

**RARITAN VALLEY COMMUNITY COLLEGE  
ACADEMIC COURSE OUTLINE**

**NTWK 273 – CCNA 4 Enterprise Networks and Automation Essentials**

**I. Basic Course Information**

- A. Course Number and Title:** NTWK 273, *CCNA 4 Enterprise Networks and Automation 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 hours  
Laboratory: 2 hours  
Out of class student work per week: 5 hours
- H.  Co-requisite:** NTWK-272 CCNA 3 Wireless and Routing Essentials
- I. Additional Fees:** None
- J. 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 272 Wireless and Routing Essentials. This is the fourth 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. This course describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. It covers Wide Area Networks (WANs) technologies and Quality of Service (QoS) mechanisms used for secure remote

access along with the introduction of Software-Defined Networks (SDNs), virtualization, and automation concepts that support the digitization of networks.

### **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 advanced 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 fourth course in the CCNA Version 7.0 curriculum at the 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 in the Computer and Programming Electives List
- D.** Free Elective
- E.** To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, [www.njtransfer.org](http://www.njtransfer.org); b) for all other colleges and universities, go to their individual websites

### **V. Outline of Course Content**

#### **Course 4 – Enterprise Networks Security and Automation [Cisco CCNA 4 Semester]**

- A.** Students will be able to design, implement, configure, and troubleshoot switches and routers to secure enterprise networks. Students will learn the followings:
  - 1. Implement ACLs for IPv4 configurations

2. Configure NAT for IPv4
  3. Describe WAN concepts, VPNs, and IPsec
  4. Learn QoS concepts and network management
  5. Perform design and troubleshooting of enterprise networks
  6. Describe network virtualization and automation
- 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 conclusion of the 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 using OSPF in point-to-point and multiaccess networks.
2. Mitigate threats and enhance network security using access control lists and security best practices.
3. Develop critical thinking and problem-solving skills using real equipment and Cisco Packet Tracer.
4. Understand virtualization, SDN and how APIs and configuration management tools enable network automation

## **B. Assessment Instruments**

1. Exams on each major topic. 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
  1. Skills-Based Assessment- Lab exam using Lab simulation program Packet Tracer or on real physical equipment
  2. 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 Switching, Routing, and Wireless Essentials (SRWE) Companion Guide*, B. Vachon and A. Johnson, Cisco Press 2020

*CCNAv7 Enterprise Networking, Security, and Automation (ENSA) Companion Guide*, B. Vachon and A. Johnson, Cisco Press 2020

(Please note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

### **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 a the Cisco Networking Academy Lab which can be isolated from the RVCC Network

### **X. Honors Option**

N/A