

Reedley College

Spring 2022

March 14, 2022 –May 20, 2022

COURSE INFORMATION

IS-54-51394 – Enterprise Networking, Security, and Automation

Meetings

This is a face-to-face course. Lectures and labs will be held in person on the days and times noted below.

Tuesday, Wednesday, and Thursday, 12:00 pm – 3:50 pm (PHS 352)

Class Cancellation

If class is cancelled unexpectedly, an announcement will be sent out via Canvas. Additional means, such as via email may also be employed.

Textbook

There is no required textbook for this course. All required materials are provided to students online as part of the course at no additional cost.

Technology

Computer

To complete homework and work on assignments outside class, students will need access to a computer (laptop or desktop) that meets the following requirements:

- One of the following operating systems:
 - Windows 10 or 11
 - macOS 10.14 or newer
 - Ubuntu 20.04 LTS (x86-64)
- 4 GB RAM or more (8 GB STRONGLY encouraged, and 16 GB or more preferred)
- 1.4 GB or more free space

Software

Microsoft Office

Some assignments may require Microsoft Office to complete. For the purposes of this class Office 365 web edition is sufficient, although the installed version is preferred.

Office 365, both web and installed versions, are available to SCCCD students for download at no cost.

Cisco Packet Tracer

Cisco Packet Tracer, current version 8.0.1 will be used for some assignments. It is available for Windows 10 and 11, macOS 10.14 and later, and Ubuntu 20.04 LTS and later. It is available as a free download.

INSTRUCTOR INFORMATION

Jason Boyer, BA/MBA

COURSE COMMUNICATION POLICY

Use the [Canvas Inbox Tool](#) to email questions about assignments and course content. As a backup, or for other questions, email me at jason.boyer@reedleycollege.edu.

Students may also text me at (559) 836-1181 between 8 am and 9 pm. As with all inquiries, please include your name and course. For all communication inquiries, I will answer within 24 hours.

OFFICE HOURS

I am available for in-person contact in BUS 47 or PHS 352, during office hours as posted outside BUS 47 and on Canvas. I will also meet at mutually agreed upon times. Please email to set an appointment.

COURSE DESCRIPTION

Enterprise Networking, Security, and Automation (ENSA) focuses on the architecture, components, operations, and security to scale for large, complex networks, including wide area network (WAN) technologies. The course emphasizes network security concepts and introduces network virtualization and automation. Students learn how to configure, troubleshoot, and secure enterprise network devices and understand how application programming interfaces (API) and configuration management tools enable network automation.

PREREQUISITES, CO-REQUISITES, AND ADVISORIES

Prerequisite: IS-53 (Switching, Routing, and Wireless Essentials). Advisories: MATH-3A and ENG-1A or ENG-1AH

COURSE LEARNING OBJECTIVES

1. Configure single-area OSPFv2 in both point-to-point and multiaccess networks.
2. Explain how to mitigate threats and enhance network security using access control lists and security best practices.
3. Implement standard IPv4 ACLs to filter traffic and secure administrative access.
4. Configure NAT services on the edge router to provide IPv4 address scalability.
5. Explain techniques to provide address scalability and secure remote access for WANs.
6. Explain how to optimize, monitor, and troubleshoot scalable network architectures.
7. Explain how networking devices implement QoS.
8. Implement protocols to manage the network.
9. Explain how technologies such as virtualization, software defined networking, and automation affect evolving networks.

STUDENT LEARNING OUTCOMES

- IS-54 SLO1: Configure, troubleshoot, and secure enterprise network devices.
- IS-54 SLO2: Employ application programming interfaces and configuration management tools to enable network automation.

LEARNING METHODS

- Lecture
- Lab
- Video
- Simulations
- Demonstrations
- Guided practice
- Other learning methods as determined necessary by the instructor.

ATTENDANCE AND DROP POLICY

You will be dropped from the course under the following circumstances:

1. If you do not attend the first day of class.
2. If you miss more than one total week in the first half of the semester.

Be on time! I will lock the door after attendance is taken.

READINGS, ASSIGNMENTS, HANDS ON PROJECTS, AND EXAMS

Academic Honesty

Assignments and Projects

Students are required to complete assignments and hands-on projects on their own. In other words, unless otherwise specified, you may and are encouraged to collaborate with fellow students except on individual exams and assignments as specified.

Examinations

All examinations must be completed individually. Collaborative work will not be allowed during examinations. The use of books, notes, cell phones, and other electronic devices will not be allowed during examinations, unless specifically stated by the instructor prior to the examination.

Late Work Policy

Late work will not be accepted. If a student fails to submit an assignment or project on the day that it is due, then the student will lose points for that project. No excuses will be accepted. To summarize:

- No late work accepted!
- Absolutely no excuses will be accepted!

Make-up examinations are only granted with advanced notification for extenuating circumstances.

DUE DATES

You will find all work that is due organized into modules (folders) in Canvas. *Required reading is expected to be completed prior to the next class lecture.*

OUTCOMES ASSESSMENT

Below is an outline of assessments and assigned percentage of the final grade. Use this for determining your final grades. Remember: Every 10% = 1 letter grade!

