

# TCN 4211—Telecommunication Networks Department of Electrical & Computer Engineering Florida International University Summer 2019

<b>Classroom:</b>	
<b>Class Time:</b>	
<b>Instructor:</b>	Dr. Alexander Pons
<b>Office Hours:</b>	Weds from 10:00am to 12:00pm or by appointment
<b>Office:</b>	EC 3145
<b>Email:</b>	<a href="mailto:apons@fiu.edu">apons@fiu.edu</a>
<b>Prerequisite:</b>	None
<b>Textbook:</b>	CompTIA Network+ N10-006 Authorized Cert Guide by Kevin Wallace, 2015 - Simulator Download Version By Michael Taylor, David L. Prowse ( <b>simulation labs</b> )

## Course Description

The goal of the course is to teach the introductory concepts and principles in telecommunication networks, especially Internet, and how to apply those concepts in network system engineering synthesis, analysis, and evaluation of computer communication networks. The course will present various aspects of telecommunication networking, with an emphasis on (1) telecommunication network components (2) flow and congestion control, (3) switching and routing, (3) quality of service, and (4) application level protocols such as RTP, peer-to-peer networks, and overlay networks.

*This course will consist of 8 modules. Module availability is open from (list day of week range. For ex. Monday – Friday from 12AM -11:59 PM) Lab Assignments will be completed individually and one project will be completed in a group. Communication will take place primarily via email and professor announcements.*

## Course Objectives

1. Comprehend the basics of computer networking and the components that comprise them.
2. Comprehend and learn the concepts related to Telecommunication and Networks.
3. Evaluate and understand the composition and functionality of the OSI layers and TCP/IP models.
4. Analysis the different networking topologies and technologies to use in different scenarios.

5. Synthesis network subnetting with IP Addresses schemes and their management.
6. Application of best practices and guidelines for developing and verifying effective security policies and procedures, security goals, threats and vulnerabilities, standards and security policy development.
7. Comprehend networking management and utilizes in configuration and deployment.
8. Application of routing protocols in LANs.
9. Comprehend the techniques to improve network performance.
10. Comprehend the basic concepts in deploying a wireless network and its vulnerabilities.

### Assignments

#### **Assignment Expectations:**

- Explicit instructions and grading criteria will be provided for all assignments.
- Unless specified otherwise, all assignments are to be completed by the individual student.
- Each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
- All work is to be submitted via Blackboard. DO NOT send assignments by email.
- **All work submitted should display Panther ID number and should be signed, as the students' own work, and that no unauthorized help was obtained.**
- Assignments are due on the date specified. Assignments submitted late (within 1 week) will receive half credit.
- Students are encouraged to ask questions and to discuss course topics with the instructor and with each other.
- To get assistance try to see me by an appointment.
- [The expected turn-around time for feedback or grades within 7 days](#)

### Assessments

#### **Quiz Expectations:**

- This course consists of 8 quizzes, consisting of multiple modules.
- [Quizzes will be available Provide the dates and times when assessments will become available \(i.e. From Monday 10:00 am - Tuesday 11:59 pm\)](#)
- Students will be given one attempt for each quiz.
- Students will be given 30 minutes to complete each quiz
- Students will be able to see their score upon submission.

### Discussion Forums

#### **Discussion Forum Expectations:**

- [Provide clear guidance on the expectations and requirements](#)
  - [The approximate length of a response \(ex. 200 words, 20 lines\)](#)
  - [How many times students are expected to post/respond to a forum \(Post Tasks requirements and at least one posting on another student's posting\)](#)
- [Available dates \(unlimited or for an specific time\) \(weekly basis - From the time the week is open till it is closed\)](#)
- [Criteria/rubric for evaluating the originality and quality of students' comments and grade credit expected \(please use TCN 4081\)](#)
- [The expected turn-around time for feedback or grades. \(within 7 days\)](#)

### Course Communication

Communication in this course will take place via [Email/Messages \(choose one\)](#)

### Course Expectations

Students are expected to:

