

Course Outline

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

TERM EFFECTIVE: Spring 2017 **CURRICULUM APPROVAL DATE:** 04/25/2016

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
- 03 - Lecture/Laboratory
- 04 - Laboratory/Studio/Activity
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

1. Describe the system administration resources available in the Linux/UNIX documentation and on the Internet.

Measure: homework, exams

PLO:

ILO: 7,1,2,3

GE-LO: A3, A5, A6, A7

Year assessed or anticipated year of assessment: 2017

2. Add users, configure a mail server, configure a web server and configure basic network services.

Measure: Homework, projects, lab exercises

PLO:

ILO: 7,3,2

GE-LO: B8

Year assessed or anticipated year of assessment: 2017

3. Manage file systems and implement basic system security.

Measure: Homework, projects, lab exercises

PLO:

ILO: 7.3.2

GE-LO:

Year assessed or anticipated year of assessment: 2017

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

Curriculum Approval Date: 04/25/2016

(6 hours) History of Linux/UNIX, importance of Linux/UNIX, the various 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.

Student performance objectives: Students demonstrate ability to find relevant resources on the web.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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.

Student performance objective: Students demonstrate ability to find change file permissions and ownership, create symbolic links.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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.

Student performance objective: Students demonstrate ability to find relevant resources on the web.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) Scheduling periodic processes, crontab files. Making backups, archiving programs: tar, gzip, dd. Checking log files.

Student performance objective: Students demonstrate ability to schedule periodic processes, and perform backups.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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.

Student performance objective: Students demonstrate ability to log onto other computers remotely, transfer files and monitor network activity.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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.

Student performance objective: Students demonstrate ability to configure a web server and install pages on the server.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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 spool directory. Mailing lists.

Student performance objective: Students demonstrate ability to configure the mailserver and send and receive user email.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(6 hours) 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.

Student performance objective: Students demonstrate ability to find relevant resources on the web.

Homework: Read the relevant sections of the text and complete the assigned exercises.

(4 hours) System Administrator best practices and ethics. Review.

(2 hours) Final Exam

METHODS OF INSTRUCTION:

Lecture, computer demonstration, hands-on exercises and practices.

METHODS OF EVALUATION:

The types of writing assignments required:

Written homework

Lab reports

The problem-solving assignments required:

Homework problems

Lab reports

Quizzes

Exams

The types of skill demonstrations required:

Performance exams

The types of objective examinations used in the course:

Multiple choice

Completion

Other: Short answer.

Other category:

None

The basis for assigning students grades in the course:

Writing assignments: 5% - 25%

Problem-solving demonstrations: 20% - 65%

Skill demonstrations: 20% - 50%

Objective examinations: 10% - 30%

Other methods of evaluation: 0% - 0%

REPRESENTATIVE TEXTBOOKS:

Required:

Wale Soyinka. Linux Administration: A Beginner's Guide, Seventh Edition. McGraw-Hill Education, 2016.
Or other appropriate college level text.

Reading level of text, Grade: 12+ Verified by: ev

Other textbooks or materials to be purchased by the student: none

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: I

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department: CSIS
CSU Crosswalk Course Number: 52
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: CCC000084024
Sports/Physical Education Course: N
Taxonomy of Program: 070800