



GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications					Branch/Spec.	Computer Application		
Semester	II					Version	1.0.0.0		
Effective from Academic Year			2026-27			Effective for the batch Admitted in		July 2026	
Subject Code	P12D4LP		Subject Name			Linux Programming			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CIA	SEE	Total
	L	TU	P	TW					
Credit	2	0	1	0	3	Theory	40	60	100
Hours	2	0	2	0	4	Practical	20	30	50
Objective:									
Students able to build system-level applications, automate tasks through scripting, and manage computer hardware efficiently									
Pre-requisites:									
Students should possess: Operating System Fundamentals, Basic Computer Networking, Familiarity with Command Line Interfaces									
Course Outcomes:									
1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); “-” = No Correlation									
Name of CO	Description								
CO1	Understand the architecture, installation, and administration of Linux operating systems and open-source environments								
CO2	Develop Linux shell scripts using programming constructs to automate system administration tasks.								
CO3	Implement graphical user interface (GUI) applications using Linux-supported programming libraries.								
CO4	Analyze and develop basic web-based applications on Linux platforms using open-source technologies.								
Mapping of CO and PO									
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
CO1	3	2	-	-	2	-	-	1	
CO2	3	3	2	-	3	-	-	1	
CO3	2	2	3	2	3	-	-	1	
CO4	3	3	3	2	3	1	-	2	

Content:		
Unit	SECTION-I	Hours
1	Installation and Linux Usage Introduction to Open Source Software, GNU/Linux Philosophy, Linux Distributions (Ubuntu, Fedora, Debian, Rocky Linux), Installation Process (Virtual Machine & Native Installation), Boot Process, Linux File System Hierarchy (FHS), File Permissions, Users and Groups, Basic Linux Commands, Process Management, Package Management (APT, DNF), System Monitoring Utilities, Environment Variables	7
2	Shell Programming Shell Types, Bash Shell, Variables, Command Line Arguments, Operators, Conditional Statements, Looping Structures, Arrays, Functions, String Operations, File Handling, Pattern Matching, Regular Expressions, awk. Sed, grep, cron Jobs, Shell Script Debugging	8
SECTION-II		
3	GUI Programming Introduction to GUI Programming, GTK Overview, Python Tkinter Basics, Window Creation, Labels, Buttons, Entry Widgets, Layout Managers, Events, Dialog Boxes, Menus, Forms, File Dialogs, Basic GUI Application Development	8
4	Web Programming Linux Web Server Architecture, Apache HTTP Server, Nginx Basics, CGI Concepts, Form Processing, Session Management, Linux File Permissions for Web, Hosting Web Applications, Basic Security Practices	7
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Text Books:		
1	Linux Command Line and Shell Scripting Bible, Christine Bresnahan & Richard Blum, Wiley, 5th Edition, 2023	
2	The Linux Command Line, William Shotts, No Starch Press, 2 nd Edition, 2024	
3	A Practical Guide to Linux Commands and Shell Programming, Mark G. Sobell, Pearson, 5th Edition.	
4	The Linux Philosophy for SysAdmins, David Both, Apress, 2022.	
5	Practical C Programming (Linux Development Concepts), Steve Oualline, O'Reilly Media.	
Reference Books:		
1	Advanced Programming in the UNIX Environment, W. Richard Stevens, Addison-Wesley	
2	How Linux Works, Brian Ward, No Starch Press	
3	Linux Administration Handbook, David Clinton, Pearson	
4	Linux for Beginners, Jason Cannon, Packt	
5	The Linux Programming Interface, Michael Kerrisk, No Starch Press	
MOOC/Certification Courses:		
1	Linux Programming & Scripting https://nptel.ac.in/courses/117106113	
2	Complete UNIX & Linux OS Fundamentals Training	

	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_01384780854051635254274_shared/overview
3	Oracle Linux System Administration I https://learn.oracle.com/ols/course/s-oracle-linux-system-administration-i/37001/61275
Question Paper Scheme:	
University Examination Duration: 3 Hours	
Note for Examiner: -	
(I) Questions 1 and 4 are compulsory with no options.	
(II) Internal options should be given in questions 2, 3, 5 and 6.	
SECTION – I	
Q.1 –8 Marks	
Q.2 –11 Marks	
Q.3 –11 Marks	
SECTION - II	
Q.4 –8 Marks	
Q.5 –11 Marks	
Q.6 –11 Marks	