- Review the **how to get started information** located in the course content
- **Introduce yourself to the class** during the first week by posting a self-introduction in the appropriate discussion forum
- **Take the practice quiz** to ensure that your computer is compatible with Blackboard
- **Interact** online with instructor/s and peers
- **Review** and follow the course calendar
- Log in to the course at least 5 times **[number of times]** per week
- Respond to discussion boards, blogs and journal postings within 2 days **[days]**
- Respond to **[emails/messages]** within 2 days **[days]**
- Submit assignments by the corresponding deadline

The instructor will:

- Log in to the course 5 times **[number of times]** per week
- Respond to discussion boards, blogs and journal postings within 3 days **[days]**
- Respond to **[emails/messages]** within 2 days **[days]**
- Grade assignments within 7 days **[days]** of the assignment deadline

Please provide a link for IEEE format

[http://www.ieee.org/conferences\\_events/conferences/publishing/templates.html](http://www.ieee.org/conferences_events/conferences/publishing/templates.html)

Plus, I will provide a word document as a template please see attachment

### **Topics Covered**

1. OSI and TCP/IP models
2. Addressing methods and formats
3. Routing and Switching
4. Network Protocols
5. DNS and DHCP concepts
6. Network topologies, technologies, cables and connectors
7. SOHO Networking
8. Wireless Networking

### **TEACHING METHODOLOGY**

This is a fully online course in which all of the instructional materials and activities are delivered through Blackboard, and/or other internet-based media. Some exams may require the use of an approved proctoring center. Should you have any questions, please contact the professor.

1. Student learning will be enabled by textbook reading, PowerPoint Slides, Case Studies, Individual and group assignments, hands-on exercises and quizzes. For each chapter, there will be assignments including quizzes, and practical exercises. These assignments are due each week.
2. Learning will be self-directed and participative. Evaluation of learning will be based on the quantity and quality of student (self-directed) study reflected by completing all assignments, and examinations. The participation part of the grade will be determined by the assignments, and how well students actively participate in extra exercises (if any) to be announced throughout the semester. We will engage in this type of learning activity through the Discussion Forum part of Blackboard.
3. Students are expected to (electronically) complete the assigned readings and learning exercises during the week the assignment is due.
4. Students are expected to play an active role in different learning activities including posting and answering class related questions on the discussion forum. Active participation is encouraged and expected

## **TECHNICAL REQUIREMENTS & SKILLS**

One of the greatest barriers to taking an online course is a lack of basic computer literacy. By computer literacy we mean being able to manage and organize computer files efficiently, and learning to use your computer's operating system and software quickly and easily. Keep in mind that this is not a computer literacy course; but students enrolled in online courses are expected to have moderate proficiency using a computer. Please go to the "[What's Required](#)" webpage to find out more information on this subject.

This course utilizes the following tools:

- Lab Simulations from Textbook
- Network Analyzer - WireShark

## **Relationship of course to program objectives**

In this course, the student will have to show:

1. An ability to apply knowledge of mathematics, science, and engineering,
2. an ability to design and conduct experiments, as well as to analyze and interpret data,
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability,
4. an ability to identify, formulate, and solve engineering problems (homework),
5. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
6. an ability to communicate effectively (through teamwork),
7. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice,
8. a knowledge of contemporary issues,
9. a knowledge of advanced mathematics.

## **Grading Scheme**

<b>Quizzes</b>	<b>10%</b>
<b>Assignment/Labs</b>	<b>10%</b>
<b>Discussion and Participation</b>	<b>15%</b>

<b>Group Research Paper/Project</b>	<b>15%</b>
<b>Midterm Exam</b>	<b>25%</b>
<b>Final Exam</b>	<b>25%</b>
<b>Total</b>	<b>100%</b>

### **Tentative Grading Scale**

<b>A</b>	<b>100-95</b>	<b>B+</b>	<b>86-89</b>	<b>C+</b>	<b>76-79</b>	<b>D+</b>	<b>66-69</b>	<b>F</b>	<b>0-59</b>
<b>A-</b>	<b>90-94</b>	<b>B</b>	<b>83-85</b>	<b>C</b>	<b>73-75</b>	<b>D</b>	<b>63-65</b>		
		<b>B-</b>	<b>80-82</b>	<b>C-</b>	<b>70-72</b>	<b>D-</b>	<b>60-62</b>		

### **Group Research Paper**

1. The course includes a substantial group project (35%) requiring the review and the implementation of attacks or defenses of a non-trivial network security issue.
2. The group contains 3-4 students working together throughout the semester.
3. Students will submit a recorded presentation, including research paper in IEEE format and the presentation PowerPoint slides.
4. See presentation and paper rubrics for grading criteria.

