

# CMPT-1074 Course Syllabus

## 1. Name of course

RedHat Linux (RHCE Prep Course)

## 2. Number of Clock Hours: 48

This class meets on Monday and Wednesday nights from 6:00 to 10:00.

## 3. Course Description

This course prepares experienced Linux/Unix administrators for the Red Hat Linux RHCE certification. The course is taught by lecture, demonstration, and hands-on exercise. Students will review and practice installation and administration of Red Hat Linux and common services.

## 4. Course Objectives

- Installation

Students will perform Red Hat installation by several different methods. Problematic installations, troubleshooting, and post-install configuration will be addressed.

- User and Group Administration

This class will cover RedHat's user policies and user/group structure. During the course of this class students will create users and user groups and customize the users' working environment. Hands on labs will work with file and directory permissions including shared directories.

- RedHat Infrastructure

Linux file systems, RedHat's directory hierarchy, and system start up configuration will be reviewed. Configuration of different runlevels and start up services will be discussed in detail.

- RedHat Package Manager

RPM, RedHat's package management system will be discussed and demonstrated in detail. Students knowledge of software installation, removal, and updating will be verified with hands on labs for these tasks.

- The Linux kernel

This class will cover configuration of the Linux kernel, Red Hat kernel upgrade procedures, and control and configuration of kernel modules. Discussion of the /proc file system will help students understand how it can be used to change the operation of certain kernel configuration aspects on the fly without rebooting the OS.

- Rescue modes

Students will discuss and practice troubleshooting and system rescue procedures utilizing hands on labs.

- Network Services

Common network services, such as Apache, BIND, DHCP, and email will be reviewed, demonstrated, and practiced using hands on labs.

- Security

Basic security issues and best-practice security measures will be described and tested. Configuration of tcp wrappers and utilization of configuration files will be discussed and utilized in hands on labs.

- X Window System

This class will cover Red Hat's graphical user environment, its features and its configuration. Remote display configuration will be discussed and practiced using hands on labs.

- Routing, Forwarding, and Firewalls

Red Hat's approach to packet routing and forwarding will be reviewed. Firewall theory, tools, and procedures will be covered in detail in both lecture and hands on labs.

## 5. Rationale

- In a survey conducted by Fairfield Research, RHCE certification was ranked the highest quality certification in the IT field.
- Enterprise data centers are rapidly migrating to Linux servers, and Red Hat has been the overwhelming choice of distributions. These organizations will require ever-increasing numbers of demonstrably qualified technicians.

## 6. Required Materials

RHCE Red Hat Certified Engineer Linux Study Guide (Exam RH302), Fifth Edition by Michael Jang; ISBN-10: 0072264543; ISBN-13: 978-0072264548.

## 7. Evaluation

Those who participate in class discussions, and miss no more than three class meetings will be awarded 4.8 continuing education units. Ultimate evaluation of the student will be their successfully passing the Red Hat Certified Engineer examination.

## 8. Course Outline

- Manual and automated installations of RedHat using a variety of installation methods including NFS, http, and ftp.
- Detailed instructions on the RedHat boot process, runlevels, start up services, and troubleshooting.
- Using GRUB
- Controlling services and runlevels using the tools provided with RedHat Enterprise Linux.
- File systems, partitions, and file system management using /etc/fstab and the Linux automounter.
- Software RAID configuration and troubleshooting
- LVM configuration, maintenance, and troubleshooting
- User and group administration
- File system permissions and shared directories
- Network configuration, troubleshooting, and maintenance
- The Linux quota system configuration, maintenance and troubleshooting
- Using the cron and at utilities
- Kernel basics, configuration, and module configuration
- Understanding the /proc file system
- The X Window System
- Network services including Apache, Squid, vsftpd, Mail services, Samba, Cups, NFS, BIND, NTP, and dhcp
- Systems Administration and Security
- Configuration of directory clients and servers
- Basic host security
- Using PAM and tcp wrappers to allow/deny access
- System logging configuration and maintenance
- Extended Internet services daemon (xinetd)
- Firewall implementation and configuration
- Network address translation
- Using ssh and sshd
- Troubleshooting strategies
- Boot procedures
- Using the rescue environment