IT C191: LINUX OPERATING SYSTEM PRINCIPLES (LINUX +)

Item	Value
Curriculum Committee Approval Date	10/27/2023
Top Code	070810 - Computer Networking
Units	3 Total Units
Hours	72 Total Hours (Lecture Hours 54; Lab Hours 18)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

Formerly: CST C191A. This course covers the history of the Linux operating system, various release versions, and how to install Linux. Students will compare and contrast desktop managers, traverse the Linux file system, explore the wonders of Vi scripts, and the command-line interface. Hands-on assignments will help students develop introductory technical skills relevant to entry-level cybersecurity and computer networking professional roles. Helps students gain knowledge in preparation for the CompTIA Linux+ certification exam. ADVISORY: IT C104 or IT C128. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Explain concepts and terminology associated with Linux administration.
2. Demonstrate the ability to install, configure, manage, and operate a Linux server system.
3. Create basic scripts for Linux administration automation.

Course Objectives

- 1. Demonstrate how to apply common administrative and navigational commands using the Linux command line interface.
- 2. Define how to perform routine maintenance tasks including assisting users, adding users to a larger system, executing backup restore and shutdown reboot.
- 3. Explain how to install and configure a workstation (including X) and connect it to a local area network (LAN), or a stand-alone personal computer via modem to the Internet in the design of capture solutions, while addressing security requirements.

Lecture Content

Linux Basics including History and Hardware requirements Describe the background and history of Linux Use the Linux User Interface Use the command-line interface Use the graphical user interface Installing and Managing Linux Software Understand PC Hardware Describe personal computer components Describe removable hardware interfaces Obtain Linux software Install from source code Install from RPM packages Manage RPM packates Plan a Linux Installation Verify system requirements and hardware compatibility Plan the file system Select software packages Specify user accounts Gather network information Select installation source Install Linux Using Linux Text Editors and Getting Help Use Non-Graphical Linux Text Editor Use the vi editor Use the Emacs editor Use Graphical Linux Text Editors Use Kate editor Use XEmacs editor Use gedit editor Get Help Use man pages Use info Use other documentation and troubleshooting resources Manage the Linux File System Describe the Linux file system Learn the types of files used by Linux Complete common file system tasks Navigate the file system Manage files and directories Run executables Search the file system Manage disk partitions Use fdisk to create partitions Build a file system with mkfs Mount a partition with mount Check the file system with fsck Use removable media Work with floppies, optical devices, USB and FireWire dev ices Backup data Select a backup medium, backup strategy, use Linux backup utilities Work with Linux Users and Groups Manage Users and Groups Manage Ownership, Permissions and Quotas Manage default and special permissions Using the Linux Shell, Controlling Processes and Services Using the BASH shell Review bash configuration files Use command history Manage Unix environment variables User-defined variables Aliases Manage shell command inputs and outputs Bash file descriptors Redirect output and input for shell commands Create shell scripts The ways Linux handles processes How Linux handles processes Manage running processes Schedule processes using at and cron Manage the Linux Boot Process Understand the BIOS, bootloader and Kernel phases Configure a bootloader Manage runlevels Configure Hardware, Networking, Server Services, and Security Manage hardware and kernel modules Configure power management Burn CDs and DVDs Implement RAID Configure XWindows Configure a network interface Test and monior the network Configure routing Secure the system User access control Defend against network attacks Use encryption Documenting and Troubleshooting the Linux System Document the system according to standard procedures Create a system baseline Troubleshooting system problems.

Lab Content

Lab assignments will cover the for the following concepts in the Linux server environment: Installation of Linux operating systems Use the command-line interface to access files Navigate the file system using the command line interface Manage files and directories Backup data Run shell scripts Implement services such as Web, Mail, FIle, and user services

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

All formats for this course will incorporate instructional methodologies to include, but not limited to lecture, hands-on assignments, discussions, and projects that can be either individually or group assigned.
This course may utilize a combination of lecture, hands-on guided laboratory assignments, discussions to include student-to-student interaction, Internet research problem solving tasks, quizzes, tests, and

troubleshooting assignments to achieve the goals and objectives of this course. All instructional methods are consistent across all modalities.

Reading Assignments

Weekly reading assignments will be assigned from the required text or online materials provided in the form of web links.

Writing Assignments

Written assignments will include discussions and short essay responses.

Out-of-class Assignments

Assignments will consist of performance-based labs, quizzes, and discussions.

Demonstration of Critical Thinking

Troubleshooting lab exercises to demonstrate critical thinking in real-world simulated Linux environments.

Required Writing, Problem Solving, Skills Demonstration

Hands-on labs to demonstrate concepts introduced in modules of the course. These labs include skills demonstration that often require problem solving to complete the assigned task based on a given scenario.

Eligible Disciplines

Computer information systems (computer network installation, microcomputer ...: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Eckert, Jason. CompTIA Linux+ Guide to Linux Certification, 6th ed. Boston, MA: Cengage Learning, 2023 Rationale: -

Other Resources

1. Coastline Library 2. White papers, security reports, and articles are available at no charge to all students at multiple sites as recommended by the instructor.