

CS/IS196 : Advanced Networking: Security

General Information

Author:	<ul style="list-style-type: none"> Vladimir Paransky
Course Code (CB01) :	CS/IS196
Course Title (CB02) :	Advanced Networking: Security
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) :	CCC000587386
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 196 is a course designed to help prepare the student for industry-recognized certification in advanced networking infrastructure. This course focuses on security installation, configuration and administration in the modern networking environment. The course includes an introduction to the fundamental principles and topics of Information Technology Security and Risk Management at the organizational level. This course includes labs to provide hands-on training.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none"> Credit

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"> 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 Special Class Status (CB13)	Grading Basis
Course is not a basic skills course.	Course is not a special class.	<ul style="list-style-type: none"> 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

No value

Specifications

Methods of Instruction

Methods of Instruction Lecture

Methods of Instruction Laboratory

Methods of Instruction Discussion

Methods of Instruction Multimedia

Methods of Instruction Collaborative Learning

Methods of Instruction

Demonstrations

Methods of Instruction

Guest Speakers

Methods of Instruction

Presentations

Out of Class Assignments

- Student presentation (e.g. recent advancements in Infrastructure Security and their application in the real world)
- Research projects (e.g. security system design methodology)

Methods of Evaluation**Rationale**

Exam/Quiz/Test

Final Examination

Project/Portfolio

Hands-on labs team projects (e.g. design and configure security infrastructure)

Exam/Quiz/Test

Quizzes

Exam/Quiz/Test

Software and hardware labs

Textbook Rationale

No Value

Textbooks**Author****Title****Publisher****Date****ISBN**

Conklin, WM. Arthor

Principles of Computer Security CompTIA Security+ and Beyond

McGraw Hill Education

2022

978-1-260-47431-2

Whitman, Michael

Principles of Information Security

Independence: Course Technology

2018

978- 133710206 3

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

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Design and administer an organization's security policy.

Use encryption methods to safeguard information.

Detect and remove malicious content from network resources.

Test, evaluate, and implement network security.

SLOs

Describe the fundamental principles of information systems security.

Expected Outcome Performance: 70.0

<i>ILOs</i> 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.
<i>CSIS</i> 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.
<i>CSIS</i> 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.
<i>CSIS</i> Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
<i>CSIS</i> Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
<i>CSIS</i> Computer Software Technician	demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
<i>CSIS</i> Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
<i>CSIS</i> Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.

Classify threat, evaluate assets, identify operational weaknesses.

Expected Outcome Performance: 70.0

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CSIS Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
CSIS Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
Apply appropriate safeguards and controls to reduce vulnerabilities and threats.	
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.
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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

General Network Security (4 hours)

- Introduction to information systems security
- Access control
- Authentication
- Non-essential services and protocols
- Application and network attacks
- Malicious Code (viruses, trojan horses, logic bombs, and worms)
- Social engineering
- Auditing
- Vulnerability assessment and mitigating attacks

Communication Security (8 hours)

- Remote access
- Email
- Web
- File transfer
- Wireless issues and wireless network security

Host, Application, and Data Security (2 hours)

Infrastructure Security (8 hours)

- Devices (Firewalls, Routers, et. al.)
- Media
- Security topologies
- Intrusion detection
- Network, application and operating system/network operating system (OS/NOS) hardening
- Network security

Cryptography (2 hours)

Operational and Organizational Security (12 hours)

- Physical security
- Disaster recovery
- Business continuity
- Policy and procedures
- Privilege management
- Risk mitigation
- Administering a secure network
- Access control fundamentals
- Authentication and account management

Total Hours: 36

Laboratory/Studio Content

General Network Security (6 hours)

- Introduction to information systems security
- Access control
- Authentication
- Non-essential services and protocols
- Application and network attacks
- Malicious Code (viruses, trojan horses, logic bombs, and worms)
- Social engineering
- Auditing
- Vulnerability assessment and mitigating attacks

Communication Security (12 hours)

- Remote access
- Email
- Web
- File transfer
- Wireless issues and wireless network security

Host, Application, and Data Security (3 hours)

Infrastructure Security (12 hours)

- Devices (Firewalls, Routers, et. al.)
- Media
- Security topologies
- Intrusion detection
- Network, application and operating system/network operating system (OS/NOS) hardening
- Network security

Cryptography (3 hours)

Operational and Organizational Security (18 hours)

- Physical security
- Disaster recovery
- Business continuity
- Policy and procedures
- Privilege management
- Risk mitigation
- Administering a secure network
- Access control fundamentals
- Authentication and account management

Total Hours: 54