### **University's Code of Academic Integrity**

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational Mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

More information can be found at [http://academic.fiu.edu/academic\\_misconduct.html](http://academic.fiu.edu/academic_misconduct.html)

### **Department Regulations Concerning Incomplete Grades**

To qualify for an Incomplete, a student:

1. Must contact (e.g., phone, email, etc.) the instructor or secretary before or during missed portion of class.
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. Must see Instructor. All missed work must be finished before last two weeks of the next term

**University policies on sexual harassment, and religious holidays, and information on services for students with disabilities**

Please visit the following websites: <http://academic.fiu.edu/> and <http://drc.fiu.edu>

### Course Policies

- **Attendance:** Attendance in the course is **mandatory** and student is not allowed to miss any class during the semester. There will be a **penalty** for missing classes and it may affect your final grade.
- **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
- **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (1 point per absence above two, 3 points per absence above 5).
- **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation you are required to email a description of the excuse and absence dates as a written record to [apons@fiu.edu](mailto:apons@fiu.edu).
- **On Time:** As in the workplace, on time arrival and preparation are required. Two “lates” are equivalent to one absence. (Leaving class early is counted the same as tardy.)
- **Deadlines:** Assignments are due at the beginning of the class period on the date specified. Assignments submitted late (within 1 week) will receive half credit.
- To get assistance try to see me by an appointment.
- Students are encouraged to ask questions and to discuss course topics with the instructor and with each other.
- **Any work submitted should display Panther ID number and should be signed, as the students’ own work, and that no unauthorized help was obtained.**
- Cell phones, communicators, MP3 players, head sets are not allowed to be used in the class.
- **DO NOT** send assignments by email.
- Instructor reserves right to change course materials or dates as necessary.

### Class Schedule

Date	Tasks
May. 16 - 22 Week 1 Module 1 – Network Basics	<p><b>Module 1 – Network Basics</b></p> <p>Chapter 1 , “Introducing Computer Networks,” introduces the purpose of computer networks and their constituent components. Additionally, networks are categorized by their geography, topology, and resource location.</p> <p>Chapter 2 , “Dissecting the OSI Model,” presents the two network models: the OSI model and the TCP/IP stack. These models categorize various network components from a network cable up to and including an application, such as e-mail. These models are contrasted, and you are given a listing of well-known TCP and UDP port numbers used for specific applications.</p>

Date	Tasks
	<p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>1. Comprehend the basics of computer networking and the components that comprise them.</li> <li>3. Evaluate and understand the composition and functionality of the OSI layers and TCP/IP models.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Describe different network topologies.</li> <li>• Comprehend the layers of the OSI and TCP/IP models.</li> <li>• Identify common TCP and UDP default ports.</li> <li>• Explain the function of common network protocols.</li> </ul> <p>Watch these videos:</p> <p>Tasks Please install the software that comes with your CD from the book, it should include a lab simulator if you have the latest edition of the book (2015)</p> <p>Reading Assignments: Chapter 1 - Introducing Computer Networks Chapter 2 - Dissecting the OSI Model</p> <p>View Chapter 1 and 2 Presentations Quiz 1: Chapters 1 and 2</p> <p>Assignment 1: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapters 1 and 2 (upload)</li> <li>2. Please complete simulations for chapters 1 and 2 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapter 1 and 2. (Upload)</li> </ol> <p>Discussion 1: What elements are required to create a network?</p> <p>What is the purpose of a protocol?</p> <p><b>Formation of Groups for Group Research Project due by Sunday, 5/22 at 6:00 PM</b></p>

