Northwest Arkansas Community College

Business and Computer Information Systems Division

Discipline Code
NTWK

Course Number
2224

Course Title
WAN Implementation and Support

Catalog Description
The focus of this course is on the WAN technologies and network services required by converged applications in a complex network. In this course, students will learn the selection criteria of network devices and WAN technologies to meet network requirements. Students will learn to describe network architectures and how to monitor network traffic using syslog and SNMP. Fiber link connections and secure connections through WAN links such as virtual private networks (VPNs) and IPsec tunneling are covered. Describe Intent based Networking, SD-WAN ACI Architecture and Network Automation tools like APIC Controllers and REST APIs. This course will assist students in preparing CCNA certification exam. Preparation for the CCNA exam should include all four semesters of CCNA training (NTWK 2014, NTWK 2084, NTWK 2214, and NTWK 2224). Outside lab time is required.

Prerequisites
NTWK 2014 Network & Information Systems (CCNA1)
NTWK 2084 Network Hardware Support (CCNA 2)
NTWK 2214 Switching Basics & Intermediate Routing (CCNA 3)

Credit Hours
4 credit hours

Contact hours
60 lecture/lab contact hours

Load hours
4 load hours

Semesters Offered
On Demand

ACTS Equivalent
N/A

Grade Mode
A-F

Learning Outcomes

Students will:

- Identify and describe current WAN technologies
- Configure and troubleshoot PPP
- Describe the operations and benefits of virtual private networks (VPNs) and tunneling
- Describe Network Evolution and Emerging Technologies like Intent based Networking
- Describe Network Automation concepts with tools like APICs and RESTful APIs
- Describe SDN concepts
- Describe Network security vulnerabilities, evolutions of network attack vectors
- Describe Rest APIs and their use network automation
- Configure and troubleshoot serial connections
- Configure and troubleshoot eBGP connections
- Configure and troubleshoot IPsec tunneling operations
- Monitor and troubleshoot network operations using syslog and SNMP
- Describe network security fundamentals
- Emerging Concepts in network automation and Programmability

General Education Outcomes Supported

- Students can write clear, coherent, well-organized documents, substantially free of errors.
- Students can use computers proficiently.
- Students can employ a variety of sources to locate, evaluate, and use Information.

Standard Practices

Topics list

- Point to Point Protocols
- WAN Architecture, Intent based networking
- Branch Connections
- mGRE
- eBGP
- SNMP
- IDS
- IPS
- IPsec protocols
- IP Tunneling
- VPN
- MPLS
- SD-WAN
- QoS
- SDN
- Network Automation (ETW)

Learning activities

- This course requires some in class, hands-on work and also additional hands-on work in a virtual or on-campus computer lab.
- Lab Assignments using Lab routers and Switches and Virtual NetLab
- Cisco Packet Tracer Activities
- Hands-on activities
- In-Class Quizzes
- Final Exam

Assessments

- On-line chapter Exams in Netacad
- Hands-on lab assignments
- Packet Tracer Activities
- Comprehensive Final Case Study
- Hands on final Skill Based Assessment
- Comprehensive online final exam

Grading guidelines

Overall Score will be based on the below given grading scale.

A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 59 & below

In addition, students will demonstrate proficiency by scoring 70% or above on the Final Skill Based Assessment, to pass the class.

Revision Date

May 27, 2020