COURSE OUTLINE

Section 1:

Course Title: Cisco CCNA II: Routing and Switching Essentials

Course Code: CNET-1021

Course Description: An exploration of the architecture, components, and operation of routers and switches in enterprise networks. Students configure routers and switches for basic functionality, and troubleshoot to resolve common issues. The learning outcomes of this course map to components of the Cisco Certified Network Associate (CCNA) certification.

Grade Scheme: ☐ Pass/Fail ☒ Percentage Minimum Pass Mark: 60% (Some programs require a mark greater than 60% to meet graduation requirements).

Course Value: Outcome hours OR 3 Credit(s) 60 (15 class + 45 lab) Hours

Pre-requisites: CNET-1010 Cisco CCNA I: Introduction to Networks

Co-requisites: NONE

Section 2:

Learning Outcomes and Competencies

1. **Apply switching concepts to local area network (LAN) design.**
   - 1.1 Describe the benefits of a hierarchical network design.
   - 1.2 Explain LAN segmentation using bridges, routers, and switches.
   - 1.3 Compare and contrast Layer 2 and Layer 3 switching.
   - 1.4 Design LANs to meet business requirements.
2. **Configure switches to provide high speed LAN communications.**
   - 2.1 Identify switches appropriate for small and medium sized businesses.
   - 2.2 List the components of a switch and explain their function.
   - 2.3 Describe the boot sequence of a Cisco switch.

2.4 Describe collision and broadcast domains.

2.5 Compare and contrast switching methods.

2.6 Verify the initial configuration of a Cisco switch.

2.7 Configure switch security.

3. Use Virtual LANs (VLANs) to meet network design requirements.

3.1 Describe VLAN operation and benefits.

3.2 Identify VLAN frames.

3.3 Configure and verify VLAN operation on a Cisco switch.

3.4 Configure inter-VLAN routing on a Cisco router.

3.5 Describe how the Virtual Trunking Protocol (VTP) simplifies the management of VLAN over multiple switches.

3.6 Describe VTP components and modes.

3.7 Configure VTP on switches.

4. Configure routers to provide routing services.

4.1 Describe the operation of static and dynamic routing.

4.2 Describe the operation of distance vector and link state routing protocols.

4.3 Configure routers to use static, distance vector, and link state routing protocols.

5. Implement Access Control Lists (ACLs) to secure enterprise networks.

5.1 Explain how ACLs secure networks.

5.2 Explain packet filtering.

5.3 Compare and contrast standard, extended, and complex ACLs.

5.4 Develop ACLs to meet enterprise security requirements.

5.5 Configure routers with ACLs.

6. Implement IP Addressing Services to manage IP address usage.

6.1 Describe the need to conserve IPv4 addresses.

6.2 Install and configure DHCP in enterprise networks.

6.3 Describe the advantages and disadvantages of network address translation (NAT).

6.4 Compare and contrast static and dynamic NAT.

6.5 Configure NAT on routers.

Section 3:

Assessment Categories:

Theory Tests and Exams	35%
Practical Tests and Exams	25%
Labs and Assignments	30%
Professionalism	10%

Research Component? ☐ Yes ☒ No

Section 4:

(For administrative use only)

Is this course new? ☐ Yes ☒ No

Is this course replacing an existing course(s)? ☐ Yes ☒ No

If this course is replacing another, please record the name and code of the old course:

Course equivalents: EET-1060

Note: See Quality Procedure A01 for more details.

Catalog Year of Original Course Implementation: 2014

Catalog Year of Current Version Implementation: 2015

Revision level: 2 **Version:** 2 **Date:** Nov/2014 **Authorized by:** mlgj

Accreditation and or Supporting Documents: National Technology Benchmarks: Canadian Council of Technicians & Technologists; Discipline: Information Technology; Level: Technologist

Additional Information: Additional tutorial hours may be scheduled.

Subject matter expert(s): Rob Blanchard

Approved by: (Program Manager)

Paul Murnaghan Date Approved: **2014-12-16**

Approved by: (Curriculum Consultant)

Mary Lou Griffin-Jenkins Date Approved: **2014-12-16**