COURSE SYLLABUS

LAST REVIEW   Spring 2022

COURSE TITLE   Applied Networking 2

COURSE NUMBER   CRTE 0156

DIVISION   Career and Technical Education

DEPARTMENT   CRTE

CIP CODE   11.1006

CREDIT HOURS   2

CONTACT HOURS/WEEK Class: 0   Lab: 4

PREREQUISITES   CRTE 0117

COREQUISITES   CRTE 0158

COURSE DESCRIPTION

The focus of this course is on learning the architecture, components, and operations of routers and switches in a small network. In this course, you will learn how to configure a router and a switch for basic functionality. Students will be able to describe enhanced switching technologies such as VLANs, VLAN Trunking Protocol (VTP), Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Protocol (PVSTP), and 802.1q. Students will be able to configure and troubleshoot basic operations of a small, switched network. Students will be able to configure and verify static routing and default routing. Students will be able to configure and troubleshoot basic operations of routers in a small, routed network. Students will configure and troubleshoot VLANs and inter-VLAN routing. Students will configure, monitor, and troubleshoot ACLs for IPv4 and Ipv6. Students will be able to configure, monitor, and troubleshoot ACLs for IPv4 and Ipv6. By the end of this course, you will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:
https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Students will be able to configure a router and a switch for basic functionality.
2. Students will be able to configure, monitor, and troubleshoot access control lists for various addressing methods.
3. Students will be able to build, maintain, and troubleshoot server hardware and software technologies.
4. Students will be able to explain and enforce basic concepts of computer and network security.

TEXTBOOKS

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE
I.   Introduction to Switched Networks

II.   Basic Switching concepts and Configuration

III.   VLANS

IV.   Routing Concepts

V.   Inter-VLAN Routing

VI.   Static Routing

VII.   Dynamic Routing

VIII.   Single-Area OSP

IX.   Access Control Lists

X.   DHCP

XI.   NAT (Network Address Translation)

COURSE LEARNING OUTCOMES AND COMPETENCIES
Upon successful completion of this course, the student will:

A.   Describe switched network technologies.
   1.   Identify switch hardware.

B.   Configure a switch with basic settings.
   2.   Configure basic switch settings.
   3.   Configure switch ports at the physical layer.

C.   Describe VLANS.

4. Describe the role of VLANS in a switched network.
5. Create a VLAN on a switch.
6. Assign ports to VLANS.

D. Describe and configure a router.
    7. Enable IP on a router.
    8. Configure basic router settings.
    9. Interpret the content of a routing table.

E. Configure a router for Inter-VLAN routing.
    10. Configure Inter-VLAN routing on a interface.
    11. Configure a router on a stick.

F. Configure static routing.
    12. Configure a router for static routing.

G. Configure dynamic routing.
    13. Configure RIPv2 on a router.

H. Configure single area OSPF.
    14. Describe and configure OSPF on a router.
    15. Verify OSPF on a router.

I. Describe and configure ACL's.
    16. describe the purpose of an ACL.
    17. configure an ACL on a router interface

J. Describe and configure DHCP.
    18. Configure DHCP on a wireless device.
    19. Configure DHCP on a router and switch.

K. Describe and configure NAT.
    20. Describe the purpose of NAT.
    21. Configure static NAT.
    22. Configure dynamic NAT.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES
Student progress is evaluated through both formative and summative assessment methods.
Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES
Student Handbook
https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf

College Catalog
https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements
https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations
https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.