

Linux Server

Course Outcome Summary

Course Information

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|---------------------------------------|--------------------------------|
| Organization | Madison Area Technical College |
| Developers | Dean W Jefferson |
| Development Date | 1/3/2005 |
| Course Number | 10-154-190 |
| Instructional Level | Associate Degree |
| Potential Hours of Instruction | 72 |
| Total Credits | 3 |

Description

Introduces Linux with a focus on system administration skills. Topics include installation, file and directory management, command execution, input/output redirection and pipes, shell scripts, network services, security, troubleshooting and the X Window system.

Target Population

This course is a required course in the CIS Network Specialist Associate Degree program and in the CIS Network Security Associate Degree Program. It is targeted to those students and programming professionals as an introduction to Linux system administration.

Types of Instruction

| Instruction Type | Contact Hours | Credits |
|------------------------|---------------|---------|
| Classroom Presentation | 36 | 2 |
| On-Campus lab | 36 | 1 |

Textbooks

Nicholas Wells. *Guide to Linux Installation & Administration*. Course Technology. **Edition:** 2. **ISBN:** 0-619-13095-4.

Prerequisites

Grade of C or better in 10-107-197 Networking and Communications 1
OR consent of instructor

Exit Learning Outcomes

Core Abilities

- A. Demonstrate critical thinking
- B. Use science and technology

Competencies

- A. **Install Linux operating system**
Linked Core Abilities

Use science and technology

Learner will demonstrate your competence:

A.1. through an in-class lab project

Learner performance will be successful when:

A.1. Linux server boots and accepts user login

A.2. Linux server pings the internet

A.3. Linux server contains correct disk partitions and installed software

A.4. Linux server has correct server name

B. Manage files and directories on a Linux system

Linked Core Abilities

Use science and technology

Learner will demonstrate your competence:

B.1. through an in-class lab project

B.2. through a written evaluation

B.3. through a hands-on evaluation

Learner performance will be successful when:

B.1. you manage files and directories on a Linux system using basic commands

B.2. you demonstrate basic security features of the Linux file system

B.3. you launch programs and manage corresponding software packages

B.4. you review and change the initialization process that starts a Linux-based computer

B.5. you shut down a Linux system in an orderly way

C. Assess the installation and settings of the X Window System

Linked Core Abilities

Demonstrate critical thinking

Learner will demonstrate your competence:

C.1. through an in-class lab project

C.2. through a written evaluation

C.3. through a hands-on evaluation

Learner performance will be successful when:

C.1. you use popular graphical desktop interfaces for Linux

C.2. you demonstrate how the X Window System functions

C.3. you analyze the installation and settings of the X Window System

D. Explore the Linux shell environment

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

D.1. through an in-class lab project

D.2. through a written evaluation

D.3. through a hands-on evaluation

Learner performance will be successful when:

D.1. you use a Linux shell environment to navigate the server

D.2. you customize the shell environment

D.3. you use common text editors to create or modify text files

E. Demonstrate the role of a system administrator

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

E.1. through an in-class lab project

E.2. through a written evaluation

E.3. through a hands-on evaluation

Learner performance will be successful when:

E.1. you describe the role of a system administrator

E.2. you discuss the responsibilities of a system administrator

E.3. you use basic system administration commands in Linux

F. Manage Linux user accounts and processes

Linked Core Abilities

Use science and technology

Learner will demonstrate your competence:

F.1. through an in-class lab project

F.2. through a written evaluation

F.3. through a hands-on evaluation

Learner performance will be successful when:

F.1. you create Linux user accounts

F.2. you modify properties of Linux user accounts

F.3. you remove Linux user accounts

F.4. you manage processes on Linux using basic commands

G. Assess system vulnerabilities

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

G.1. through an in-class lab project

G.2. through a written evaluation

G.3. through a hands-on evaluation

Learner performance will be successful when:

G.1. you describe a Linux system's vulnerabilities

G.2. you discuss ways to protect data and ensure minimum downtime

G.3. you manage the power supply of a Linux computer

G.4. you check the integrity of a Linux file systems

G.5. you describe how redundant disk systems can protect data

H. Control how processes use system resources

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

- H.1. through an in-class lab project
- H.2. through a written evaluation
- H.3. through a hands-on evaluation

Learner performance will be successful when:

- H.1. you access the /proc file system to manage system status
- H.2. you control how processes use system resources
- H.3. you track physical and virtual memory usage
- H.4. you use system logs to troubleshoot hardware and software problems
- H.5. you use system logs to monitor potential security breaches

I. Demonstrate advanced Linux administration techniques

Linked Core Abilities

Demonstrate critical thinking
Use science and technology

Learner will demonstrate your competence:

- I.1. through an in-class lab project
- I.2. through a written evaluation
- I.3. through a hands-on evaluation

Learner performance will be successful when:

- I.1. you create shell scripts using basic shell programming features
- I.2. you automate one-time and repetitive tasks using the "at" and "cron" utilities
- I.3. you assess features of the current configuration of the Linux kernel

J. Manage networked printing resources using the Common UNIX Printing System (CUPS)

Linked Core Abilities

Use science and technology

Learner will demonstrate your competence:

- J.1. through an in-class lab project
- J.2. through a written evaluation
- J.3. through a hands-on evaluation

Learner performance will be successful when:

- J.1. you configure a printer and uses the Linux printing architecture
- J.2. you discuss the Common UNIX Printing System (CUPS)
- J.3. you print files from different applications
- J.4. you manage networked printing resources

K. Explore popular Linux backup utilities

Linked Core Abilities

Use science and technology

Learner will demonstrate your competence:

- K.1. through an in-class lab project
- K.2. through a written evaluation
- K.3. through a hands-on evaluation

Learner performance will be successful when:

- K.1. you discuss Linux system data backup strategies
- K.2. you discuss hardware and software used to back up Linux systems

K.3. you use backup utilities such as tar, cpio, and graphical backup utilities

L. Configure a Samba server to share file and printing services with Windows

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

L.1. through an in-class lab project

L.2. through a written evaluation

L.3. through a hands-on evaluation

Learner performance will be successful when:

L.1. you install the Samba software for internetworking with Windows

L.2. you install the swat administration utility for Samba

L.3. you configure Samba to share disk resources with Windows workstations

L.4. you configure Samba to share printing resources with Windows workstations

M. Configure a basic Linux firewall

Linked Core Abilities

Demonstrate critical thinking

Use science and technology

Learner will demonstrate your competence:

M.1. through an in-class lab project

M.2. through a written evaluation

M.3. through a hands-on evaluation

Learner performance will be successful when:

M.1. you install Linux iptables firewall software

M.2. you analyze the default configuration of the iptables firewall

M.3. you configure iptables based firewall to allow secure remote access by client computers