D. Syllabus Detailing and Learning objectives

Module	Chapter	Detailed Content	Syllabus Detailing	Learning Objectives
Module 1	Over View of Open Source Software(4 hrs)	Need of Open Sources –Advantages of Open sources – Applications-FOSS – FOSS usage – Free Software Movement – Comercial Aspect of Open Source Movement – Licensing – Certification – Open Source Software Development Model – comparision with close source / Proprietary software – Free Software – Open source vs source – available –Widely used open source software license :Apache License, BSD license,GNU General Public License, GNU Lesser General Public License, MIT License, Eclipse Public License and Mozilla Public	**Purpose**: To make students familiar with Opens source technologies and compare opensource with closed source technologies **Scope –** **1. Academic Aspects** Overview of the opensource technologies and its description of open source software **2. Technology Aspect** : Explain FOSS (free open sorce concept) and comparison of Opensource with closed source softwares **3. Application Aspect-** Steps to start with Open source software Students Evaluation – Theory Questions to be asked on 1. Compare Open source with closed source software. 2. Describe step involve to develop software under open source. 3. Explain various open source license.	1. To **describe** various licensing of open source such as BSD , General Public GNU (**U)** 2. To **Distinguish** between Linux and Windows (R) 3. To explain steps involve for development of open source software (R)

		License.		
Module 2	Open Source Operating System(4 hours)	Installation of Linux (Red hat- CentOS): Theory about Multiboot Environment, Hardisk Partitioning, Swap space, LVM, and Bootloader Command Line: Basic File System management Task, Working with files, Piping and Redirection, Working with VI editor, use of sed and understanding FHS of Linux	**Purpose-** This chapter is focused on installation of linux.Linux VI editor Scope – 1. Academic Aspects- Describe swap area of linux , File hierarchy of linux 2. Technology Aspect- . Hard disk Partition , Steps to install Linux 3. Application Aspect- VI editor and its varous modes and commands Students Evaluation – 1. Explain LVM & Swap area 2What is boot loader? 3. Describe Booting process and Linux initialization. 4. Draw and Explain Linux FHS in detail 5. Demonstrate the Hard disk partition for linux. 6. Explain various modes of VI Editor.	1.Describe Linux FHS (R) 2. Explain Hard disk partion in for installing ubuntu Linux (U) 3. Create a file in linux and edit it using various VI command (A)
Module 3	Administrator task (4 hours)	Job management, Process Management, Mounting Devices and	**Purpose –** To make students familiar about Processes Management , Types of process , Various administrative command	1. To **categories and identify the types of process (R)** 2. To **describe** booting process and related

		filesystem working with Linux, Backup, working with user, group and permission, Managing Software. Understanding Boot process and related system files, Common kernel Management Task	**Scope –** **1. Academic Aspects-** Understanding processes and its management using ps command in linux 2. Technology Aspect- Creating new user , managing created user , providing permissions to the users **3. Application Aspect-** Implementation of command like adduser ,usermod, groupadd , chmod , chown during partical sessions. **Student Evaluation -** 1. What is mutual exclusion? Explain Peterson's approach to solve mutual exclusion? 2. What are semaphores? State solution of producer-consumer problem using Semaphores. 3. What is deadlock? Explain deadlock prevention methods. 4. Explain deadlock avoidance methods.	files in Linux(U) 3. To analysis various files such as /etc/shadow , /etc/passwd (AN) 4. To create new login for a machine linux using administrative command like useradd , usermod (A)
Module 4	Network and Security Administration(6 hours)	Basic networking commands, Configuration of Apache Web servers, DNS servers, DHCP servers, mail Servers, NFS, FTP servers. Securing servers with IPtables. Setting up cryptographic services,	**Purpose-** This chapter is focused on networking commands which helps students to understand and analyze the computer system configuration and its connectivity within the LAN and Internet **Scope –** 1. Academic Aspects- Describing networking commands and various configuration 2. Technology Aspect- Configure apache server to host web page, configuration of DHCP server 3. Application Aspect- Analyzing the hops of request made by PC to the server using trace route command	1. Describe the various networking commands(U) 2. Demonstrate connectivity of your machine with other machines in LAN (A) 3. Implement fire wall such that incoming request from particular machine must be block to machine.(A) 4. Configure machine as FTP server, dhcp server as per lab.(C)

		SSL, Managing Certificate with OpenSSL, working with the GNU Privacy guard.	Implementation of firewall using IP table commands. Configuration of Apache2 server for hosting web site **Student Evaluation -** **Student Evaluation -** 1. Name the package to install apache server, Also configure the machine to host webpage. 2. Describe IP tables , input , output and forward chain in detail. 3.To configure DHCP server which file need to be edited , Write the configuration to get 20 IP addresses dynamically in your Lab	
Module 5	Shell Programming (8 hours)	Bash Shell Scripting, Executing Script, Working with Variables and Input, Using Control Strutures, Script control, handling with signals, Creating functions,working sed and gawk -Working with web using shell	**Purpose –** To make students familiar Schell Programming and basic logic used to develop code in shell programming **Scope –** **1. Academic Aspects-** Learning of I/O functions , Environmental variables,shell scripting **2. Technology Aspect-** Describing shell commands and programming structure. **3. Application Aspect-** Create a shell script for various task.	1. Define shell and explain the types of shell (R) 2.Develop shell script which will perform task such as taking backup of particular file at regular interval. (A) 3. To **describe** sed command **(U)** 4. Write basic shell program which will demonstrate looping and branching structure. (A)

		script: Downloading web page as formatted text file and parsing for data, working cURL etc.	**Student Evaluation –** 1. Describe various types of shell in linux. 2. Write a shell script to generate table from 1 to 10 3. Implement a program in shell script for taking regular backup of particular file. 4. Describe sed and gawk command in detail	
Module 6	Open Source Mobile Programming (10 hours)	Android programming: Setting up Android Environment (using Eclipse for android development), Activites and Intents, User Interface, Designing UI using views, Data Persistence,Conent Providers, messaging and networking, Location-based Services, Publishing Android Applications	**Purpose –** To understand the concept of android programming and its architecture, activity, life cycle. **Scope –** **1. Academic Aspects-** Android architecture , basic android programming and GUI using android. **2. Technology Aspect-** Android studio or adt – Eclipse for android program devlopment **3. Application Aspect**- Devloping simple android program and GUI , Activites and Intents **Student Evaluation –** 1. Draw and explain android architecture. 2. Explain data persistency in android with an example 3. Create a simple application using android to display information based on selected item in dropdown box. 4. Describe activity and Intent in android programming	1. To describe architecture of android.**(U)** 2. To identify the component of android (R) 3. To design or develop basic code using android studio or eclipse (C) 4. To explain data persistence , content providers and messaging in android (U)

			5.Illustratre activity life cycle of android.	