Subject Code: 01IT0501

Subject Name: Linux Administration

B.Tech. Year - III

Objective:
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.

Credits Earned: 4 Credits

Course Outcomes: After completion of this course, student will be able to

➢ Understand concepts of Linux OS basics

➢ Learn various Linux based administration tasks

➢ Implement Linux OS based server configuration, management and administration.

Pre-requisite of course: Basics of Operating System.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
3	0	2	4	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
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	4
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)	4

3	**Booting and Shutting down** Boot Loaders, The init process, rc scripts, enabling and disabling services, Booting in recovery mode	4
4	**File Systems** Makeup of file systems, Managing file systems, Adding a new disk, Volume Management, Creating file systems.	6
5	**Core System Services** The init Daemon, xinetd and inetd, The Logging Daemon, Configuring Logging Daemon, The CRON program	6
6	**Compiling the Linux Kernel** Kernel concepts, Finding Kernel Source Code, Building the Kernel, Patching the Kernel	4
7	**DNS** Installing DNS Server, Configuring DNS server, DNS records types, Setting up BIND database file, The DNS Toolbox, Configuring DNS clients.	6
8	**Apache Web Server** HTTP Protocol, Installing Apache HTTP Server, Starting up and shutting down apache, Testing Apache Installation, Configuring Apache, Troubleshooting Apache	4
9	**Virtualization** Virtualization Implementation, Kernel based Virtual Machines (KVM)	4
	Total Hours	**42**

References:

1. Steve Shah and Wale Soyinka " Linux Administration: A Begineer'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

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
20%	20%	30%	15%	10%	5%

Suggested List of Experiments:

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

Instructional Method:

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

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