GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT (Infrastructure Management Services) (Hons.)	**Branch/Spec.**	Computer Applications
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2025-26	**Effective for the batch Admitted in**	June 2024
Subject Code	U43B3FLS	**Subject Name**	Fundamentals of Linux and Shell Scripting

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	-	2	-	2	Theory	50	50	100
Hours	2	-	4	-	6				

Objective:

Teach OS principles: file handling, permissions, process & disk utilities, networking, Linux commands, scripting, and filters.

Pre-requisites:

Must have basic knowledge of computer.

Course Outcomes :

Name of CO	**Description**
CO1	Understand basics of Unix Operating System and File System.
CO2	Understanding the basic set of commands and utilities in Linux systems.
CO3	Ability to write Shell Programming using Linux commands.
CO4	Understand and make effective use of shell scripting language to solve problems.

Mapping of CO and PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	3	2	3	3	2	3	3	3	3
CO2	3	2	3	3	3	3	2	2	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	2	3	2
CO4	1	3	3	3	2	3	3	3	2	3	3	3

Theory Syllabus

Unit	**Content**	**Hrs.**
1	**Introduction to Linux:** Unix Operating System, Understanding Open Source, linux vs windows , Linux Origins, Linux Distributions, Linux Principles, Features of Linux, Architecture of Linux, Linux Installation Process , Logging in to a Linux System, Switching between virtual consoles and the graphical environment, Changing your password, Linux File Hierarchy Concepts, Partion and File System**, Structure**, **File access permissions:** chmod, umask, chgrp, group	**7**

2	**Linux Utilities and Commands: Logical Volume Manager:** LVM Configuration, Automatic Partioning, **Package Management:** Package Management with RPM, Package Management Tool, YUM (Yellowdog Updater Modified), Registering a System and Managing Subscriptions, **Linux Commands:** echo, printf, script, who, date, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, wc, ps, w, finger	**7**
3	**Shell Scripting:** Introduction to Shell, Types of Shell, Shell Programming: Shell variables, Output, Input ,Command Line Arguments and Functions, Socket File, Device Files , Bash Keywords , variable assignment and Displaying Messages, colon commands , Shell aliases , Long command lines	**8**
4	**Script Basics:**Creating a script , header , Global Declaration , Sanity Checks , The Man Script , Cleanup , Stopping a script , input , Basic Redirection , Set and Shopt , variable Attributes ,Arrays , file expressions , Operations ,let features , pattern recognization , Decision Statements_ if then fi_ if then else fi_ if then elif else fi_ case esac Logical Operators, Looping statements_ for loop_ while loop_ until loop, Break, continue command, Arithmetic in Shell script using expr	**8**
Text Books:		
1	Linux Shell Scripting WithBashBy: Ken O Burch –Sams Publishing.	
2	Wicked Cool Shell Scripts By Dave Taylor- O'Reilly	
3	W. Richard. Stevens (2005), Advanced Programming in the UNIX Environment, 3rd edition, Pearson Education, New Delhi, India.	
Reference Books:		
1	Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson	
2	Linux System Programming, Robert Love, O'Reilly, SPD.	
Web References / MOOC / Certification Course:		
1	Linux Basics-I- NPTEL- https://nptel.ac.in/courses/117106113 - LinuxFoundationX: Introduction to Linux LinuxFoundationX: Introduction to Linux	
2	Linux BASH (shell scripting)-Swayam- https://onlinecourses.swayam2.ac.in/aic20_sp05/preview	
3	Linux Programming & Scripting- NPTEL- https://archive.nptel.ac.in/courses/117/106/117106113/ Linux Programming & Scripting Linux	
4	Linux FoundationX-edX- https://www.edx.org/learn/linux/the-linux-foundation-introduction-to-linux	
Question Paper Scheme:		
	University Examination Duration:2Hours **Note for Examiner:** Q-1 Must be common from any topics from the syllabus. Q-2 And onwards must be from specific topics and internal choice or option can be given. **Paper Structure:** Q-1 Must be from all Unit Any Five out of seven **(25 Marks)** (CO1, CO2, CO3, CO4) Q-2 Must be from Unit 1: Any Two out of Three **(06 Marks)** CO1 Q-3 Must be from Unit 2: Only one question without any option **(05 Marks)** CO2 Q-4 Must be from Unit 3: Any Two out of Three **(08 Marks)** CO3 Q-5 Must be from Unit 4: Any Two out of Three **(06 Marks)** CO4	