

College: A Saddleback College
Division/School: BS Business Science
Department: CIM Computer Information Management
Program: CIMNAD Network Administrator
Subject: CIMNAD Network Administrator

O F F I C I A L C O U R S E O U T L I N E

HISTORY AND STATUS

Course Status: A Active (Fully Approved)
Course Originator: Tom DeDonno

Board of Trustees 08/26/19
State Approval 02/25/02
Curriculum Committee Approval 08/01/19
Division Approval 08/01/19
Tech Review Approval 08/01/19

Technical Change Date: 02/25/13

Technical Change Comment:
2/25/13-frmlly CIM 256, rpt removed in accordance w/Title V; 10/21/19 chngd
CB00 fr 424901 to 608656

Comments:
txt

BRIEF DESCRIPTION

Short Title: UNIX/LINUX SYS ADMIN
Full Title: FUNDAMENTAL UNIX/LINUX SYSTEM ADMINISTRATION

BRIEF DESCRIPTION

Catalog Description:

Course includes test preparation for COMPTIA Linux+ and Server+ certifications.

Specifically course provides a student with the knowledge and skills required to build, maintain, troubleshoot and support server hardware and software technologies. The student will be able to identify environmental issues; understand and comply with disaster recovery and physical / software security procedures; become familiar with industry terminology and concepts; understand server roles / specializations and interaction within the overall computing environment. Topics include installing UNIX/Linux; configuring X windows and system hardware; file system creation, backup and maintenance; boot process; administering user and group accounts; network and printing integration.

(formerly CIMN 240)

Prerequisite:

None

Enrollment Limitation:

None

Corequisite:

None

Recommended Preparation:

CIMN 230

COURSE FUNCTIONS

Course Prior to: Y Not Applicable
Course Classification: Y Credit Course

SC/IVC GE Code: NA - Not Applicable
CSU GE Code: NA Not Applicable
IGETC GE Code: NA - Not Applicable
UC Transferable Course: N No UC credit
Comparable SC/IVC:

Comparable CSU: CSU
CSU Bakersfield
CMPS 2650 - Linux Environment and Administration

Comparable UC:

Comparable CCC Baccalaureate:

TOP Code: 0708.10 Network Administrator
SAM Code: C Clearly Occupational
CAN Number:
CID Number:

COURSE OPTIONS

Grading Option: GR Letter Grade or Pass/No Pass
Open Entry: N No
Fixed, Optional or Variable Units: F Fixed Units

Repeatability Status: N No
Repeatability Model:
Repeatability Limit: 0

Cross-Listed Courses: NONE
Cross-Listed Parent: No

COURSE VALUES

Method of Instruction:	L-L	Lecture/Lab Combination	
Maximum Enrollment:	45	Maximum WSCH:	225
Average Enrollment:	40	Average WSCH:	200

	Lecture	Lab	Learn Ctr	Total
WFCH	2.00	3.00	0.00	5.00
TFCH	33.20	49.80	0.00	83.00
TSCH	33.20	49.80	0.00	83.00
LHE	2.00	2.50	0.00	4.50
FTEF	13.33	16.67	0.00	30.00
UNITS	2.00	1.00	0.00	3.00

Schedule Description:

Course includes test preparation for COMPTIA Linux+ and Server+ certifications. An in-depth look at administrative and maintenance tasks on a UNIX/Linux-based network. Includes installation, hardware configuration, creating/maintaining the file system, boot process, user account management, printing subsystems, and troubleshooting. (formerly CIMN240)

COURSE CONTENT
(Topics Covered)

Lecture Topics:

- I. Introduction to servers
 - A. Examine the network architecture
 - B. Identify common server types and functions
- II. UNIX/Linux operating system installation
- III. X Window System configuration and desktops
- IV. Explore Server Hardware
 - A. Common system hardware configuration
 - B. Identify server system board components
 - C. Explore system processing core
 - D. Explore server memory
 - E. Examine server cooling and power systems
- V. Introduction to server software
 - A. Describe server software
 - B. Network operating system (NOS) management features
 - C. Network operating system (NOS) security features
 - D. Network essentials for servers
- VI. Exploring the server storage system
 - A. The UNIX/Linux file systems
 - B. Examine storage devices used for servers
 - C. Exploring disk interfaces, such as Integrated Drive Electronics (IDE) and Small Computer System Interface (SCSI)
 - D. Describe Random Arrays of Independent Disks (RAID)
 - E. Explore Network-Attached Storage (NAS) implementations
 - F. Explore Storage Area Network (SAN) implementations
- VII. The UNIX/Linux boot process
- VIII. Standard user and group administration tasks
- IX. The integration of a UNIX/Linux workstation into an existing multi-operating system network
- X. Basic UNIX/Linux subsystems including printing
- XI. Maintain and interpret system audit logs
- XII. Installing the server hardware
 - A. Identify the best practices in server hardware installation
 - B. Install hardware components on a server
 - C. Verify server installation
 - D. Install a server in a network environment
- XIII. Configuring servers
 - A. Network operating system (NOS) installation and verification
 - B. Install system monitoring agents and service tools
 - C. Server configuration documentation
- XIV. Examining the issues in upgrading server components
 - A. Examine an upgrade checklist
 - B. Examine the issues in upgrading server hardware
 - C. Examine the issues in upgrading server software
- XV. Examining servers in an IT environment
 - A. Industry best practices for server installation and maintenance
 - B. Server security and access methods
- XVI. Troubleshooting servers
 - A. Examine the troubleshooting theory and methodologies
 - B. Troubleshoot server hardware problems

