ownership commands (chown, chgrp)	2	5%	CO 3
7	Editors:-Linux file editor (vi), Difference between vi and vim editors, nano,pico and other linux editors,"sed" command.	2	5%	CO 3
8	Filters / Text Processing Commands:-cut, awk, grep/egrep, sort/uniq, wc, compare files (diff and cmp), Compress and uncompress (tar, gzip, gunzip).	2	5%	CO 3 CO 4

9	User Account Management:-useradd, groupadd, usermod, userdel, groupdel, Switch users and sudo access (su, sudo), Monitor users (who, last, w, id).	2	5%	CO 4
10	System Utility Commands:-date, uptime, hostname, uname, which, cal, bc.	2	5%	CO 4 CO 5
11	Process Management & System Monitoring:-ps, bg, fg, nice commands.	2	5%	CO 5
12	Troubleshooting:-ifconfig, ping, traceroute, DNS troubleshooting tools etc.	2	5%	CO 5
13	Shell Scripting:-Shell scripting basics, Types of shells, starting a shell, Create your first script - Hello world, Conditions/If else statements Scripts, Case statements script Conditions/If else statements, Scripts, Case statements script, for loop script, do-while scripts, Exit status, Script, For loop script, do-while scripts, Exit status	8	20%	CO 5
14	GCC Compiler:-Basics of GCC, Compilation of program, Execution of program, Time stamping.	6	15%	CO 5

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	**40**	**40**	**20**	**-**	**-**	**20**

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books

Sr. No.	**Name of Reference Books**
1	Linux the Complete Reference, John Purcell, 7th edition, Walnut Creek, 1999.
2	Linux Command Line and Shell Scripting Bible, Richard Blum, 4rd edition, Wiley, 2021.
3	Your Unix - The Ultimate Guide, Sumitabha Das, 4th Edition, Tata McGraw-Hill, 2008.
4	Linux Programming Bible, John Goerzen, 8th Edition, IDG Books, 2001.
5	A Practical Guide to Linux, Mark G. Sobell, 3rd Edition by Pearson Education, 2013.