Date	Tasks
<p>Mar. 23 - 29</p> <p>Week 2</p> <p>Module 2 - Network Components and Ethernet</p>	<p><b>Module 2 – Network Components and Ethernet</b></p> <p>Chapter 3 , “Identifying Network Components.” A variety of network components are introduced in this chapter. You are given an explanation of various media types, the roles of specific infrastructure components, and the features provided by specialized network devices (for example, a firewall or content switch).</p> <p>Chapter 4 , “Understanding Ethernet.” The most widely deployed LAN technology is Ethernet, and this chapter describes the characteristics of Ethernet networks. Topics include media access, collision domains, broadcast domains, and distance/speed limitations for popular Ethernet standards. Additionally, you are introduced to some of the features available on Ethernet switches, such as VLANs, trunks, STP, link aggregation, PoE, port monitoring, and user authentication.</p> <p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>1. Comprehend the basics of computer networking and the components that comprise them.</li> <li>2. Comprehend and learn the concepts related to Telecommunication and Networks.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Evaluate standard media types and associated properties.</li> <li>• Identify standard connector types based on network media.</li> <li>• Identify components of wiring distribution.</li> <li>• Knowledge of the purpose and features of various network appliances.</li> <li>• Knowledge of the purpose of routing and switching.</li> <li>• Compare and contrast different LAN technologies.</li> </ul> <p>Watch these videos at</p> <p>Tasks Reading Assignments: Chapter 3: Identifying Network Components Chapter 4: Understanding Ethernet</p> <p>View Chapter 4 and 5 Presentation Quiz 2: Chapters 3, and 4</p> <p>Assignment 2: Posted in Respective Forum</p>



Date	Tasks
	<ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapters 3 and 4 (upload)</li> <li>2. Please complete simulations for chapters 3 and 4 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapter 3 and 4. (Upload)</li> </ol> <p>Discussion 2:</p> <p>Describe how one device can send a bit to another device.</p> <p>Why is it necessary to have a common language for communication across devices?</p>
<p>May. 30 – June 5</p> <p>Week 3</p> <p>Module 3 – Networking Addressing and Subnetting</p>	<p><b>Module 3 – Network Addressing and Subnetting</b></p> <p>Chapter 5 , “Working with IP Addresses.” One of the most challenging concepts for many CompTIA Network+ students is IP subnetting. This chapter demystifies IP subnetting by reviewing the basics of binary numbering, before delving into basic subnetting and then advanced subnetting. Although most of the focus of this chapter is on IP version 4 (IPv4) addressing, the chapter concludes with an introduction to IP version 6 (IPv6).</p> <p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>5. Synthesis network subnetting with IP Addresses schemes and their management.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Knowledge of the purpose and properties of IP addressing</li> <li>• Comprehension of the network segmentation</li> <li>• Application of network subnetting</li> <li>• Synthesis a network addressing scheme</li> </ul> <p>Watch these videos at</p> <p>Tasks Reading Assignments: Chapter 5: Working with IP Addresses</p>

Date	Tasks
	<p>View Chapter 5 Presentation Quiz 3: Chapters 5</p> <p>Assignment 3: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapter 5 (upload)</li> <li>2. Please complete simulations for chapter 5 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapter 5. (Upload)</li> </ol> <p>Discussion 3:</p> <p>What is the purpose of a logical address?</p> <p>How large should an address be to define a single device on any network in the world?</p> <p><b>Group Research Project Proposal due by Sunday, 6/5 at 11:59 PM</b></p>
<p>June. 6 - 12</p> <p>Week 4</p> <p>Module 4 – Routing and WANs</p>	<p><b>Module 4 – Routing and WANs</b></p> <p>Chapter 6 , “Routing Traffic.” A primary job of a computer network is to route traffic between subnets. This chapter reviews the operation of routing IP traffic and discusses how a router obtains routing information. One way a router can populate its routing table is through the use of dynamic routing protocols, several of which are discussed in this chapter. Many environments (such as a home network connecting to the Internet via a cable modem) use NAT to convert between private IP addresses inside a network and public IP addresses outside a network. This chapter discusses DNAT, SNAT, and PAT.</p> <p>Chapter 7 , “Introducing Wide-Area Networks.” Many corporate networks need to interconnect multiple sites separated by large distances. Connections between such geographically dispersed sites make up a WAN. This chapter discusses three categories of WAN connections and contrasts various WAN connection types, based on supported data rates and media types. Finally, this chapter lists characteristics for multiple WAN technologies.</p>

