

Cosumnes River College
ITIS 167 / CISS 327
Cisco Networking Academy™ Network Security
An Online Course
Fall 2023 8w2

Instructor: Buddy Spisak

Online Office Hours: Mondays/Wednesdays 1:30 to 3:00 p.m.
Tuesdays/Thursdays 1:30 to 2:30 p.m.

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E-mail: spisakj@crc.losrios.edu The turnaround time for responding to most e-mails is about one to two days. Be sure to include your name and the course number in each e-mail so I can identify who you are and what the e-mail is about.

Course Web page: <https://lrccd.instructure.com>

Instructor Web page: <http://crc.losrios.edu/spisakj/>

Prerequisites: None

Advisory: CISCN 304 and CISCN 341 with grades of "C" or better

Lecture/Lab: Fully online (13918) Asynchronous – no scheduled meeting times, recorded lectures on Tuesdays 7 to 9 p.m.

Accepted for Credit: CSU

Class Credits: 3.5 units

Textbook: No textbook is required for this course. All the reading materials are available via the Cisco Networking Academy at <https://www.netacad.com>.

Labs: Some labs are done through NDG Netlab+ at <https://netlabve10.coastline.edu>.

Resource Materials: CISCO Network Academy Curriculum

Supplies: Ear buds or a headset would be beneficial when listening to videos and a camera for Zoom conferencing.

A flash drive is recommended (at least 16GB, but 32GB is preferred) to store your work for the class.

Course Description:

This course provides the theoretical understanding of network security and the hands-on skills to implement and support network security. Topics include Cisco switch and router security, Authentication, Authorization, and Accounting (AAA), Access Control Lists (ACLs), Firewalls, Intrusion Prevention System (IPS), and Virtual Private Networks (VPNs). Additionally, the Cisco Adaptive Security Appliance (ASA) and Adaptive Security Device Manager (ASDM) are covered. C-ID: ITIS 167

Student Learning Outcomes and Course Objectives:

Upon completion of this course, the student will be able to:

EXPLAIN NETWORK THREATS, MITIGATION TECHNIQUES, AND THE BASICS OF SECURING A NETWORK. (SLO 1)

- Explain the various types of threats and attacks.
- Explain the tools and procedures to mitigate the effects of malware and common network attacks.

DESCRIBE SECURITY THREATS FACING MODERN NETWORK INFRASTRUCTURES. (SLO 2)

- Explain endpoint vulnerabilities and protection methods.

CONFIGURE AND SECURE CISCO DEVICES. (SLO 3)

- Configure command authorization using privilege levels and role-based command-line interface (CLI).
- Implement the secure management and monitoring of network devices.
- Implement security measures to mitigate Layer 2 attacks.

CONFIGURE ACCESS CONTROL LISTS (ACLs) AND FIREWALL FUNCTIONS TO FILTER TRAFFIC, MITIGATE THREATS TO ROUTERS, AND NETWORKS. (SLO 4)

- Implement ACLs to filter traffic and mitigate network attacks on a network.
- Implement Zone-Based Policy Firewall using the CLI.
- Explain how the Adaptive Security Appliance (ASA) operates as an advanced stateful firewall.
- Implement an ASA firewall configuration.

EXPLAIN METHODS FOR IMPLEMENTING SECURE COMMUNICATIONS TO ENSURE INTEGRITY, AUTHENTICITY, AND CONFIDENTIALITY. (SLO 5)

- Explain how the types of encryptions, hashes, and digital signatures work together to provide confidentiality, integrity, and authentication.
- Explain how a public key infrastructure is used to ensure data confidentiality and provide authentication.

CONFIGURE VIRTUAL PRIVATE NETWORKS (VPNS). (SLO 6)

- Configure a site-to-site IPsec VPN, with pre-shared key authentication, using the CLI.

DESCRIBE HOW TO IMPLEMENT SECURE NETWORK DESIGN, MANAGEMENT, AND REPORTING. (SLO7)

- Configure authentication, authorization, and accounting (AAA) to secure a network.
- Explain how network-based Intrusion Prevention Systems (IPSs) are used to help secure a network.
- Test network security.

Methods of Measuring Student Learning Outcomes:

