CS/IS174 : Unix/Linux System Administration

General Information

Author:	• Simon Mirzayan
Course Code (CB01) :	CS/IS174
Course Title (CB02) :	Unix/Linux System Administration
Department:	CSIS
Proposal Start:	Fall 2024
TOP Code (CB03) :	(0708.00) Computer Infrastructure and Support
CIP Code:	(11.1003) Computer and Information Systems Security/Auditing/Information Assurance.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000343911
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	CS/IS 174 is a course designed to acquaint the student with Unix system administration. Topics covered include the tasks performed by a system administrator. Topics covered will include installation, system startup and shutdown, networking, files system structure, Sun Microsystem's Network File System (NFS), process control, backups, user administration, email, web hosting, interoperability with Windows, and security.
Justification:	Mandatory Revision
Academic Career:	• Credit
Mode of Delivery:	
Author:	Simon Mirzayan
Course Family:	

Academic Senate Discipline

Primary Discipline:	• Computer Information Systems (Computer network installation, microcomputer technology, computer applications)
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07)	4
Maximum Credit Units (CB06)	4
Total Course In-Class (Contact) Hours	72
Total Course Out-of-Class Hours	144
Total Student Learning Hours	216

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	4	8
Laboratory Hours	0	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	72
Laboratory	0
Studio	0

Total	72

Course Out-of-Class Hours

Lecture	144
Laboratory	0
Studio	0
Total	144

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

CS/IS172 - Unix/Linux Operating System

Objectives

- Create and maintain individual file systems and shell programs within UNIX.
- Set up and maintain file systems for high-level UNIX system administration.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Multimedia
Methods of Instruction	Collaborative Learning
Methods of Instruction	Demonstrations

Out of Class Assignments

- Projects (e.g. setting up Web services, networking and conducting performance analysis)
- Written proposals and installation documentation

Methods of Evaluation	Rationale
Exam/Quiz/Test	Final examination
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Mid-term examination

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Nemeth, E., et. al.,	UNIX & LINUX Administration Handbook	Addison Wesley	2018	978-0134277554

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Install and configure a Unix computer system.

Startup and shutdown the system.

Administer user accounts, email and web hosting.

Setup Network File System (NFS).

Configure and connect the system to the Internet.

Establish and maintain system security.

SLOs

Develop skills to maintain a Unix computer system. Expected Outcome Performance: 70.0

ILOs Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
CSIS Information Technology Certificate	Demonstrate installing, configuring and maintaining computer and mobile devices, including diagnosing, resolving and documenting common hardware and software.
CSIS Information Technology - A.S. Degree Major	Demonstrate installing, configuring, and maintaining computer and mobile devices, including diagnosing, resolving, and documenting common hardware and software.
CSIS Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CSIS Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CSIS Computer Information Systems	analyze simple business or technical problems relevant to programming, and prepare solutions to them
	demonstrate an understanding of the operations and processes of a computer relevant to programming.
CSIS Computer Software Technician	demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
CSIS Unix/Linux System Administrator	install, configure and maintain and industry standard computer with the Unix/Linux operating that is connected to the Internet

CSIS Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
CSIS Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.

Describe Unix system administration activities such as accounts, email, and web. Expected Outcome Performance: 70.0

ILOs Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
CSIS Information Technology Certificate	Demonstrate installing, configuring and maintaining computer and mobile devices, including diagnosing, resolving and documenting common hardware and software.
	Demonstrate the proper server operation procedures, maintenance procedures and managing risk associated with real world networks.
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Describe how to have Unix system function on the Internet and maintain system security. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
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Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Introduction (5 hours)
- Unix history and flavors
- The role of the system administrator
- System and file security

Booting and Shutting Down (4 hours)
- Bootstrapping
- Run levels

File Systems (4 hours)
- Pathnames and file system organization

- File types, attributes, and permissions

Users and Groups (4 hours)
- Adding
- Configuring
- Removing

Backups (4 hours)
- Devices and media
- Periodic processes
- Syslog configuration

Adding a Disk (5 hours)
- Formatting: partitioning and labeling
- Creating a file system
- Check and repair file systems

Networking (8 hours)
- TCP/IP
- Ethernet

Email (5 hours)
- Sendmail
- POP

Print Services (4 hours)
- BSD printing
- System V printing

Web Services (6 hours)
- Web hosting basics
- Apache installation

Daemons (6 hours)

NFS and Sharing File Systems (5 hours)
- Server-side NFS
- Client-side NFS

Security (7 hours)
- Common sense rules
- Firewalls
- Security resources

Performance Analysis (5 hours)
- Factors that affect performance
- Analyzing CPU usage, memory usage, disk I/O

Total hours: 72

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

No Value

If additional resources are needed, add a brief description and cost in the box provided.

No Value