Date	Tasks
	<p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>4. Analysis the different networking topologies and technologies to use in different scenarios.</li> <li>8. Application of routing protocols in LANs.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Comprehend the purpose and properties of routing and switching.</li> <li>• Synthesis the installation and configuration of routers and switches.</li> <li>• Comprehend WAN technology types and properties.</li> </ul> <p>Watch these videos at</p> <p>Tasks</p> <p>Reading Assignments:  Chapter 6: <b>Routing Traffic</b>  Chapter 7: <b>Introducing Wide-Area Networks</b></p> <p>View Chapter 6 and 7 Presentations  Quiz 4: Chapters 6 and 7</p> <p>Assignment 4: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapters 6 and 7 (upload)</li> <li>2. Please complete simulations for chapters 6 and 7 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapters 6 and 7. (Upload)</li> </ol> <p>Discussion 4:</p> <p>What is necessary for a router to know where to send a message next?</p> <p>What are the challenges in establishing a network connection between two points over a large distance?</p> <p><b>Midterm must be taken prior to June 13</b></p>

Date	Tasks
<p>June. 13 – 19</p> <p>Week 5</p> <p>Module 5 – Wireless and Configurations</p>	<p><b>Module 5 – Wireless and Configurations</b></p> <p>Chapter 8 , “Connecting Wirelessly.” In this increasingly mobile world, wireless technologies are exploding in popularity. This chapter discusses the basic operation of WLANs. Additionally, WLAN design and security considerations are addressed.</p> <p>Chapter 9 , “Optimizing Network Performance.” This chapter explains the importance of high availability for a network and what mechanisms help provide a high level of availability. Network performance optimization strategies are addressed, including a section on QoS. Finally, this chapter allows you to use what you have learned in this and preceding chapters to design a SOHO network.</p> <p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>9. Comprehend the techniques to improve network performance.</li> <li>10. Comprehend the basic concepts in deploying a wireless network and its vulnerabilities.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Evaluate and contrast different wireless standards.</li> <li>• Synthesis a wireless network given a scenario, implement appropriate wireless security measures.</li> <li>• Explain common threats, vulnerabilities, and mitigation techniques.</li> <li>• Synthesis a network given a set of requirements, plan and implement a basic SOHO network.</li> <li>• Explain different methods and rationales for network performance optimization.</li> </ul> <p>Tasks</p> <p>Reading Assignments:</p> <p>Chapter 8: <b>Connecting Wirelessly</b></p> <p>Chapter 9: <b>Optimizing Network Performance</b></p> <p>View Chapter 8 and 9 Presentation</p> <p>Quiz 5: Chapters 8 and 9</p> <p>Assignment 5: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapters 8 and 9 (upload)</li> <li>2. Please complete simulations for chapters 8 and 9 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapters 8 and 9. (Upload)</li> </ol>

Date	Tasks
	<p>Discussion 5:</p> <p>What are the difficulties associated with wireless network connections?</p> <p>What is necessary to have network availability and why is it beneficial?</p>
<p>June. 20 -26</p> <p>Week 6</p> <p>Module 6 - Network Management and Utilities</p>	<p><b>Module 6 – Network Management and Utilities</b></p> <p>Chapter 10 , “Using Command-Line Utilities.” In your daily administration and troubleshooting of computer networks, you need familiarity with various command-line utilities available on the operating systems present in your network. This chapter presents a collection of popular command-line utilities for both Microsoft Windows ® and UNIX platforms.</p> <p>Chapter 11 , “Managing a Network,” reviews some of the more common tools used to physically maintain a network. The components of configuration management are also presented. Finally, this chapter discusses some of the network-monitoring tools available to network administrators and what types of information are included in various logs.</p> <p><b>Supports Course Learning Objective(s):</b></p> <p>7. Comprehend networking management and utilizes in configuration and deployment.</p> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Comprehend the use of appropriate software tools to troubleshoot connectivity issues.</li> <li>• Application of a scenario, use the appropriate network resource to analyze traffic.</li> <li>• Describe the purpose of configuration management documentation.</li> </ul> <p>Watch these videos at</p>