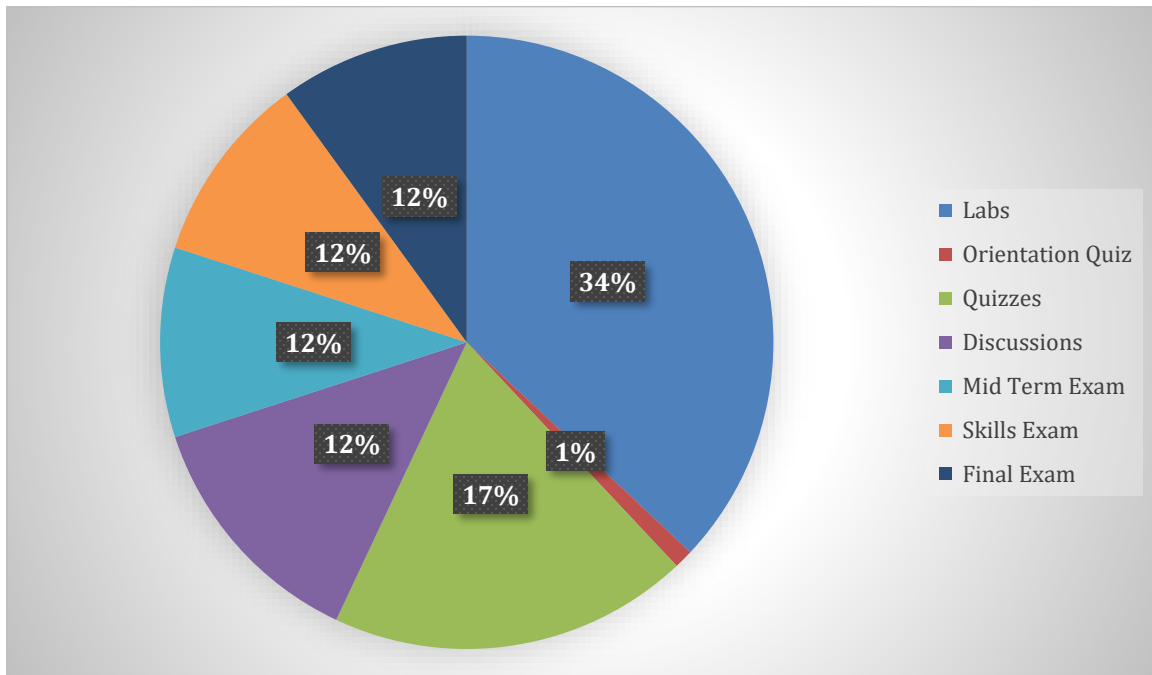
- You will demonstrate knowledge of course concepts through class discussions and achievement on quizzes, mid-term exam, skills exam, and a final examination.
- You will demonstrate competence in the coursework by completing lab work and participating in discussions during the semester.

Student Obligations:

- **Attendance:** Since this course is online, it is important to participate frequently in the class.
- **Late Work:** Unless noted all assignments are due on Sunday by midnight each week. Late work will be accepted ONLY if you have contacted me prior to the due date either by e-mail or voice mail. In general, late work is due the next week, and no late assignments may be turned in after one week from the original due date, regardless of the reason. For every day an assignment is late, you will lose 10% of its grade.
- **Due Dates:** Unless noted, all assignments will be submitted in Canvas. If, for any reason, you cannot access Canvas or are unable to submit the assignment on time, please e-mail it to me instead so that you are not penalized for being late. Quizzes and discussion items cannot be taken past their due dates. If you miss a quiz and you want to make up points, you can take advantage of the extra credit assignments posted in Canvas. Everyone is welcome to work on the extra credit assignments. Typically, they are five to ten points each, depending on the difficulty of the assignment.
- **Labs:** There will be six labs credited for homework for the class. The due dates are in the **SCHEDULE** portion of this handout. We will spend a lot of time working on lab activities. Each lab has a set of review questions that you will need to answer in Canvas to receive points for that assignment.
- **Discussions:** I want everyone to take a pro-active approach to learning this material. This includes using the discussion feature in Canvas to ask questions and answer other students' questions. I will also post questions each week that you can answer to further your understanding of the material. I expect two postings each week unless otherwise noted.
- **Language Matters:** Part of communicating effectively with one another involves communicating correctly with one another. This is not an English class; however, I will be looking at and commenting on the basic accuracy of your written English, such as sentence boundaries, spelling, and other basic grammar issues. While you will not fail the class because of your English, you may lose some points for frequent and repeated errors. Keep in mind that your use of English can influence your readers positively—or negatively.
- **Mid-Term Exam, Skills Exam and Final Exam:** These exams will be administered through Canvas.
- **Plagiarism Policy:** It is inappropriate, and a violation of academic policy, to copy information from any source (including, but not limited to, textbooks, magazine articles, newspaper articles and internet articles) without giving proper credit to the author by using standard quotation procedures such as in-line quotes, footnotes, endnotes, etc. Quotes may not exceed 25% of the assignment's total length. You will receive no credit (0 points) for any assignment that copies any material from any other source without giving proper credit to the source(s). Repeat offenders of this policy are subject to academic discipline as outlined in the policies published by the college.
- **Cheating:** Students who cheat will receive a failing grade for the course. (See the Student Behavior and Academic Integrity page of the college website (<https://crc.losrios.edu/about-us/our-values/student-rights-and-responsibilities/student-standards-of-conduct>.)
- **E-mail:** Every student will be required to have an email account. If you do not have an email account, the college provides free email accounts for all current students. To activate your account, go to <https://sso.losrios.edu> then choose the option for *Expired/Forgotten Password* and then *Initial Password and Security Questions Setup*. Now, follow the directions provided.
- **E-mail etiquette:** I will not tolerate rude and demeaning comments or e-mails to anyone in this class. Please keep your comments and e-mails topic-related. If I determine that a comment or e-mail to anyone else in the class is rude or demeaning, I will warn you once. If your behavior continues to be unacceptable, I will refer you to the administration of the college for disciplinary action.
- **Personal belongings:** All cell phones, beepers, pagers, etc. should be turned off or set to vibrate during any of the online lectures/labs.
- **Disabilities:** If you have a documented disability and wish to discuss academic accommodations, please contact me or contact the Office of Disabled Student Programs and Services at 916-691-7275 as soon as possible.

