RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

CISY 272 – Scaling Networks

I. Basic Course Information

A. Course Number and Title: **CISY 272, *Scaling Networks***

B. New or Modified Course: **Modified**

C. Date of Proposal or Revision: Semester: **Fall** Year: **2013**

D. Sponsoring Department: **Computer Science Department**

E. Semester Credit Hours: **3**

F. Weekly Contact Hours: Lecture**: 4 hours**
Laboratory**: 4 hours**

G. Prerequisite: **A grade of C or better and a grade of 70% or better on the Final Exam in CISY-271, *Routing and Switching***

H. Laboratory Fees: **Yes, at current rate**

I. Department Chair: **Dr. Tom Edmunds, tedmunds@raritanval.edu**

II. Catalog Description

Prerequisite: A grade of C or better and a grade of 70% or better on the Final Exam in CISY-271, Routing and Switching. This course is the third of four 7½ week courses in a program called the *Cisco Networking Academy*, which is a partnership between RVCC and the Cisco Corporation. This third course covers DHCP, the Spanning Tree Protocol for switches, Link Aggregation, EIGRP, Multi-Area OSPF and IOS File Management. Students will have hands on experience including Basic Router and Switch Configuration including configuring new routing protocols, VTP, DHCP and advanced troubleshooting.

III. Statement of Course Need

A. In the rapidly developing field of data communications and internetworking, Cisco is the dominant 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 more advanced concepts of Networks and Routing Protocols and tools for managing the network, enabling them to progress to the next level on the path towards Cisco Certified Network Associate (CCENT and CCNA) certifications.

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 third course in the CCNA Version 5.0 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 Certificate – Cisco Emphasis*
    2. *Computer Networking Certificate of Completion – Cisco Emphasis*
C. This course serves as a CIS Elective in the Computer Science Elective 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 their individual websites

V. Outline of Course Content

Semester 3– Scaling Networks [Cisco CCNA Semester 3]

A. Through a hands-on approach, students will learn the network protocols in depth, network standards and router programming using Cisco routers and IOS. The topics to be covered include:

1. Configuration and troubleshooting of DHCP and DNS for IPv4 and IPv6
2. The Spanning Tree Protocol for switches (STP)
3. Link Aggregation and Cisco VLAN Trunk Protocol (VTP)
4. Multi-area OSPF and advanced Single-area OSPF

5. EIGRP for IPv4 and IPv6

6. Managing Cisco IOS licensing and IOS configuration files

VI. General Education and Course Learning Outcomes

A. General Education 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-NJ 1)

B. Course Learning Outcomes

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

1. Configure and troubleshoot DHCP and DNS operations for IPv4 and IPv6
2. Describe the operation of the Spanning Tree Protocol (STP)
3. Configure and troubleshoot STP operations
4. Configure and troubleshoot complex routing protocol (OSPF and EIGRP)
5. Configure Link Aggregation

VII. Modes of Teaching and Learning

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. Papers, Examinations, and other Assessment Instruments

A. Exams on each major topic (9 in all). Exams are part of the online tutorial provided by the Cisco Networking Academy Program and therefore are standard across all Academies
B. Laboratory Exercises – Assignments are part of the Academy Program and provide consistency in skill development across all Academies
C. Skills Examination (successful configuration of Lab Routers using Multi-area OSPF and/or EIGRP and switches employing STP

D. 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

IX. Grade Determinants

A. Major Topic Exams
B. Laboratory Exercises
C. Skills Examination
D. Final Examination – students must pass the final examination with a 70% or higher in order to proceed to the final 7½ week course in the series

X. Textbook: Suggestions

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.)

XI. 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