CS/IS197 : Advanced Networking: Server Operations

General Information

Author:	• Vladimir Paransky
Course Code (CB01) :	CS/IS197
Course Title (CB02) :	Advanced Networking: Server Operations
Department:	CSIS
Proposal Start:	Fall 2024
TOP Code (CB03) :	(0708.10) Computer Networking
CIP Code:	(11.0901) Computer Systems Networking and Telecommunications.
SAM Code (CB09) :	Advanced Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000587383
Curriculum Committee Approval Date:	10/25/2023
Board of Trustees Approval Date:	12/19/2023
Last Cyclical Review Date:	10/25/2023
Course Description and Course Note:	CS/IS 197 is a course designed to acquaint the student with the knowledge and skills required to build, maintain, troubleshoot, and support server hardware and software technologies. Students learn to identify environmental issues, understand and comply with disaster recovery procedures, become familiar with security procedures and industry terminology, and understand server roles, server specializations, and interactions within the computing environment. This course includes labs to provide hands-on training.
Justification:	Mandatory Revision
Academic Career:	• Credit

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.

Course Special Class Status (CB13)

Course is not a special class.

Grading Basis

- Grade with Pass / No-Pass Option

Pre-Collegiate Level (CB21)

Course Support Course Status (CB26)

☐ Allow Students to Gain Credit by Exam/Challenge	Not applicable.	Course is not a support course

Transferability & Gen. Ed. Options

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	90
Total Course Out-of-Class Hours	72
Total Student Learning Hours	162

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	2	4
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	54
Studio	0
Total	90

Course Out-of-Class Hours

Lecture	72
Laboratory	0
Studio	0
Total	72

Time Commitment Notes for Students

No value

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

Advisory

CS/IS190 - Introduction to Computer Networks (in-development)

Objectives

- Apply the OSI networking model to a TCP/IP network.
- Configure all TCP/IP network nodes.
- Select the appropriate equipment for a network installation.

Entry Standards

Entry Standards

Select appropriate hardware and software to integrate different networks.

Install the hardware and software for a simple local area network.

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory
Methods of Instruction	Discussion
Methods of Instruction	Multimedia

Methods of Instruction	Tutorial
Methods of Instruction	Collaborative Learning
Methods of Instruction	Demonstrations
Methods of Instruction	Guest Speakers
Methods of Instruction	Presentations

Out of Class Assignments

- NetLab projects (e.g. server installation, configuration and maintenance with multiple server operating systems)
- Research online projects (e.g. research troubleshooting methods for server problems)

Methods of Evaluation	Rationale
Exam/Quiz/Test	Final examination
Exam/Quiz/Test	Quizzes
Project/Portfolio	Lab projects

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Lachance, Daniel	CompTIA Server+ Certification All-in-One Exam Guide (Exam SK0-005)	McGraw-Hill Education	2021	978- 1260469912

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

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Perform system backup and recovery operations.

Install and manage multiple-drive arrays.

Upgrade server hardware and operating system.

Manage multiple servers in a networked environment.

SLOs

Install, configure, maintain, and troubleshoot servers. 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.
	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.
	Demonstrate the proper server operation procedures, maintenance procedures and managing risk associated with real world networks.
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.
	Demonstrate the proper server operation procedures, maintenance procedures and managing risks associated with real world networks.
CSIS Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CSIS Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
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 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.

Determine the resources and equipment needed for server installation. 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.
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CSIS Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.

Configure network equipment to enable server communication. Expected Outcome Performance: 70.0

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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 to Servers (2 hours)

- Network architecture
- Common server types and functions

Exploring the Server Hardware (4 hours)

- Server system board components
- System processing core
- Server memory
- Server cooling and power systems

Introduction to Server Software (6 hours)

- Server software
- Network Operating System (NOS) management features
- Network Operating System (NOS) security features
- Network essentials for servers

Exploring the Server Storage System (4 hours)

- Storage devices used for servers
- Disk interfaces, such as Integrated Drive Electronics (IDE) and Small Computer System Interface (SCSI)
- Random Arrays of Independent Disks (RAID)
- Network-Attached Storage (NAS) implementations
- Storage Area Network (SAN) implementations

Installing the Server Hardware (2 hours)

- Best practices in server hardware installation
- Install hardware components on a server
- Verify server installation
- Install a server in a network environment

Configuring Servers (2 hours)

- Network operating system (NOS) installation and verification
- Install system monitoring agents and service tools
- Server configuration documentation Examining the issues in Upgrading Server Components
- Upgrade checklist
- Issues in upgrading server hardware
- Issues in upgrading server software

Examining the issues in Upgrading Server Components (4 hours)

- Upgrade checklist
- Issues in upgrading server hardware
- Issues in upgrading server software

Examining Servers in an I.T. Environment (4 hours)

- Industry best practices for server installation and maintenance
- Server security and access methods

Troubleshooting Servers (4 hours)

- Troubleshooting theory and methodologies
- Troubleshoot server hardware problems
- Troubleshoot server software problems
- Troubleshoot server network problems
- Troubleshoot server storage device problems

Exploring Disaster Recovery Concepts and Methodologies (4 hours)

- Disaster recovery plans
- Disaster recovery methodologies
- Replication methods

Total Hours: 36

Laboratory/Studio Content

Introduction to Servers (3 hours)

- Network architecture
- Common server types and functions

Exploring the Server Hardware (6 hours)

- Server system board components
- System processing core
- Server memory
- Server cooling and power systems

Introduction to Server Software (9 hours)

- Server software
- Network Operating System (NOS) management features
- Network Operating System (NOS) security features
- Network essentials for servers

Exploring the Server Storage System (6 hours)

- Storage devices used for servers
- Disk interfaces, such as Integrated Drive Electronics (IDE) and Small Computer System Interface (SCSI)
- Random Arrays of Independent Disks (RAID)
- Network-Attached Storage (NAS) implementations
- Storage Area Network (SAN) implementations

Installing the Server Hardware (3 hours)

- Best practices in server hardware installation
- Install hardware components on a server
- Verify server installation
- Install a server in a network environment

Configuring Servers (3 hours)

- Network operating system (NOS) installation and verification
- Install system monitoring agents and service tools
- Server configuration documentation Examining the issues in Upgrading Server Components
- Upgrade checklist
- Issues in upgrading server hardware
- Issues in upgrading server software

Examining the issues in Upgrading Server Components (6 hours)

- Upgrade checklist
- Issues in upgrading server hardware
- Issues in upgrading server software

Examining Servers in an I.T. Environment (6 hours)

- Industry best practices for server installation and maintenance
- Server security and access methods

Troubleshooting Servers (6 hours)

- Troubleshooting theory and methodologies
- Troubleshoot server hardware problems
- Troubleshoot server software problems
- Troubleshoot server network problems

- Troubleshoot server storage device problems

Exploring Disaster Recovery Concepts and Methodologies (6 hours)

- Disaster recovery plans
- Disaster recovery methodologies
- Replication methods

Total Hours: 54