Assessment Category	Percentage of Grade
Labs/CYU/SYN	25%
Quizzes (Module Group Exams)	10%
Mid-Term Packet Tracer Activity	15%
Case Study Packet Tracer Activity	15%
Skills Final Packet Tracker Activity	15%
Final Exam	10%
Professionalism	10%

Table 1 - Outcomes Assessments

Grading Scale

The grading scale is: 90-100%=A, 80-89%=B, 70-79%=C, 60-69%=D, <60%=F

DROP DATES

- Friday, March 18th for a refund
- Wednesday, March 23rd to avoid a "W" (in person)
- Wednesday, , March 23rd to avoid a "W" (via WebAdvisor)
- Wednesday, April 20th to avoid a letter grade

It is each student's responsibility to drop the class if they are no longer attending or no longer interested, otherwise they risk obtaining a grade of "F" in the class.

POLICIES

Expectations

I have three expectations of students in my class. These expectations can be applied anywhere in your educational journey as well as in your career and will serve you well.

1. Be Where You Need to Be When You Need to Be There

You may have heard it said the "early is on-time; on-time is late." Punctuality and dependability are two of the most sought-after qualities in employees. Showing up is important, but also, be present. Stay focused, on-task, and pay attention to whatever you are doing. If you are not present, you are not participating, and you will lose participation points.

In the online class, this looks like:

- Participating in online discussions. Answer fully and carefully and respond substantially to your classmates. "Great post" is not so great and will earn you zero points.
- Staying on task, beginning work early, and turning assignments in well ahead of established due dates. **Plan ahead and pace yourself.**
- Remember – late assignments are not accepted.

2. Dress for Success

What you wear reflects who you are. It is not just being properly attired, but the attitude you display too. Be respectful and professional always. Failing to maintain a proper attitude can be a distraction and could lead to discipline if it becomes a distraction to others.

In the online class, this looks like:

- Posts and interactions that are respectful to your classmates and yourself.
- Use proper grammar and professional language within the course.
- Maintaining a positive and pleasant learning environment.

3. Know and Do the Right Thing

Knowing what is right only has meaning if you do what is right. In the classroom, respect between classmates, respect for the school and school property, as well as respect between instructor and students is the key to a positive learning environment. Failing to respect each other will result in disciplinary consequences, from loss of participation points up to and including suspension and expulsion per State Center Community College policy.

In class, this looks like:

- Being respectful in all interactions with others, tolerant of different points of view and backgrounds, and using language that is respectful to others.
- Maintaining academic integrity in all assignments and interactions.

Personal and Academic Conduct

A student will be subject to discipline if she or he:

- Prevents other students from pursuing their authorized curricular or co-curricular interests.
- Interferes with or disputes faculty and administrators who are fulfilling their professional responsibilities.
- Prevents classified employees from fulfilling their prescribed duties.
- Deliberately endangers the safety of persons or the security of college property.
- Violates Reedley College computers and networks usage policy.
- Violates Reedley College cheating/plagiarism policy.

ACCOMMODATIONS

If you have a verified need for an academic accommodation or materials in alternate media (e.g.: Braille, large print, electronic text, etc.) per the Americans with Disabilities Act or Section 504 of the Rehabilitation Act, please contact your instructor as soon as possible.

CHEATING

Cheating is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner such as having improper access to answers, attempting to gain an unearned academic advantage.

Cheating may include but is not limited to:

- Copying from another's work
- Supplying one's work to another
- Giving or receiving copies of examinations without an instructor's permission
- Using or displaying notes or devices inappropriate to the conditions of the examination
- Allowing someone other than the officially enrolled student to represent the student

- Failing to disclose research results completely.

Incidents of cheating may result in any of a variety of sanctions and penalties, which may range from a failing grade on an examination, assignment, or hands-on project in question to a failing grade in the course, at the discretion of the instructor and depending on severity and frequency.

CLASS SCHEDULE (SUBJECT TO CHANGE)

Week	Week of	Topic	Major Assessments
1	3/14	<ul style="list-style-type: none"> • Introduction to Class, Syllabus • Module 1 – Single Area OSPFv2 Concepts • Module 2 – Single Area OSPFv2 Configuration • Module 3 – Network Security Concepts 	<ul style="list-style-type: none"> • Syllabus Quiz
2	3/21	<ul style="list-style-type: none"> • Module 4 – ACL Concepts • Module 5 – ACLS for IPv4 Configuration • Module 6 – NAT for IPv4 	<ul style="list-style-type: none"> • Modules 1-2 Exam: OSPF Concepts and Configuration
3	3/28	<ul style="list-style-type: none"> • Module 7 – WAN Concepts • Module 8 – VPN and IPsec Concepts 	<ul style="list-style-type: none"> • Modules 3-5 Exam: Network Security
4	4/4	<ul style="list-style-type: none"> • Case Study Intro • Midterm Prep 	<ul style="list-style-type: none"> • Modules 6-8 Exam: WAN Concepts • Midterm
	4/11	Spring Break	Spring Break
5	4/18	<ul style="list-style-type: none"> • Module 9 – QoS Concepts • Module 10 – Network Mgmt. • Module 11 – Network Design 	
6	4/25	<ul style="list-style-type: none"> • Module 12 – Network Troubleshooting • Module 13 – Network Automation 	<ul style="list-style-type: none"> • Modules 9-12 Exam: Optimize, Monitor, and Troubleshoot
7	5/2	<ul style="list-style-type: none"> • Module 14 – Network Automation • Case Study Work Day 	<ul style="list-style-type: none"> • Quiz: The Puzzle • Module 13-14 Exam: Emerging Network Technologies
8	5/9	<ul style="list-style-type: none"> • Finish Case Study • Skills Final Prep 	<ul style="list-style-type: none"> • Skills Final Packet Tracer • Case Study Due
9	5/16	<ul style="list-style-type: none"> • Final Exam • Case Study due 	<ul style="list-style-type: none"> • Course Feedback • Final Exam