



## Linux System Administration

Course: <b>CIS238DL</b>	Lec + Lab <b>3.0</b> Credit(s) <b>4.0</b> Period(s) <b>4.0</b> Load
First Term: <b>2018 Fall</b>	Course Type: <b>Occupational</b>
Final Term: <b>Current</b>	Load Formula: <b>T</b>

**Description:** Managing Linux Operating Systems including sophisticated manipulation of file structures, backup systems, printing processes, troubleshooting, user account management, hard disk maintenance and configuration, process monitoring and prioritizing, kernel customization, and system resource control. Preparation for industry certifications such as the CompTIA Linux+, the Red Hat Certified System Administrator (RHCSA), the Red Hat Certified Engineer (RHCE) and the Linux Professional Institute (LPIC-1).

**Requisites:** Prerequisites: A grade of C or better in CIS126DL or CIS126RH or permission of Instructor.

### MCCCD Official Course Competencies

1. Demonstrate understanding of Linux File System standards. (I)
2. Demonstrate the utilization of automated backup procedures. (I, IV, V, VI)
3. Manage and control system resources such as memory and CPU usage through a variety of techniques. (I, IV, VI)
4. Configure printing system to local and remote network printers including print job filtering and management. (I, IV, VI)
5. Create and implement a security policy including an emergency security plan. (I, II, III, V, VI)
6. Design fault-tolerant systems and network environments. (I, V, VI)
7. Customize system security through the use of user system profiles, user and group accounts, and file and directory privileges. (II, III, V, VI)
8. Create partitions and file systems and manipulate access to them through the use of mount points and automated mounting techniques. (II, IV, VI)
9. Recompile the kernel of the Linux operating system from source code and explain the benefits. (II, III)
10. Apply su and sudo commands to access administrative system privileges. (III)
11. Monitor system functions and security through the use of a variety of system logs. (III)
12. Add to repertoire of system prompt commands used to control the Linux operating system. (I, II, III, IV, V, VI)
13. Apply a variety of command line and graphical applications to perform a variety of user and administrative tasks. (V).
14. Implement a variety of troubleshooting techniques to prevent and deal with a variety of system problems including core dumps. (VI)

### MCCCD Official Course Outline

- I. Theory of Operation
  - A. File system hierarchy standards
  - B. Cron daemon`s (task scheduling utility) implementation of file system backup
  - C. System tuning
  - D. Print process and the role of the Berkeley Software Distribution (BSD) printing model

- E. Common physical network problems and the troubleshooting measures
  - F. Emergency measures when network vulnerabilities are breached
  - G. Key system resources
  - H. Redundant Array of Independent Disks (RAID) storage
- II. Base System
- A. Key files used in configuring user profiles
  - B. Adding and removing users
  - C. Run levels and specific roles of reserved run levels 0, 1, and 6
  - D. File system table configuration file (fstab) in mounting and unmounting file systems and devices
  - F. Recompiling the kernel
- III. Shells and Commands
- A. Switch user (su) command
  - B. Message of the day (motd) and its role in user communication
  - C. Microsoft Disc Operating System OS (MS-DOS) tools and their use in a Linux system
  - D. Make command in the compilation of source code
  - E. Function of the touch command and its effect on system logs
  - F. System status, system message logging, and performance analysis
- IV. System Services
- A. Function of common user commands
  - B. Utilities used for archiving
  - C. File system check command (fsck) and program`s default run time
  - D. Process management and the options that accompany those commands
  - E. Printer configuration options
  - F. Line printer daemon and the foreground line printer requester
  - G. Package managers utilizing software packages
- V. Applications
- A. Backup applications
  - B. Mail exchange programs
  - C. Web server daemons
  - D. Processor, system architecture and compiler design
  - E. File Transfer Protocol (FTP) clients and servers
  - F. Secure Shell (SSH) network
  - G. Common graphical configuration tools
- VI. Troubleshooting
- A. Tools, procedures, and techniques for administering a variety of systems within the Linux architecture
  - B. Measures to prevent and control core dumps
  - C. Rescue environment utilities

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MCCCD Governing Board Approval Date: **November 28, 2017**

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