GLS UNIVERSITY
Bachelor of Computer Applications (BCA)
(Core Course)
Semester-IV
0301407 LINUX SHELL SCRIPTING (PRACTICAL)

1. Course Objective

- To develop the skills for writing shell scripts based on files and filters.
- To learn advanced commands of Linux for manipulating and filtering contents of files.
- To gain knowledge about Process Management in Linux
- To develop knowledge of communication and mailing

2. Course Duration:

The course will have sessions which are divided into five modules. Each module consists of nine sessions of 60 minutes each and carries a weightage of 20%.

3. Course Contents:

Module No.	Modules/Sub-Modules	No. of Sessions	Marks Weightage

I	**Introduction to Shell Programming**
	• Types of shell and comparison of Shells
	  ○ Sh
	  ○ Csh
	  ○ Ksh
	  ○ Tcsh
	  ○ Bash
	  ○ Zsh
	  ○ Pdksh
	• Creating Shell Scripts using various commands of Linux except Filters.
	• Interactive shell script using read and echo
	• I/O redirection
	• Shell scripts based on file attribute testing
	• Test command
	• Decision Statements
	  ○ if then fi
	  ○ if then else fi
	  ○ if then elif else fi
	  ○ Case esac
		09	20%

II	**Advanced Shell Programming**
	• Operators
	  ○ Arithmetic Operators
	  ○ Relational Operators
	  ○ Logical Operators
	• Arithmetic in Shell script using expr
	• Looping statements
	  ○ for loop
	  ○ while loop
	  ○ until loop
		09	20%

	• Break, continue command		
III	**Filters** • Simple Filters ○ Cut ○ Paste ○ Join ○ Fold ○ Sort ○ Tr ○ Unique ○ Head ○ Tail • Join two filters using Pipe • Advanced Filters ○ Grep ○ Regular Basic Expression ○ Sed ○ Awk • Formatting output-printf • The comparison operator • Variables ○ Built-in variables	09	20%
IV	**File Management and Compression using Shell scripting** • Command line arguments • Disk related commands ○ Dd ○ Du ○ Df ○ free ○ reboot ○ powerof • Dealing with files ○ File ○ Find ○ locate ○ Whereis ○ which • Compressing and decompressing ○ Gzip ○ Gunzip ○ Zip ○ Unzip ○ Tar	09	20%
V	**Functions in Shell Script** • Creating a function • Calling a function • Networking Command, Communication commands, Process commands ○ IP related commands ▪ ifconfig ▪ hostname	09	20%

	▪ PING ▪ Domain Information Groper (dig) ▪ route • Process Commands ○ Top ○ Ps ▪ -r ▪ -x ▪ -e ▪ -A ▪ -a ▪ -f ○ kill ○ mount ○ bg ○ fg ○ jobs ▪ -l ▪ -n ▪ -p ▪ -r ▪ -s		

Following is the list of sample shell scripts:

• Write a shell script that takes a filename as an argument and checks if the file exists and is
• Write a shell script that takes a filename from the user and checks whether it is a directory file or
• Write a shell script that accepts 2 filenames and checks if both exists; if both exist then append
• Write a shell script to check whether the file is read only or not.
• Write a shell script to display “Good Morning/Good Afternoon/Good Evening/Good Night”
• Write a shell script to find hidden files
• Write a shell script to find whether a given file is zero sized or not, if it is deleted.
• Write a shell script to enter 3 file names and find the largest of three files.
• Write a shell script that takes the name of two files from user and performs the following:
• Write a shell script, take a file name from the user as input and sort its content in descending
• Write a shell script to display last five lines from a file
• Write a shell script to display the first five lines from a file.
• Write a shell script to create a file student with following fields:
• Write a shell script to delete all the spaces from a given file.
• Write a shell script to check whether a particular named user is currently logged in or not.
• Write a shell script to convert all the characters of the file to uppercase.
• Write a shell script to display the file contents by removing all duplicate values.
• Write a shell script to display all the files starting with character 'a', make use of grep
• Write a shell script to illustrate the concept of looping, make use of 'awk' command
• Write a shell script to illustrate the use of built-in variables make use of 'awk' command

