RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

NTWK 271 – CCNA 2 Switching and LAN Security Essentials

I. Basic Course Information

A. Course Number and Title: NTWK 271, CCNA 2 Switching and LAN Security Essentials

B. New or Modified Course: Modified

C. Date of Proposal or Revision: Semester: Spring Year: 2023

D. Effective Term Fall 2023

E. Sponsoring Department: Math & Computer Science Department

F. Semester Credit Hours: 3

G. Weekly Contact Hours**:** 4 Lecture**:** 2
Laboratory**:** 2
Out of class student work per week: 5

H. ☐ Prerequisite (s):
☒ Corequisite (s): CCNA 1 NTWK 270 Introduction to Networks
☐ Prerequisite (s) and Corequisite (s):

I. Additional Fees**:** None

G. Name and Telephone Number or E-Mail Address of Department Chair and Divisional Dean at time of approval:
Lori Austin – Lori.Austin@raritanval.edu (Chair),
Sarah Imbriglio – Sarah.Imbriglio@raritanval.edu (Divisional Dean)

II. Catalog Description

Corequisite: NTWK 270 CCNA 1 Introduction to Networks. This is the second course in a sequence of four 7½-week CCNA courses. The course is part of the Cisco Networking Academy Program 3-course CCNA series which is designed to prepare students for entry level networking jobs. The course focuses on switching technologies and LAN security that support small-to-medium business networks. The student will perform basic network configuration and troubleshooting to identify and mitigate LAN security threats. The student will also configure,

troubleshoot VLANs, Inter-VLAN routing, STP, EtherChannel and first-hop redundancy protocols, DHCPv4 and DHCPv6.

III. Statement of Course Need

A. In the rapidly developing field of data communications and internetworking, Cisco is the dominant vendor of Networking Equipment. Cisco certification is recognized world-wide as a necessity for a sustained career in Network Design, Implementation, Management and Trouble Shooting. This course will help students learn the basic concepts of Networks and Open Network Standards and Protocols, enabling them to progress to the next level on the path towards Certified Cisco Networking Associate (CCNA) certification.

B. This course does have a Laboratory component. The Laboratory equipment consists of the latest Cisco Routers and Switches which the students use to demonstrate their ability to construct networks and perform basic router and switch configuration.

C. Most colleges do not accept this course as transferrable. Those that do only accept it as an Elective. However, a student who transfers into a Cisco Academy at another Institution will receive credit for the second course in the CCNA Version 7.0 curriculum at that Institution.

IV. Place of Course in College Curriculum

A. Free Elective
B. This course meets a program requirement for the Computer Networking & Cybersecurity AAS and Certificate programs.
C. This course serves as a Computer Elective on the Computer and Programming Electives List
D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites

V. Outline of Course Content

Course 2 – Switching and LAN Security Essentials [Cisco CCNA 2 Semester]

A. Students will gain insights into LAN switching technologies, that will provide fault tolerance, security, and increase performance. In addition, students will be able to configure switches and routers to mitigate LAN vulnerabilities. Topics that are covered in this course include:

1. Basic Switch Configuration

2. Basic Router Configuration

3. VLANs and Inter-VLAN routing
4. Basic Switch and Router security
5. STP and EtherChannel
6. FHRP
7. DHCPv4 and DHCPv6

B. Labs will include the designing, configuring and troubleshooting of small networks using the equipment in the networking Lab or the simulation software Packet Tracer.

VI. A. Course Learning Outcomes

At the completion of this course, students will be able to:

1. Produce accurate, written Lab Reports in a clear and concise manner. (GE-1)
1. Work with routers and switches to configure and troubleshoot VLANs, and Inter-VLAN routing.
2. Configure and troubleshoot redundancy on a switched network using STP and EtherChannel.
3. Develop critical thinking and problem-solving skills using real equipment and Cisco Packet Tracer.
4. Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols.

B. Assessment Instruments

1. Exams on each major topic (11 in all). Exams are part of the online tutorial provided by the Cisco Networking Academy Program and therefore are standard across all Academies
2. Laboratory Exercises - Assignments are part of the Academy Program and provide consistency in skill development across all Academies
3. Skills-Based Assessment- Lab exam using Lab simulation program Packet Tracer or on real physical equipment
4. Final Examination - used to assess the student's mastery of the topics covered in the class. The Final Exam is a product of the Cisco Academy Program

VII. Grade Determinants

A. Major Topic Exams

B. Skills Examination
C. Laboratory Exercises
D. Final Examination – students must pass the final examination with a 70% or higher in order to proceed to the next 7.5 week course in the series

Methods for teaching and learning that may be used in the course:

A. Traditional lecture with Slide and Video presentations
B. Self-learning through an online version of the curriculum delivered by Cisco
C. Laboratory Exercises on actual hardware (in small groups)
D. Laboratory Exercises using Simulation Software (individually)

VIII. Texts and Materials

A. Suggested Textbook

CCNAv7 Introduction to Networks (ITN) Companion Guide, R. Graziani and A. Johnson, Cisco Press 2020

CCNAv7 Switching, Routing, and Wireless Essentials (SRWE) Companion Guide, B. Vachon and A. Johnson, Cisco Press 2020

IX. Resources

A. Access to General Purpose Computers with Internet Access
B. Access to Cisco Routers and Switches as specified in the Academy Program
C. Access to the Cisco Networking Academy Lab which can be isolated from the RVCC Network

X. Honors Option

N/A