

LAN, WAN Design and Management CNVT-1830-002; Fall 2021 - Warwick Campus

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Office Hours	Tuesday, Wednesday, Thursday 4:00 - 5:00 P.M - Friday: 5:00 - 6:00 P.M, or by appointment.		
Section 002	Classroom 2054 - Meets on Thursdays 12 P.M - 3:50 P.M Semester starts September 2 - Ends December 16.		
Credit Hours	3 Credit Hours, 2 Lecture hours and 2 Laboratory hours per week (15 weeks)		

Online Instructional Material

Cisco Academy Curriculum and Assessment Web Site	https://www.netacad.com
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Grading Policies

Skills:

Labs	15%
Packet Tracer Labs	10%
Case Study and Research	15%
Practical Final	30%

Academic:

Chapter Exams	10%
Final	20%

Textbook: **Optional**

Enterprise Networking, Security, and Automation Companion Guide.

Print: 9780136634324
eBook: 9780136634300

NOTE: Student will be given a final grade only when all requirements have been completed.

		93-100%	A	90-92%	A-
87-89%	B+	83-86%	B	80-82%	B-
77-79%	C+	70-76%	C		
67-69%	D+	60-66%	D		
		Below 60%	F		

**COVID-19 Vaccine
Required for Fall 2021**

**Learn more about
CCRI's COVID-19
Policy, requirements
and Updates.**

For more information,
follow the link below

[Link](#)

Course Objectives:

This course describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. ENSA also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces enable network automation.

By the end of this course, students will be able:

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

Examinations:

All exams are to be taken online at the assigned time. Taking all chapter exams, working on Labs and Packet Tracer assignments will prepare you for the final and practical exams. You cannot utilize any materials such as books, Enterprise Networking, Security, and Automation v7.0 (ENSA)

notes, cell phones or the Internet searches when taking these exams. Students are reminded of the college policies relative to working independently and are required to complete all examinations, Packet Tracer labs and other materials assigned. These requirements can be done either independently, or in a group, depending on the instructions given.

Students are expected to **uphold a standard of conduct** relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit. Cheating and plagiarism will not be tolerated. Copying answers on tests from somebody else, as well as assignments (entire or partial) is not allowed. Copying from textbooks and/or the Internet is also not allowed. Students who plagiarize and those who allow somebody else to copy your work will receive a grade of 0 (zero) for that exam or assignment.

Attendance/Tardiness:

Your final grade may be dropped by one letter grade as a result of missing the equivalent of two weeks of classes. An excused absence is: personal illness; urgent family issue; work related or a transportation issue. It is the responsibility of the student to notify the instructor of any absence and the reason for it. Documentation for the absence should be provided where applicable. Students whose work schedule may cause occasional tardiness should let the instructor know of the situation as soon as possible and are responsible for ALL missed work.

Other Policies

- The student expected to complete the On-Line lessons outside of class time.
- Late assignments, including labs, will be penalized 10%.
- All assignments must be completed using a word processor.
- Students who miss a chapter exam must take the quiz within two classes of the original quiz date.
- Students are expected to participate as a member of teams when required.
- Students must pass both the Skills based portion in addition to the Academic portion of the curriculum to pass the course.
- Student's final grade can only raise one letter grade above the on-line final exam score based on other class assignments.
- Students are allowed a **maximum** of three (3) re-takes of chapter exams per the semester.
- All re-takes must be completed **prior** to the final exam, in the classroom, **without exception**.

Classroom Etiquette, Netiquette Policy:

- Respect your classmates and their opinions, knowledge and presence.
- Speak articulately and use proper grammar. Be respectful of your classmates and instructor.
- Do not include personal topics, or experiences, unless they are related to the topic being discussed.
- DO NOT use capitals, it is a known policy that by doing so you are representing "anger" which will not be tolerated.
- Agree to disagree. Do not ensue in an argument, but instead understand that there will be differences of opinions, which should be discussed.
- Don't share another's information, this is an invasion of privacy and can be considered a form of plagiarism. Ask for permission before posting anything that is not your own property, idea or work.
- Do not post anything that can be misconstrued as "inappropriate", this could lead to severe actions, and possible dismissal.
- If something is offensive to you, please do not take matters into your own hands, reach out to your instructor for guidance.
- Always reread your information before sending to ensure that it is in an acceptable form of communication.
- Please refer to [The Student Handbook Code of Conduct outlines what is misconduct by a student.](#)

Accessibility Policy:

CCRI is committed to creating an environment that meets the needs of all students. CCRI abides by the Americans with Disabilities Act and Sections 504 and 508 of the Rehabilitation Act of 1973. Any student having a disability can arrange accommodations. Please refer to the [Disability Services for Students](#) for assistance.