• Write a shell script to illustrate the use of comparison operators in awk.
• Write a shell script to find a particular word in a file using awk.
• Write a shell script to display only the first column of a multi column file using awk.
• Write a shell script to display only the first and third column of a particular word in a file using
• Write a shell script to make use of the awk command to display the following output.
• Write a shell script to count the number of ordinary and directory files in the current directory.
• Write a shell script to combine two files in the third file horizontally and vertically.
• Write a shell script to display five largest files from the current directory.
• Write a shell script to count all the readable files in the current directory.
• Write a shell script to search for a given word in all files given as the arguments on the
• Write a shell script to accept any character using the command line and list all the files starting
• Write a shell script to create the following menu for a particular file:
• Write a shell script to create the following menu.
• Write a shell script to find a file having permission as 777.
• Write a shell script to find a file that has not been accessed since one year.
• Write a shell script to find all active processes.
• Write a shell script to find all the background and foreground processes
• Write a shell script for performing the write and mail commands.
• Write a shell script to view all the running processes .
• Write a shell script to view processes not associated with a terminal.
• Write a shell script to view all running processes.
• Write a shell script to view all processes owned by you.
• Write a shell script to view all processes along with the parent process.
• Write a shell script to display the status of jobs.
• Write a shell script to display detailed description of jobs.
• Write a shell script to display only the processes that have changed their status.
• Write a shell script to display process id only.
• Write a shell script to display only running jobs.
• Write a shell script to display stopped jobs.
• Write a shell script to create a user defined function.
• Write a shell script to display the IP address of your system.
• Write a shell script to display the hostname of your system.
• Write a shell script to check that the client is connected to the network or not.
• Write a shell script to check DNS related query.
• Write a shell script to display the ip routing table.
• Write a shell script to display details of particular processes from the given current processes.

4. Teaching Methods:

The following pedagogical tools will be used to teach this course:

1. Laboratory Sessions
2. Assignments and Presentations
3. Video, e-learning

5. Evaluation:

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

1.	Assignments / Presentations / Quizzes, etc.	30% (Internal Assessment)
2.	Internal Examination	20% (Internal Assessment)
3.	External Examination	50%(External Assessment)

6. Basic Text Books:

Sr. No	Author/s	Name of the book	Publisher	Edition
T1	Sumitabha Das	Unix concepts and Applications	Tata McGraw-Hill	Latest Edition
T2	B.M. Harwani	Unix and Shell Programming	Oxford University Press	Latest Edition

7. Reference Books:

Sr. No	Author/s	Name of book	Publisher	Edition
R1	K.L.James	Linux Learning the Essentials	PHI	Latest Edition
R2	Christopher Diaz	Introduction to Unix/Linux	Cengage Learning	Latest Edition
R3	Chris Negus	Linux Bible	Wiley	Latest Edition
R4	Ganesh Sanjiv Naik	Learning Linux Shell Scripting	[PACKT] publishing	Latest Edition

8. List of Journals / Periodicals / Magazines / Newspapers etc.:

Sr. No	Link
1	Ebook: http://tldp.org/LDP/intro-linux/html/index.html
2	Ebook:http://introcomp.fisica.edu.uy/biblio/Shell%20Programming%20in%2024%20Hours.pdf
3	http://www.nptel.ac.in/courses/106108101/20
4	http://nptel.ac.in/courses/117106113/
5	http://www.nptel.ac.in/courses/106108101/13
6	https://www.youtube.com/watch?v=ThQ6R1EM0e8&list=PL7B7FA4E693D8E790&index=3
7	https://www.youtube.com/watch?v=QBlENrp2wns&list=PL7B7FA4E693D8E790&index=10
8	https://www.youtube.com/watch?v=PTaL1s3YJPY
9	https://www.youtube.com/watch?v=jID3dFxuFR8&list=PL7B7FA4E693D8E790&index=8
10	https://www.youtube.com/watch?v=jID3dFxuFR8&list=PL7B7FA4E693D8E790&index=8

9. Session Plan:

Session No.	Topics / Chapters
1-3	Shell scripts based on different commands
4-6	Shell scripts based on echo, read and test command
7-9	Shell scripts based on Decision statements
10-12	Shell script based on Operators
13-15	Arithmetic in Shell script using expr
16-18	Shell script based on Looping statement
19-21	Shell scripts based on simple filters
22-24	Shell scripts using regular basic expression
25	Shell scripts based on advanced filters
26-27	Shell script using awk
28	Using command line arguments
29-30	Performing various disk related commands
31-33	Compressing and Decompressing of files
34-36	Dealing with files
37-38	Functions in shell script
39-42	Using Networking commands
43-45	Performing various process commands

10. Learning Outcomes:

Upon completion of this course, the student will be able to:

- Create shell scripts based on different file operations and filters
- Manage the Processes that are running.
- Create a user defined function to run the shell script.
- Communicate and send mail.