- C. Troubleshoot server software problems
- D. Troubleshoot server network problems
- E. Troubleshoot server storage device problems
- XVII. Exploring disaster recovery concepts and methodologies
 - A. Unix/Linux backup tools and strategies
 - B. Examine disaster recovery plans
 - C. Implement disaster recovery methodologies
 - D. Implement replication methods
- VIII. The UNIX/Linux kernel; install, compile and configure
- XIX. Basic performance monitoring and tuning,
 - A. memory, and process management
 - B. Basic operating system troubleshooting

Lab/Learning Center Content:

- I. Labs on troubleshooting server hardware, software and network problems
- II. Lab on server security and access methods
- III. Lab on examining disaster recovery concepts and methodologies along with disaster recovery plans, and replication methods.
- IV. Lab on issues relating to upgrading server hardware and software
- V. Lab on configuring servers for Network Operating System (NOS), monitoring agents, and service tools.
- VI. Labs on server software Network Operating System (NOS) management and security features.
- VII. Labs on exploring server hardware.

COURSE CONTENT
(Learning Objectives)

Students participating in this class will:

1. Examine server fundamentals as preparation to install the UNIX/Linux operating system.
2. Identify the hardware components of a server and explain the purpose and function of controlling common system hardware.
3. Describe features of server software
4. Examine the various types of storage systems used in servers and install, share and manage file systems and resources.
5. Install hardware components on a server.
6. Configure various servers including the X Window System and various Linux desktops.
7. Examine the issues in upgrading server components.
8. Identify some of the industry's best practices for deploying a server and the various strategies of securing, accessing, and remotely managing the server hardware.
9. Optimize system performance including basic troubleshooting.
10. Describe disaster recovery concepts and techniques.
11. Create and maintain the UNIX/Linux file system.
12. Summarize the boot process.
13. Create and manage user and group accounts.
14. Integrate a workstation with an existing multi-operating system network.
15. Prepare the installation, configuration and support of printers and printer resources, including print sharing.
16. Create and analyze system logs.
17. Describe backing up file systems.
18. Configure servers including compiling and installing the UNIX/Linux kernel.
19. Create shell scripts to automate system administration tasks.

COURSE CONTENT
(Student Learning Outcomes)

Students completing this course satisfactorily will be able to:

1. Describe the preparation and installation of the UNIX/linux operating system.
2. Explain the purpose and function of controlling common system hardware.
3. Summarize the boot process.

COURSE CONTENT
(Methods of Evaluation)

Evaluation of the student will be based upon the following items:

1. Writing Assignments
 - short answers
 - other (specify)
 - a. Evaluation of student's subject matter comprehension of course topics through written homework
2. Problem Solving Demonstrations

exams
quizzes
homework problems
other (specify)
a. Evaluation of student's knowledge of configuring an X Window System

3. Skill Demonstrations

class performance(s)
performance (exam)
other (specify)
a. Evaluation of student's ability to demonstrate proficiency at installing, configuring and supporting printers and printer resources, including print sharing

4. Examinations

multiple choice, true/false
essay
matching items
completion
other (specify)
a. Evaluation of student's knowledge of the UNIX/Linux boot process, file systems, and backup tools and strategies.
Practice tests for CompTIA linux+ certificate.

5. Other

other (specify)
a. Evaluation will include hands-on projects along with presentations and discussion.

VALIDATION
(Corequisite, Limitation on Enrollment,
Prerequisite and Recommended Preparation)

Recommended Preparation:

CIMN 230:

1. Describe the concepts and terminology relating to the operating system.
2. Summarize features of file systems and command syntax.
3. Identify and evaluate available help.
4. Select and apply commands to navigate the directory structure and manipulate files and directories.
5. Create and print text files using an editor.
6. Describe the concepts and terminology relating to pipes, filters and redirection.
7. Apply and use commands that relate to pipes, filters and redirection.
8. Identify types of users and their rights.
9. Analyze and use file and directory permissions.
10. Describe the purpose and function of symbolic and hard links.
11. Describe the purpose and function of processes and variables.
12. Utilize local administrative commands to maintain a local working system.
13. Describe the purpose and function of shell scripts.