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Class	Lesson	Module Group Exam	Subjects	Labs/Packet Tracer (PT)/Videos/Case Study
Sep 2	1 & 2		Module 1: Single-Area OSPFv2 Concepts Module 2: Single-Area OSPFv2 Configuration	Video 1.2.1 OSPF Packets Video 1.3.1 OSPF Operation *PT 2.2.13 Point-to-Point Single-Area OSPFv2 Configuration *PT 2.3.11 Determine the DR and BDR *PT 2.4.11 Modify Single-Area OSPFv2 *PT 2.5.3 Propagate a Default Route in OSPFv2 *PT 2.6.6 Verify Single-Area OSPFv2 Configuration *PT 2.7.1 Single-Area OSPFv2 Configuration **Lab 2.7.2 Single-Area OSPFv2 Configuration
Sept 9	3	Exam 1 Modules 1 & 2	Module 3: Network Security Concepts	Video 3.3.1 Threat Actor Tools Video 3.5.2 Reconnaissance Attacks Video 3.5.4 Access and Social Engineering Attacks Video 3.6.1 Common IP and ICMP Attacks Video 3.6.4 Amplification, Reflection and Spoofing Attacks Video 3.8.3 ARP Spoofing Video 3.10.1 Cryptography Wireshark *Document upload **Lab 3.8.8 Explore DNS
Module Group Exam 1 - Modules 1 and 2 - Available: September 9, 2021 - Due: Wednesday midnight September 14				
Sept 16	4 & 5		Module 4: ACL Concepts Module 5: ACLs for IPv4 Configuration	*PT 4.1.4 ALC Demonstration *PT 5.1.8 Configure a Numbered ACLs *PT 5.1.9 Configure Named Standard ACLs
Sept 23		Exam 2 Modules 3, 4 & 5	ACLs Continued.....	*PT 5.2.7 Configure and Modify Standard IPv4 ACLs *PT 5.4.12 Configure Extended IPv4 ACLs - Scenario 1 *PT 5.4.13 Configure Extended IPv4 ACLs - Scenario 2 **Lab 5.5.2 Configure and Verify IPv4 ACLs
Module Group Exam 2 - Modules 3, 4 & 5 - Available: September 23 2021 - Due: Wednesday midnight September 29				
Sept 30	6 & 7		Module 6: NAT for IPv4 Module 7: WAN Concepts	*PT 6.4.5 Configure Static NAT *PT 6.5.6 Configure Dynamic NAT *PT 6.6.7 Configure PAT *PT 6.8.1 Configure NAT for IPv4 **Lab Configure NAT for IPv4 *PT 7.6.1 WAN Concepts
Oct 7	8	Exam 3 Modules 6, 7 & 8	Module 8: VPN and IPsec Concepts	Video 8.3.1 IPsec Concepts Video 8.3.8 IPsec Transport and Tunnel Mode **Lab Configuring GRE VPN Tunnel Case Study Assigned
Module Group Exam 3 - Modules 6, 7 & 8 - Available: October 7, 2021 - Due: Wednesday midnight October 13				
Oct 14	9		Module 9: QoS Concepts Module 10: Network Management	Video 9.1.1 The Purpose of QoS Video 9.2.1 Traffic Characteristics Video 9.3.1 QoS Algorithms Video 9.4.1 QoS Models Video 9.5.1 QoS Implementation Techniques

Oct 21	10			<p>*PT 10.1.5 Use CDP to Map a Network</p> <p>*PT 10.2.6 Use LLDP to Map a Network</p> <p>*PT 10.3.4 Configure and Verify NTP</p> <p>*PT 10.6.10 Back Up Configuration Files</p> <p>**Lab 10.6.11 Use Tera Term to manage files</p> <p>**Lab 10.6.13 Research Password Recovery</p> <p>*PT 10.7.6 Use a TFTP Server to Upgrade a Cisco IOS Image</p> <p>*PT 10.8.1 Configure CDP, LLDP, and NTP</p> <p>**Lab 10.8.2 Configure CDP, LLDP, and NTP</p> <p>Video 10.7.1 Managing Cisco IOS Images</p>
Oct 28	11 & 12	Exam 4 Modules 9, 10, 11 & 12	Module 11: Network Design Module 12: Network Troubleshooting	<p>*PT 11.5.1 Compare Layer 2 and Layer 3 Devices</p> <p>Video 11.1.1 Three-Layer Network design</p> <p>*PT 12.5.13 Troubleshoot Enterprise Networks</p> <p>*PT 12.6.1 Troubleshooting Challenge - Document the Network</p> <p>*PT 12.6.2 Troubleshooting Challenge - Use Documentation to Solve Issues</p>
Module Group Exam 4 - Modules 9 thru 12 - Available: October 28, 2021 - Due: Wednesday midnight November 3				
Nov 4	13		Module 13: Network Virtualization	<p>Video 13.1.1 Cloud and Virtualization</p> <p>Video 13.4.1 Software-Defined Networking</p> <p>Video 13.5.2 Cisco ACI</p>
Tuesday Nov 9 Thursday class schedule followed	14	Exam 5 Modules 13 & 14	Module 14: Network Automation	<p>Video 14.1.1 Automation Everywhere</p> <p>Video 14.2.1 Data Formats</p> <p>Video 14.3.1 APIs</p> <p>Video 14.4.1 REST</p> <p>Video 14.5.1 Configuration Management Tools</p> <p>Video 14.6.1 Intent Based Networking</p> <p>Video 14.6.6 DNA Center Overview and Platform APIs</p> <p>Video 14.6.7 DNA Center Design and Provision</p> <p>Video 14.6.8 A Center Policy and Assurance</p> <p>Video 14.6.9 DNA Center Troubleshooting User Connectivity</p>
Nov 11	Holiday - Veteran's day			
Module Group Exam 4 - Modules 13 and 14 - Available: November 9, 2021 - Due: Wednesday midnight November 17				
Nov 18			Review	Open Lab - Case Study
Nov 25	Holiday - Thanksgiving			
Dec 2			Case Study Due	Upload PT file and documents
Dec 9	Practical Exam - In Class			
Dec 16	Final Exam - In Class			

Schedule, assignments and course content may be subject to change.

*Packet Tracer (*PT) assignments must be uploaded to the NetAcad.com site no later than one week from the assigned date (assigned date found in the first column labeled "Class Meeting" for each associated Module).

**Labs must be turned in at the end of each class, unless otherwise specified.