Course **Syllabus**

What you will learn in this course

Advanced Networking 1b: Protecting Your Network

You've learned the basics of networks, and now it's time to dig deeper into the intricacies and inner workings of these channels. In this course, you'll learn the methods used to manage traffic, transmissions, and users based on organizational needs and the important decisions that go into building an optimal network. You'll explore types of malicious attacks and the role that risk management plays in the strategic planning to prepare for, monitor, and efficiently remediate damage. Lastly, you'll investigate processes that can be used to prevent, monitor, and notify of these events to employ action plans quickly. Get ready to advance your networking prowess! Let's get started!

Unit 1: Managing Networks

Think about how access to school is controlled each day. You may need to scan your ID, walk through a metal detector, or use wireless communication mounted on a wall to unlock a door. In

a network, a high degree of monitoring is required for security, availability, and optimization. Managing networks is very much like this. Users receive permission to complete specific actions on a network, and there are systems in place that control their movement. Not everyone can get onto a network, and doing anything that is not allowed is highly visible to network administrators. This unit is all about learning the methods used to manage traffic, transmissions, and users, so here we go!

What will you learn in this unit?

1. Define the purpose of change management, and describe how it can be used
2. Evaluate types of network logs and practices
3. Analyze methods for maintaining network logs
4. Discuss best practices to implement network monitoring

UNIT 1 Assignments

Assignment	Type
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

Unit 2: Data, Storage, and Optimization

Like a puzzle that you need to solve, networks are full of options, and it is up to you to figure out what the best choices are. Understanding organizational needs and making the right decisions are critical parts of the process. You might need to consider the deployment methods, infrastructure, what systems respond best to change, addressing schemes, and storage methods. Luckily for you, this unit covers it all! We'll dive deep into the methods surrounding many of the important decisions that you will make as you build an optimal network that best serves the needs of your organization.

What will you learn in this unit?

1. Explain deployment methods, including public, private, and cloud
2. Describe automation and orchestration requirements
3. Assess the advantages and disadvantages of elasticity, scalability, and multitenancy to determine the most suitable application
4. Calculate and convert various numbering systems, including hexadecimal, binary, and decimal
5. Differentiate between storage methods and contrast the uses of NAS, cloud, and extended storage

UNIT 2 Assignments

Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

Unit 3: Network Architecture

We keep talking about network architecture, but what is it? You are probably familiar with thinking about architecture in terms of how a building is made, including the engineering used to support the structure, the strategy of the layout, and even the aesthetics. Believe it or not, network architecture actually has a lot of similarities to traditional architecture! Although networks are highly standardized, there are a lot of options available when creating them and for the methods used to construct them. There are considerations such as how the network traffic will flow, how it will be managed and monitored, and what will make it the most effective for the demands of the organization that it serves. Let's learn how to build the best network we can!

What will you learn in this unit?

1. Identify three-tier network architecture, both theoretically and when implemented

2. Define spine-leaf architecture and compare it to three-tier network architecture
3. Describe how traffic flows within a network
4. Discuss the concepts of architecture and traffic flows within the context of data center locations and the advantages/disadvantages they possess

UNIT 3 Assignments

Assignment	Type
Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Quiz

Unit 4: Responding to the Unexpected

As sure as the sun rises in the east and sets in the west, disasters will happen, and network components will fail! In this unit, we discuss the need for formalized plans when the unexpected occurs and how to define the parameters of the response. As the size of the organization and the infrastructure that supports it grow, more preparation is required to provide a comprehensive response. How will your plans take into account the organization's employees, stakeholders, facilities in other locations, and cloud-based services? Without plans in place to respond on an organizational level, the response might not be quick enough. We will also investigate methods and processes that can be used to prevent, monitor, and alert us to these events so that plans can be employed quickly. Let's get prepared!

What will you learn in this unit?

