

Course Outline

COURSE: CSIS 52 **DIVISION:** 50 **ALSO LISTED AS:**

TERM EFFECTIVE: Fall 2022 **CURRICULUM APPROVAL DATE:** 12/13/2022

SHORT TITLE: LINUX, UNIX SYS ADM

LONG TITLE: Linux, UNIX System Administration

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

COURSE DESCRIPTION:

This course introduces students to the fundamentals of Linux/UNIX system administration: the setup, configuration and maintenance of Linux/UNIX servers. Topics include managing file systems, devices and user accounts, maintaining system backups and system logs, and basic system security. Students will configure a web-server, install programs, configure networking, and implement basic system security protocols. This course has the option of a letter grade or pass/no pass. **ADVISORY:** CSIS 48

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

- L - Standard Letter Grade
- P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

- 02 - Lecture and/or discussion
- 05 - Hybrid
- 71 - Dist. Ed Internet Simultaneous
- 72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Describe the system administration resources available in the Linux/UNIX documentation and on the Internet.
2. Add users, configure a mail server, configure a web server and configure basic network services.
3. Manage file systems and implement basic system security.

COURSE OBJECTIVES:

By the end of this course, a student should:

1. Demonstrate the ability to find relevant resources on the web.
2. Describe and demonstrate how to find change file permissions and ownership and how to create symbolic links.
3. Demonstrate how to schedule periodic processes and perform backups.
4. Explain and demonstrate how to log onto other computers remotely, transfer files and monitor network activity.
5. Describe and demonstrate how to configure a web server and install pages on the server.
6. Explain and demonstrate how to configure the mailserver and send and receive user email.
7. Discuss System Administrator best practices and ethics

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 12/13/2022

6 Hours

Content: History of Linux/UNIX. Importance of Linux/UNIX. Different versions of Linux/UNIX in use today. Linux/UNIX features, multitasking, multiuser, multiprocessing. Relation to DOS and Windows. Choosing and installing a distribution, which hardware is supported. Using the manuals, "man" pages, web resources. Overview of system administration tools.

6 Hours

Content: UNIX model of ownership of files and processes. System commands. Organization of the filesystem. Regular files, directories, character and block devices. File permissions, changing permissions, changing file ownership, hard links, symbolic links, inodes.

6 Hours

Content: Hardware: adding new hardware, devices and drivers. Partitioning a hard disk with the fdisk program. Mounting a disk to make it part of the filesystem. Finding information on the web about supported hardware, finding device drivers.

6 Hours

Content: Scheduling periodic processes, crontab files. Making backups, archiving programs: tar, gzip, dd. Checking log files.

6 Hours

Content: Using the network. NFS (Network File System), DNS (Domain Name System), TCP/IP, logging onto other computers using telnet, transferring files between computers using ftp, network monitoring tools, using tcpdump.

6 Hours

Content: The Internet. Configuring the Apache web server, creating web pages and installing them on the web server, creating an interactive web page using forms and C++. Allowing CGI scripts and configuring them securely.

6 Hours

Content: Email. Configure a mailserver. Configuring and using the sendmail and fetchmail programs to send email. The POP3 and IMAP protocols. Email attachments and faxes. Mail forwarding, mailing lists, the mail pool directory. Mailing lists.

6 Hours

Content: Security. Password checking and selection. Password aging. Important file permissions. Security tools: finding insecure passwords, protecting internet services, monitoring changes to system files. Encryption and Secure Shell. Online resources for up-to-date security information.

4 Hours

Content: System Administrator best practices and ethics. Review.

2 Hours

Final Exam

METHODS OF INSTRUCTION:

Lecture, Discussion, Guided Practice

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Find relevant resources on the web.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Find change file permissions and ownership, create symbolic links.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Find relevant resources on the web.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Schedule periodic processes and perform backups.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Log onto other computers remotely, transfer files and monitor network activity.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Configure a web server and install pages on the server.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Configure the mailserver and send and receive user email.

Required Outside Hours 12

Assignment Description

Homework: Read the relevant sections of the text and complete the assigned exercises. Find relevant resources on the web.

Required Outside Hours 12

Assignment Description

Research System Administrator best practices and ethics. Review. Study for quizzes, exams.

METHODS OF EVALUATION:

Writing assignments

Evaluation Percent 5

Evaluation Description

Writing assignments: 5% - 20%

Written Homework; Reports

Problem-solving assignments

Evaluation Percent 55

Evaluation Description

Problem-solving demonstrations: 35% - 65%

Homework Problems; Reports; Quizzes; Exams

Skill demonstrations

Evaluation Percent 30

Evaluation Description

Skill demonstrations: 20% - 50%

Performance Exams

Objective examinations

Evaluation Percent 10

Evaluation Description

Objective examinations: 10% - 30%

Multiple Choice;

Completion;

Other: Short Answer

REPRESENTATIVE TEXTBOOKS:

Wale Soyinka. Linux Administration: A Beginner's Guide, Eighth Edition. McGraw-Hill Education, 2020. Or other appropriate college level text.

ISBN: 9781260441710

Reading level of text, Grade: 12+ Verified by: MS Word

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 200430

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: C

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000574225

Sports/Physical Education Course: N

Taxonomy of Program: 070800