



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Engineering

Level: UG

Branch: Computer Engineering

Course / Subject Code : 3164906

CC Course / Subject Name : Linux System Administration

w. e. f. Academic Year:	2024-2025
Semester:	6 th
Category of the Course:	Open Elective

Prerequisite:	Basics of Operating System.
Rationale:	To impart knowledge and skills on various practical and theoretical aspects of Linux operating system (OS) basics and Linux OS based server configuration, management and administration.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
1	Understand concepts of Linux OS basics	U
2	Learn various Linux based administration tasks	U
3	Implement Linux OS based server configuration, management and administration.	A

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial / Practical	
			ESE (E)		PA / CA (M)	PA/CA (I)	ESE (V)	
2	0	2	3	70	30	20	30	150



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Unit 1: Management of File using Command Line Introduction to BASH, Command-line shortcuts, File Types, Ownership and Permissions, File management and manipulation, Moving users & its directories, Miscellaneous Tools, Editors.	3	10
2.	Unit 2: Managing Users and Groups Creating and managing user/s and group commands, User management Tools, Users and Access Permissions, Updating users and group attributes, PAM (Pluggable Authentication Modules)	3	10
3.	Unit 3: Booting and Shutting down Boot Loaders, Theinit process, rc scripts, enabling and disabling services, Booting in recovery mode.	3	10
4.	Unit 4: File Systems Makeup of file systems, Managing file systems, Adding a new disk, Volume Management, Creating file systems.	3	10
5	Unit 5: Core System Services The init Daemon, xinetd and inetd, The Logging Daemon, Configuring Logging Daemon, The CRON program	4	12
6	Unit 6: Compiling the Linux Kernel Kernel concepts, Finding Kernel Source Code, Building the Kernel, Patching the Kernel	4	12
7	Unit 7: DNS Installing DNS Server, Configuring DNS server, DNS records types, Setting up BIND database file, The DNS Toolbox, Configuring DNS clients	4	12
8	Unit 8: Apache Web Server HTTP Protocol, Installing Apache HTTP Server, Starting up and shutting down apache, Testing Apache Installation, Configuring Apache, Troubleshooting Apache	4	12
9	Unit 9: Virtualization Virtualization Implementation, Kernel based Virtual Machines (KVM)	4	12
	Total		100



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Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
20	35	35	05	05	-

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Steve Shah and Wale Soyinka "Linux Administration: A Beginner's Guide", 4th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, ISBN: 978-0072262599
2. Susan Lauber, Philip Sweany, Rudolf Kastl and George Hacker, "REDHAT System Administration-1 Student Work book", REDHAT Inc. 2014

(b) Open source software and website:

List of e-Learning Resources:

1. https://www.tutorialspoint.com/linux_admin/index.htm
2. <https://linode.com/docs/tools-reference/linux-system-administrationbasics/>
3. opensourceforu.com/2016/07/introduction-linux-system-administration/
4. <https://www.linuxfoundation.org>

Suggested Course Practical List: If any

1. File Handling Commands
2. User Handling Commands
3. Group Handling Commands.
4. Startup and Shutdown Commands
5. Installation and Configuration of DNS server
6. Installation and Configuration of Apache Server
7. Building and patching Linux Kernel

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