1. Describe a business continuity plan
2. Explain disaster recovery, including NIC teaming and multipathing
3. Plan solutions to common network hardware issues in response to the disruption of services
4. Discuss high availability concepts, including active, passive, and cloud sites
5. Compare routing protocols for prevention and response to disaster recovery

UNIT 4 Assignments

Assignment	Type
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework
Unit 4 Activity 2	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

Advanced Networking 1b Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 5: Security Management

The world of technology is full of security threats, and it isn't possible to avoid malicious attacks on an organization's infrastructure. Still, while we can't stop an attack from happening, we can prepare for attacks, monitor them, and efficiently remediate any damage caused. This lesson is all about the types of attacks that you will encounter and the role that risk management plays in strategic planning. Risk management encompasses a wide variety of tactics and assessments that are used to prepare for the threats that technology faces.

What will you learn in this unit?

1. Compare attack types, including piggybacking and tailgating
2. Interpret security risk assessments and vulnerability assessments
3. Describe penetration testing
4. Devise posture assessments and business risk assessments
5. Summarize process assessments and vendor assessments
6. Define security information and event management

UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

Unit 6: Wireless Security and Threat Planning

Building secure networks demands a range of skills. Think about physical buildings and the many things we do to protect them from a variety of dangers. There are screens on our windows and locks on our doors to keep out pests and unwanted visitors. You might also have a camera so that if something bad does happen, you can go back and see exactly what went wrong. Networks are likewise protected in a variety of ways. In this unit, we will discuss how to protect and secure networks by investigating topics ranging from fundamental methods and frameworks to protocols and planning. Once the network is built, you will be able to ensure that it stands the test of time.

What will you learn in this unit?

1. Give scenario-based examples to explain wireless security concepts
2. Evaluate the methods and implementation of wireless security concepts
3. Analyze least privilege, role-based access, and zero trust

4. Compare various security protocols including LDAP and Kerberos
5. Harden a network to ensure its integrity
6. Define cryptography and make plans to prepare for change, unexpected incidents, and common malicious attacks

UNIT 6 Assignments

Assignment	Type
Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Activity 3	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

Unit 7: Troubleshooting Storage and Security

Whether it is our personal documents and pictures or a company's data, we store quite a bit of information on computers and servers. Most people put things on their computer, a company server, or the cloud and don't think any more about it. For network administrators, however, being prepared for the *what ifs* is an important part of the job. People panic when they can't find the file that they are looking for. If a business loses data, that has a definite financial impact on the business. Let's find out how to make sure that doesn't happen.

What will you learn in this unit?

1. Utilize basic tools to find disk and volume errors
2. Repair problems with files and folders
3. Create and implement safe account policies
4. Analyze a system for errors
5. Minimize the attack surface of a system

UNIT 7 Assignments

Assignment	Type
Unit 7 Critical Thinking Questions	Homework
Unit 7 Activity 1	Homework
Unit 7 Activity 2	Homework
Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion
Unit 7 Quiz	Quiz

Unit 8: Professionalism, Employability, and Security

Advanced technical skills are necessary but insufficient on their own for a great career. Indeed, there is another trait that can lift up professionals who may lack some skills: professional etiquette. Professional etiquette is a highly sought-after trait in the technology community. It is vital. A network professional must be an excellent problem solver, a resourceful person, and an effective communicator. A technology professional is required to work in teams quite frequently and operate within the boundaries that their organization's policies and procedures outline. An effective technology professional can discuss their content area with other technology professionals and translate complex concepts for non-native technology users.

What will you learn in this unit?

1. Evaluate and highlight formal agreements, including NDAs and service-level agreements
2. Demonstrate an understanding of a range of roles and professional responsibilities
3. Act as a strong teammate and leader
4. Develop your career with internal performance goals and external certifications

UNIT 8 Assignments

Assignment	Type
Unit 8 Critical Thinking Questions	Homework
Unit 8 Activity 1	Homework

Unit 8 Activity 2	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Quiz

Advanced Networking 1b Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **second** half of the course (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Final Exam Discussion	Discussion