- **Canvas:** This class utilizes a product called "Canvas." It is highly recommended that you check the website frequently for scheduling updates and homework assignments. Most of the homework assignments and quizzes will be done on Canvas.
- **Online Course Responsibilities:** This course requires significant self-motivation. You must not get behind. Labs and weekly assignments can take up to 15 hours to finish. Please don't try to finish them in one day. Not all activities are created equal. Some may take a bit longer than others. You would normally spend 7 hours per week in class for this course: total of 189 hours. Allow yourself at least 10 hours per week to complete the activities online, including the time spent writing the class discussion postings. You should plan additional time to read the textbook and study for the quizzes. Some people believe that an on-line format provides a much easier way to study this subject than an on-campus framework because they love to read and avoid parking problems. Others feel very intimidated at first. Be patient as you work your way through the activities.
- **Online Access via Zoom:** This class also utilizes a product called "Zoom." It is highly recommended that you are in a quiet room without distractions, have stable internet access, and use a video camera with a quality microphone so that you are seen and heard by everyone.

Grading:



Course Topic	Points	Total	Approximate % the of Grade
Labs (6)	50	300	34
Orientation Quiz (1)	10	10	1
Quizzes (5)	30	150	17
Discussions (5)	20	100	12
Mid Term Exam (1)	100	100	12
Skills Exam (1)	100	100	12
Final Exam (1)	100	100	12

Point System: There are 860 total assigned points.

Grade Ranges: A=774-860, B=688-773, C=602-687, D=516-601, F=0-515

Schedule: It is tentative and can change during the term. All changes will be located under the "Announcements" section in Canvas for the course.

	Day:		Lecture/Lab Schedule:	Assignment Due:	Due Date (By Midnight):
Week 1	Tues.	10/17	Orientation and Introductions	View the Online Orientation	Sun., Oct. 22
			Chapter 1: Securing Networks	Orientation Disc.	
			Chapter 2: Network Threats	Orientation Quiz	
			Chapter 3: Mitigating Threats		
			Lab #1		
Week 2	Tues.	10/24	Chapter 4: Secure Device Access	Disc. #1 (Ch. 1-3)	Sun., Oct. 29
			Chapter 5: Assigning Administrative Roles	Lab Review #1	
			Chapter 6: Device Monitoring and Management	Quiz #1 (Ch. 1-3)	
			Lab #2		
Week 3	Tues.	10/31	Chapter 7: Authentication, Authorization, and Accounting (AAA)	Disc. #2 (Ch. 4-6)	Sun., Nov. 5
			Chapter 8: Access Control Lists	Lab Review #2	
			Chapter 9: Firewall Technologies	Quiz #2 (Ch. 4-6)	
			Lab #3		
			Finishing up the first half of the course		
Week 4	Tues.	11/7	Chapter 10: Zone-Based Policy Firewalls	Disc. #3 (Ch. 7-9)	Sun., Nov. 12
			Chapter 11: IPS Technologies	Lab Review #3	
			Chapter 12: IPS Operation and Implementation	Quiz #3 (Ch. 7-9)	
			Mid Term Exam (Chapters 1-12)		
Week 5	Tues.	11/14	Chapter 13: Endpoint Security	Mid Term Exam	Sun., Nov. 19
			Chapter 14: Layer 2 Security Considerations		
			Chapter 15: Cryptographic Services		
			Lab #4		
Week 6	Tues.	11/21	Chapter 16: Basic Integrity and Authenticity	Disc. #4 (Ch. 10-12)	Sun., Nov. 26
			Chapter 17: Public Key Cryptography	Lab Review #4	
			Chapter 18: VPNs	Quiz #4 (Ch. 10-12)	
			Lab #5		
Week 7	Tues.	11/28	Chapter 19: Implement Site-to-Site IPsec VPN	Disc. #5 (Ch. 13-15)	Sun., Dec. 3
			Chapter 20: Introduction to the ASA	Lab Review #5	
			Chapter 21: ASA Firewall Configuration	Quiz #5 (Ch. 13-15)	
			Final Review		
			Lab #6		
			Finishing up the second half of the course		
Week 8	Tues.	12/5	Chapter 22: Network Security Testing	Lab Review #6	Fri., Dec. 8
			Skills Exam		
			Final Exam (Chapters 13-21)		
				Skills Exam	All work needs to be
			What is next after this class? meeting	Final Exam	turned in Fri., Dec. 8