Lecture Contact Hours: 32-36; Homework Hours: 64-72; Total Student Learning Hours: 96-108
Laboratory Contact Hours: 48-54; Homework Hours: 0; Total Student Learning Hours: 48-54

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

COMPUTER AND INFORMATION SCIENCE 191 – LINUX OPERATING SYSTEM

2 hours lecture, 3 hours laboratory, 3 units

Catalog Description
Comprehensive hands-on application, use and training on a Linux client computer operating system for both beginning and intermediate-level students. Instruction will include: operating system installation and configuration, graphical user interface and command-line commands, hardware installation and configuration, file system management, user and group management, security configuration, network configuration and management, troubleshooting and disaster recovery. Course maps to the Computer Technology Industry Association (CompTIA) Linux+ and Linux Professional Institute (LPI) Certification Level 1 certification exams.

Prerequisite
"C" grade or higher or "Pass" in CIS 120 or 125 or equivalent or current CompTIA A+ or N+ certification

Entrance Skills
Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:
1) Working knowledge of basic operating system terminology (command prompt, window, file system, formatting, etc.) and basic information system terminology (server, input, output, driver or port).
2) Effectively use an input and pointing device to navigate a computer file system and enter commands.
3) Launch application software, save files, print files, retrieve files, and rename files without supervision.

Course Content
1) Linux operating system configuration using both graphical user interface and command line tools
2) Installation and configuration of computer peripheral and hardware devices
3) Computer utility programs pertinent to client computer configuration and management
4) Storage system management including partitioning, permissions, security and recovery
5) Software installation, update, configuration, compatibility and management
6) Computer network configuration and management
7) Sharing files and folders across a network
8) Computer security configuration and management including permissions, firewalls, Internet and encryption
9) System troubleshooting including system file editing and hardware, software, user and groups configuration
10) Computer system backup and disaster recovery procedures and techniques

Course Objectives
1) Define, describe and/or discuss: operating system functions, properties, tools and utilities; boot functions; hardware and printer resources; network configuration topologies, protocols and properties; security considerations and utilities; file system parameters and configurations; disaster recovery procedures; and major elements of the Linux operating system architecture
2) Configure Linux installation configuration files, install the operating system, and troubleshoot/repair boot errors

3) Configure and manage daemons; hardware and printers; configuration files and shell parameters; and file systems associated with the Linux operating system using both graphical user interface and command line tools/utilities
4) Create and manage computer users and groups, user policies and permissions
5) Configure the Linux operating system to join an IP network and access shared content across a network using both secure and unsecure methods
6) Configure and troubleshoot computer security configurations, intrusion detection, firewalls, software updates, and log monitoring/management
7) Backup and recover data and system settings using backup utilities

Method of Evaluation
A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.
1) Written quizzes and exams that measure students' ability to describe computer operating system functions and characteristics, analyze a scenario, and choose the alternatives and troubleshooting options.
2) Scenario-based lab activities that measure students' ability to configure specific operating system functions or subsystems, troubleshoot/analyze imposed system problems, investigate potential alternatives, and implement corrective action to achieve a determined result.
3) Practical application-based examinations that measure students' ability to evaluate scenario-based computer configuration requirements/problems, analyze/troubleshoot the operating system configuration, and apply the correct configuration changes to achieve the correct results.

Special Materials Required of Student
USB flash drive

Minimum Instructional Facilities
Computer lab with configurable hard drives installed with course software or a virtualized lab environment using either VMware or Virtual PC/Server software that is accessible via the campus network or the Internet; current version of a Linux client operating system distribution; instructional domain server capable of student client computer connection (real or virtual); course management system

Method of Instruction
1) Lecture and demonstration
2) Hands-on practice
3) Topical discussion of current operating system trends and issues

Out-of-Class Assignments
May include the following:
1) Reading assignments
2) Virtualized labs
3) Tests and quizzes
4) Discussion item research and responses

Texts and References
1) Required (representative example): Bresnahan, Christine et al. *CompTIA Linux+ Powered by Linux Professional Institute Study Guide*. 4th edition. Sybex, 2020.
2) Supplemental: None

Exit Skills
Students having successfully completed this course exit with the following skills, competencies and/or knowledge:
1) Configure, perform and troubleshoot a Linux operating system installation.
2) Configure, manage and troubleshoot operating system configurations using both command-line and graphical user interface tools/utilities.
3) Configure, manage and troubleshoot access to files, folders and shared folders.
4) Manage computer storage systems including drive partitioning, drive mounting, disk formatting and disk quotas.
5) Configure, manage and connect to local and network print devices and print queues.
6) Configure, manage, install and troubleshoot computer hardware and drivers.
7) Configure and perform a scheduled backup as well as restore files from a backup.
8) Configure and manage users and groups, including setting user permissions.
9) Configure and troubleshoot IP network settings and connect client computers to a network.
10) Configure and manage computer security policies and firewalls.

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
1) Install, deploy, configure and manage a Linux client/server project using current industry software and standards.