

**RARITAN VALLEY COMMUNITY COLLEGE  
ACADEMIC COURSE OUTLINE**

**NTWK 273 – Connecting Networks**

**I. Basic Course Information**

- A. Course Number and Title: **NTWK 273, *Connecting Networks***
- B. New or Modified Course: **Modified**
- C. Date of Proposal or Revision: Semester: **Fall** Year: **2020**
- D. Effective Term **Fall 2021**
- E. Sponsoring Department: **Math & Computer Science Department**
- F. Semester Credit Hours: **3**
- G. Weekly Contact Hours: Lecture: **2 hours**  
Laboratory: **2 hours**  
Out of class student work per week: **5 hours**
- H. Co-requisite: **NTWK-272 Scaling Networks.**
- I. Laboratory Fees: **NO**
- 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: A grade of C or better and a grade of 70% or better on the Final Exam in NTWK-272, Scaling Networks.* This course is the fourth and final 7½ week course in a program called the *Cisco Networking Academy*, which is a partnership between RVCC and the Cisco Corporation. This fourth course covers Wide Area Network Design considerations in-depth, PPP, Frame Relay, VPNs, IPSec and a final review of all Cisco courses in the Academy Program in preparation for students considering the CCENT or CCNA exam. Students will have hands on experience including basic Router and Switch Configuration in a standalone Laboratory environment.

### III. Statement of Course Need

- A. In the rapidly developing field of data communications and internetworking, Cisco is the dominant equipment vendor in the field. Cisco certification is recognized world-wide as a necessary for a sustained career in Network Design, Implementation, Management and Trouble Shooting. This course will help students learn the advanced concepts of Wide Area Networks (WANs), Broadband networking solutions, securing networks and various network architectures used in WAN design.
- 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 6.0 curriculum at the institution.

### IV. Place of Course in College Curriculum

- A. Free Elective
- B. This course meets a program requirement for:
  - 1. *Computer Networking and Cybersecurity Certificate*
  - 2. *Computer Networking Certificate of Completion – Cisco Emphasis*
  - 3. *Computer Networking AAS*
- C. This course serves as a CIS Elective in the Computer Science 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

#### **Semester 4– Connecting Networks [Cisco CCNA Semester 4]**

- A. Through a hands-on approach, students will learn the network protocols in depth, network security standards and router programming using Cisco routers and IOS. The topics to be covered include:
  - 1. WAN's and WAN design
  - 2. Point to Point Protocol (PPP)
  - 3. Operations of a VPN

4. Configuration and troubleshooting of Serial connections
  5. Configuration and troubleshooting of IPSec tunneling operations
  6. Network Architecture design
  7. Comprehensive Review of all four semesters in preparation for the CCENT and CCNA exam
- B. Labs will include the creation of small networks, the configuration of routers and switches and advanced, network design and troubleshooting using the equipment in the Lab and simulation software

## **VI. General Education and Course Learning Outcomes**

### **A. General Education 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-NJ 1)

### **B. Course Learning Outcomes**

*At the conclusion of the course, students will be able to:*

1. Describe different WAN technologies and their benefits
2. Describe the operational benefits of virtual private networks (VPN)
3. Configure and Troubleshoot serial connections
4. Configure and troubleshoot IPSec tunneling operations

### **C. Assessment Instruments**

1. Exams on each major topic (8 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 Examination (individual test on router configuration with subnetting, Access Lists and network problem determination and repair)
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**

Odom, Wendall *Cisco CCNA Routing and Switching 200-120 Official Cert Guide Library* Cisco Press 2013

(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