

# **FR. Conceicao Rodrigues College Of Engineering**

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## **Computer Engineering Department**

### **Linux System And Network Administration Syllabus**

#### **1. Basics of Linux**

- Introduction
- Evolution of Linux

#### **2. Linux User Administration**

- User Administration
- Adding a New User Account
- User Private Groups
- Modifying / Deleting User Accounts
- Group Administration
- Password Aging Policies
- Switching Accounts sudo
- Network Users
- Authentication Configuration
- SUID and SGID Executables
- SGID Directories
- The Sticky Bit

#### **3. Linux System Administration**

##### **Managing Startup Command line:**

##### **Introduction to Bash Shell**

- Basic Commands (ls,cd,tail,cat,mkdir,pwd,less,more,history)
- Commands to work with file(mv,cp,rm)
- Text editor (vim,nano,gedit)
- text editor (grep, sed, and awk)
- Compression Tar,gzip and bzip2

##### **System Initialization**

- Boot Sequence Overview
- Troubleshooting boot issues
- What is GRUB and grub.conf
- Starting the Boot Process: GRUB Kernel Initialization

- init Initialization (init 0,1,2,3,4,5)
  - Run Levels
  - /etc/rc.d/rc.sysinit
  - /etc/rc.d/rc
  - System V run levels
  - /etc/rc.d/rc.local
- Sunil Chaudhari
- Controlling Services(service,init.d,chkconfig)

### **Booting and run levels**

- The boot process: from BIOS to kernel then to user space
- Setting kernel parameters
- Run levels and init scripts
- Configuring services to run at boot
- Securing single user mode (su login)
- Shutting down and rebooting the system
- Package Management
- -Working with packages
- Installing and Removing Software
- Exploring Hardware Devices (hwinfo)
- Monitoring Processes and Resources(kill,ps,pstree,top)

### **File system Management**

- Adding New File systems to the File system Tree
- Device Recognition
- Disk Partitioning
- Managing Partitions
- Making Filesystems
- Difference between ext3 and ext4
- Filesystem Labels
- tune2fs
- Mount Points and /etc/fstab
- Mounting Filesystems with mount
- Unmounting Filesystems
- Logical Volume Manager
- Quota management

### **Automating tasks using cron**

- Controlling Access to cron
- System crontab Files
- Daily Cron Jobs

## **4. Linux Network Administration**

- FTP server Configuration
- SSH Configuration
- NFS server Configuration
- Apache2 server Configuration
- Samba server Configuration
- DNS (Master and Slave) server Configuration
- DHCP server Configuration
- Log Monitoring

## **5. Security**

- User based Security
- Port based security
- IP based security

## **6. Miscellaneous**

- Troubleshooting Linux System login issues,
- Troubleshooting Linux Booting issues and
- Linux Server hardening