Linux Administration I 2023-2024 Catal

[ARCHIVED CATALOG]

SVAD 116 - Linux Administration I

PREREQUISITES: SVAD 111 - Linux and Virtualization Tech.
PROGRAM: Cloud Technologies
CREDIT HOURS MIN: 3
LECTURE HOURS MIN: 2
LAB HOURS MIN: 2
DATE OF LAST REVISION: Fall, 2020

Linux Administration provides hands-on training for installing, managing, monitoring, configuring and troubleshooting the fundamental systems and services found in most major Linux operating system distributions. Students will learn to manage the Linux boot process, install software, and manage users and groups, the Linux file system is examined including ownerships, permissions and quotas. Students will learn to write shell scripts and manage network services on the Linux server. Students will learn how to secure a Linux desktop and server. [derived directly from the CompTIA Linux+ objectives]

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

1. Examine hardware and system configuration concepts including but not limited to the boot process, kernel modules, network connectivity, storage, cloud and virtualization concepts, and localization.
2. Perform systems operation and maintenance involving software installation/configuration/updates/removal, user and group management, file creation/modification/redirection, services, server roles, job management, devices, and GUIs.
3. Demonstrate security elements such as user/group permissions and ownership, appropriate access and authentication, file backup/compression/restoration, logging services, firewalls, and best practices.
4. Diagnose and troubleshoot by analyzing system, process, and user issues with appropriate remediation and/or performance optimization.
5. Implement automation and scripting solutions through BASH scripting, version control using Git, and orchestration processes and concepts.

COURSE CONTENT: Topical areas of study include -

- The Linux Boot process
- Kernel modules
- Network configuration and diagnostics
- Storage concepts and tools
- Filesystem Hierarchy Standard, and filesystem types
- Cloud and virtualization concepts
- Localization, environment variables, character sets, and commands
- Software package types, installation and build tools, repositories
- User and group creation, modification, removal; user queries, quotas, profiles
- Text editors, file readers, file output redirection; text processing and file and directory operations
- Systemd and SysVinit managed services
- Job scheduling and control using cron, crontab, kill, nohup
- Devices, their important file locations, types, monitoring and configuration tools
- GUI servers, desktop environments, and remote desktop solutions

- File, directory, and context-based permissions, privilege escalation, user types
- Access and authentication methods including PAM, SSH, PKI
- Boot security, Chroot, Log management, ACLs, firewalls, and backup/restore strategies
- Network, storage, CPU, and memory monitoring and configuration
- Process management
- Shell scripting, version control, infrastructure automation

CERTIFICATION ASSOCIATED COURSE:

All students enrolled in this course are required to take the corresponding certification exam at some point on or before the last day of the course. The seat, allowing the student to take the certification exam, was paid for by the student as a consumable fee at the beginning of the course, along with tuition. If the student does not take the exam, the student will earn an "F" for the class. If the student takes the exam and does not pass the exam, the highest grade possible in the course is a "B." However, if the student passes the exam, it will account for 20% of the total course grade. Students will be assessed the current fee in order to take the examination. This consumable fee will be automatically encumbered upon enrollment in the course.

CERTIFICATION/LICENSURE DISCLAIMER:

Ivy Tech cannot guarantee that any student will pass a certification or licensing exam. Your success will be determined by several factors beyond the instruction you are given in the classroom including your test-taking skills, your willingness to study outside of class, and your satisfactory completion of appropriate practice exams. Certification exam questions are drawn from databases of tens of thousands of possible questions and no two people are asked exactly the same progression of questions. Therefore, a thorough understanding of the subject matter is required. The goal of Ivy Tech in providing a certification exam studies class is to assist you in understanding the material sufficiently to provide a firm foundation for your studies as you prepare for the exam.

Course Addendum - Syllabus (Click to expand)