COURSE SYLLABUS

LAST REVIEW   Spring 2021

COURSE TITLE   Linux Server Administration

COURSE NUMBER   CIST-0332

DIVISION   Career and Technical Education

DEPARTMENT   CIST

CIP CODE   11.0801

CREDIT HOURS   3

CONTACT HOURS/WEEK   Class: X   Lab: X   Clinical: X

PREREQUISITES   CIST-0232: UNIX Scripting and Utilities

COREQUISITES   None

COURSE DESCRIPTION

This course will instruct the student in the hands-on installation, configuring and maintaining a Linux server Operating system in a networked environment. The basic commands needed to administrate and manage the Linux server OS using the command line structure will be covered as well. Additionally, Students will learn to perform basic administrative tasks such as adding and managing users, creating, and maintaining file systems, developing, and implementing a security policy. Also, students will perform Linux network-related tasks.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:
https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES
   1.
   2.

INSTITUTIONAL LEARNING OUTCOMES
☐ Communication
☐ Computation and Financial Literacy
☐ Critical Reasoning
☐ Technology and Information Literacy
☐ Community and Civic Responsibility
☐ Personal and Interpersonal Skills

TEXTBOOKS

METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Introduction to Linux OS
   A. Linux Foundation
   B. Distribution Details
II. Linux System Startup
   A. Understanding the Boot Sequence
   B. The Grand Unified Boot Loader
   C. GRUB Configuration Files
   D. System Configuration Files
   E. systemd
   F. SysVinit Startup
   G. Chkconfig service
III. Kernel Services and Configuration
   A. Kernel Overview
   B. Kernel Configuration
   C. Kernel Modules
   D. Module Utilities
   E. Module Configuration
   F. Device Management
IV. Partitioning and Formatting Disks
   A. Partitioning
   B. Naming Disk Devices
   C. Sizing up partitions
   D. Partition table editors
V. Linux Filesystems
   A. Filesystem Concepts
   B. Disk and Filesystem Usage
   C. Extended Attributes
   D. Creating, formatting, Checking and Repairing filesystems
   E. Mounting filesystems
   F. Swap
   G. Filesystem Quotas
VI. Linux processes
   A. Programs and Processes

COURSE LEARNING OUTCOMES AND COMPETENCIES
Upon completion of the course, the student will:

A.   Explain Linux operating systems.
    1.   Define Linux Foundation and Distribution Details.

B.   Explain Linux system Startup.
    2.   Understand the Boot Sequence.
    3.   Explain the grand unified boot loader.
    4.   Define GRUB configuration files.
    5.   Identify system configuration files.
    6.   Explain Linux systemd service.
    7.   Explain Linux SysVinit Startup.
    8.   Explain Linux chkconfig service.

C.   Explain Linux kernel services and configuration.
    9.   Define Linux kernel.
    10. Configure Linux kernel.
    11. Define Linux kernel modules.
    12. Explain Linux module utilities.
    13. Configure Linux module.
    14. Manage Linux devices.

D.   Explain Linux partitioning and formatting disks.
    15. Partition storage devices using Linux OS.
    16. Name disk devices in Linux OS.
    17. Size up partitions in Linux OS.
    18. Edit Linux partition table.

E.   Explain Linux Filesystems.
    19. Explain Linux filesystem.
    20. Explain Linux disk and filesystem usage.
    21. Explain Linux extended attributes.
    22. Create, format, check, repair, and mount filesystems.
    23. Explain Linux swap.
    24. Explain Linux filesystem quotas.

F.   Explain Linux processes.
    25. Explain Linux programs and processes.
    26. Explain process states.
    27. Explain execution modes.
    28. Explain Linux daemons.
    29. Create processes.
    30. Explain Linux process limits.

31. Monitor Linux process.

G. Explain Linux package management systems.
    32. Explain Linux software packaging concepts.
    33. Explain RPM and DPKG.
    34. Explain Linux revision control systems.

H. Explain Linux user and group account management.
    35. Manage user accounts and their passwords.
    36. Explain restricted shells and accounts.
    37. Define the root account.
    38. Manage groups.
    39. Explain the PAM (Pluggable Authentication Modules).
    40. Explain the authentication Process.
    41. Configure the PAM.
    42. Explain the LDAP Authentication.
    43. Explain Linux file permissions and ownership.
    44. Explain SSH.

I.   Explain Linux networking system.
    45. Explain IP addresses from Linux perspective.
    46. Define hostnames.
    47. Manage network devices.
    48. Configure Linux files.
    49. Explain network manager.
    50. Explain routing.
    51. Explain DNS and hostname resolution.
    52. Explain network diagnostics.

J.   Explain Linux security.
    53. Explain local system security.
    54. Create a security policy.
    55. Explain Linux updates and security.
    56. Explain Linux physical security.
    57. Explain Linux filesystem security.
    58. Explain Linux security modules.

K. Explain Linux server roles.
    59. Explain web server role.
    60. Explain mail server role.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook
https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf

College Catalog
https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements
https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations
https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.