Northwest Arkansas Community College
Business and Computer Information Systems Division

Discipline Code
NTWK

Course Number
2214

Course Title
Switching Basics and Intermediate Routing

Catalog Description
This course is covers network design including routing and switching technologies used in business networks. Focus is on advanced switching and routing technologies on redundant networks (several generations of Spanning Tree, EtherChannel, BPDU Guard, HSRP and GLBP and other intermediate routing protocols (single-area OSPF, multi-area OSPF, EIGRP). This course is designed to provide students with classroom and laboratory experience in advanced features of routers, routing concepts and networking switching. This is the third course in the Cisco Networking Academy CCNA curriculum. Students completing this course will progress with the preparation necessary for success in the following industry-recognized certifications: Cisco CCNA, Cisco Devnet+, CCNA Security, CCNA CyberOps, Cisco Certified Technician (CCT) and CompTIA Network+. This course is the 1st semester of preparation for CCNA and certification mentioned above. Preparation for the CCNA certification exam should include the following courses for CCNA training (NTWK 2014, NTWK 2084, NTWK 2214, NTWK 2224). Outside Lab time will be required.

Prerequisites
NTWK 2014   Network & Information Systems (CCNA1)
NTWK 2084   Network Hardware Support (CCNA 2)

Credit Hours
4 credit hours

Contact hours
60 contact hours

Load hours
4 load hours

Semesters Offered
On Demand

ACTS Equivalent
N/A

Grade Mode
A-F

Learning Outcomes

Students will:
- Design basic network topologies based on the hierarchical network design model.
- Independently configure complete basic configuration tasks on Cisco routers and switches.
- Describe the Switch Spanning Tree protocol process
- Configure PVST+, PortFast, and BPDU Guard
- Configure HSRP/FHRP
- Configure and troubleshoot EtherChannel groups
- Describe basic Wireless concepts and fundamentals
- Configure and troubleshoot Single-area OSPFv2 & OSPFv3
- Configure and troubleshoot Multi-area OSPFv2 & OSPFv3
- Configure and troubleshoot EIGRPv2 &EIGRPv3

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

- Network Scalability
- Switch port Security
- Spanning Tree Protocol
- PVST
- Rapid STP
- Per-VLAN routing
- First Hop Redundancy Protocols
- Link Aggregation protocols LAG
- Port Aggregation
- Load Balancing
- Wireless bands and Mobility
- Finite State Machine/Automation
- Link State Routing
- Distance Vector Routing
- Single-area OSPFv2 & OSPFv3
- Multi-area OSPFv2 & OSPFv3
- Diffusing Update Algorithm (DUAL)
- EIGRP & EIGRPv6

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
- Quizzes
- Final Exam

Assessments

- On-line chapter Exams in Netacad
- Hands-on lab assignments
- Packet Tracer Activities
- 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 26, 2020