Date	Tasks
	<p>Tasks</p> <p>Reading Assignments:  Chapter 10: Using Command-Line Utilities  Chapter 11: Managing a Network</p> <p>View Chapter 10 and 11 Presentations  Quizzes: Chapters 10 and 11</p> <p>Assignment 6: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>1. Complete Review question from the end of chapters 10 and 11 (upload)</li> <li>2. Please complete simulations for chapters 10 and 11 (upload Screenshots)</li> <li>3. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapters 10 and 11. (Upload)</li> </ol> <p>Discussion 6:</p> <p>What is the benefit of using command-line utilities instead of GUI utilities for network configuration?</p> <p>What elements of a network can be tested and what steps can be taken to test them?</p>
<p>June. 27 –July 3</p> <p>Week 7</p> <p>Module 7 -  Network  Security</p>	<p><b>Module 7 – Network Security</b></p> <p>Chapter 12 , “Securing a Network.” Network security is an issue for most any network, and this chapter covers a variety of network security technologies. You begin by understanding the goals of network security and the types of attacks you must defend against. Then, you review a collection of security best practices. Next, the chapter discusses specific security technologies, including firewalls, VPNs, IDSs, and IPSs.</p> <p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>6. Application of best practices and guidelines for developing and verifying effective security policies and procedures, security goals, threats and vulnerabilities, standards and</li> </ol>

Date	Tasks
	<p style="text-align: center;">security policy development.</p> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain the methods of network access security.</li> <li>• Comprehend the methods of user authentication.</li> <li>• Comprehend the common threats, vulnerabilities, and mitigation techniques.</li> <li>• Describe the different types of network security appliances and methods.</li> </ul> <p>Watch these videos at</p> <p>Tasks Reading Assignments: Chapter 12: Securing a Network</p> <p>View Chapter 12 Presentation Quiz 7: Chapter 12</p> <p>Assignment 7: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>4. Complete Review question from the end of chapter 12 (upload)</li> <li>5. Please complete simulations for chapter 12 (upload Screenshots)</li> <li>6. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapter 12. (Upload)</li> </ol> <p>Discussion 7: What are the biggest threats to a network in terms of security?</p> <p>What measures should be taken to protect a network from attack?</p>
<p>July 4 - 10</p> <p>Week 8</p> <p>Module 8 –</p>	<p><b>Module 8 – Troubleshooting Networks</b></p> <p>Chapter 13 , “Troubleshooting Network Issues.” Troubleshooting network issues in an inherent part of network administration, and this chapter presents a structured approach to troubleshooting various network technologies. Specifically, you learn</p>

Date	Tasks
<p>Troubleshooting Networks</p>	<p>how to troubleshoot common Layer 2, Layer 3, and wireless network issues.</p> <p><b>Supports Course Learning Objective(s):</b></p> <ol style="list-style-type: none"> <li>7. Comprehend networking management and utilizes in configuration and deployment.</li> <li>9. Comprehend the techniques to improve network performance.</li> </ol> <p><b>Module Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Analysis and implement a given troubleshooting methodology.</li> <li>• Comprehend how to troubleshoot common wireless problems.</li> <li>• Comprehend how to troubleshoot common router and switch problems.</li> <li>• Comprehend how to troubleshoot common physical connectivity problems.</li> </ul> <p>Tasks</p> <p>Reading Assignments:  Chapter 13: Troubleshooting Network Issues  View Chapter 13 Presentation  Quiz 8: Chapter 13</p> <p>Assignment 8: Posted in Respective Forum</p> <ol style="list-style-type: none"> <li>7. Complete Review question from the end of chapter 13 (upload)</li> <li>8. Please complete simulations for chapter 13 (upload Screenshots)</li> <li>9. Obtain from the CD the (Resource Tab) the Memorization tables and fill out the part for chapter 13. (Upload)</li> </ol> <p>Discussion 8:  What are some likely causes of network interruption or failure?</p> <p>Why is it important to establish a hierarchy for troubleshooting networks?</p>
<p>July 10</p>	<p>FINAL EXAM</p>
<p>July 11</p>	<p>Group Research Project</p>



