

Program : <b>Diploma in Computer Engineering / Cyber Forensics and Information Security / Computer Hardware Engineering</b>	
Course Code : <b>3157</b>	Course Title: <b>System Administration lab</b>
Semester : <b>5 / 3 / 3</b>	Credits: <b>1.5</b>
Course Category: <b>Program Core</b>	
Periods per week: <b>3 (L:0 T:0 P:3)</b>	Periods per semester: <b>45</b>

### Course Objectives:

- Provide practical knowledge to apply Linux commands for the efficient use of operating system
- Expertise in shell scripting in Linux platform

### Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge in computer and system software		Introduction to IT Systems	1

### Course Outcomes:

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

CO <sub>n</sub>	Description	Duration (Hours)	Cognitive Level
CO1	Demonstrate user management and directory management in Linux platform using commands.	12	Applying
CO2	Make use of pipes and filters in Linux commands	6	Applying
CO3	Demonstrate process management, backup and recovery management on Linux platform using commands.	6	Applying
CO4	Implement shell scripting in Linux platform for system administration	18	Applying
	Lab Exam	3	

## CO-PO Mapping

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

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

## Course Outline

Module Outcomes	Name of Experiment	Duration (Hours)	Cognitive Level
CO1	<b>Demonstrate user management and directory management in Linux platform using commands.</b>		
M1.01	Illustrate the structure of Linux Operating System, file and directory organization.	2	Understanding
M1.02	Demonstrate the management of system using Linux commands - date, time, pwd, ps, who, whoami, uptime, users, groups	3	Applying
M1.03	Demonstrate the management of users and groups on Linux Platform using commands - useradd, passwd, usermod, userdel, groupadd, groupmod, groupdel, gpasswd	3	Applying
M1.04	Demonstrate management of files, directories and its permissions using Linux commands - ls, mkdir, cd, rmdir, mv, touch, cp, mv, rm, chmod, chage, sudo, chown	4	Applying
CO2	<b>Make use of pipes and filters in Linux commands.</b>		
M2.01	Demonstrate the concept of input and output redirections on Linux	2	Understanding
M2.02	Demonstrate the usage of pipes and filters using Linux commands - wc, cut, paste, comm, uniq, more, less, cmp, diff, sort, file sleep, uniq, grep.	4	Applying
	Lab Exam – I	1.5	

<b>CO3</b>	<b>Demonstrate process management, backup and recovery management on Linux platform using commands.</b>		
M3.01	Demonstrate process management using commands - bg, fg, top, ps, pidof, nice, renice, df, free, kill, pkill	3	Applying
M3.02	Demonstrate backup and recovery management using commands tar, cpio, dump	3	Applying
<b>CO4</b>	<b>Implement shell scripting in Linux platform for system administration</b>		
M4.01	Demonstrate the concept of shell and types of shells used in Linux Operating System	2	Understanding
M4.02	Implement shell script to manage systems.	4	Applying
M4.03	Implement shell script to manage system users.	4	Applying
M4.04	Implement shell script to perform the operations on files and directories.	4	Applying
M4.05	Implement shell script for the management of system process.	4	Applying
	Lab Exam – II	1.5	

**Text /Reference:**

<b>T/R</b>	<b>Book Title/Author</b>
T1	Richard Petersen, <b>Linux: The Complete Reference</b> , Sixth Edition
T2	Richard Blum, <b>Linux Command Line and Shell Scripting Bible</b> , 3rd Edition
R1	Sumitabha Das, <b>Unix Concepts and applications</b>
R2	Arnold Robbins, <b>Bash Pocket Reference: Help for Power Users and Sys Admins</b>

**Online Resources:**

<b>Sl.No</b>	<b>Website Link</b>
1	<a href="https://www.javatpoint.com/linux-tutorial">https://www.javatpoint.com/linux-tutorial</a>
2	<a href="https://www.javatpoint.com/shell-scripting-tutorial">https://www.javatpoint.com/shell-scripting-tutorial</a>
3	<a href="https://www.tutorialspoint.com/unix/shell_scripting.htm">https://www.tutorialspoint.com/unix/shell_scripting.htm</a>

## **Suggested Open Ended Projects**

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can do open ended experiments as a group of 2-3. There is no duplication in experiments between groups)

1. Perform the following tasks using Linux Commands
  - a) Create directory named Computer
  - b) Create two subdirectories Hardware and Software under Computer
  - c) Create text file under each subdirectories
  - d) Apply copy, rename and delete operations on files and directories
2. Obtain the following results
  - a) Create user and set password
  - b) To print the login name
  - c) Create group and add existing user to group.
3. Write a menu-driven shell script program for the following operations
  - a) List of files
  - d) Processes of users
  - e) Today's Date
  - f) Quit out of Linux
4. Write a shell script to accept the file name from the standard input and performs the following tests
  - a) File existence
  - b) File readable and writable