

**RARITAN VALLEY COMMUNITY COLLEGE
COMPUTER SCIENCE DEPARTMENT**

CISY 271 – Intermediate Cisco Networking

I. Basic Course Information

- A. Course Number and Title: **CISY 271, *Intermediate Cisco Networking***
- B. Date of Proposal or Revision: **November, 2006**
- C. Sponsoring Department: **Computer Science Department**
- D. Semester Credit Hours: **3**
- E. Weekly Contact Hours: **4 (2, 2) Lecture 2 hours, Lab 2 hours**
- F. Prerequisite: **CISY-270, *Introduction to Cisco Networking***
- G. Laboratory Fees: **Yes**

II. Catalog Description

This course is the second of four 7 ½ week courses in a program called the *Cisco Networking Academy*, which is a partnership between RVCC and the Cisco Corporation. This second course covers Networking Protocols, especially Routing and Router Protocols and the basics of Cisco Router Configuration and Operating System. Students will have hands on experience including basic WAN design and implementation in a Laboratory environment including the configuration of several routers in tandem which simulate a T1 WAN.

III. Statement of Course Need

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 basic concepts of Networks and Open Network Standards, enabling them to progress to the next level on the path towards CCNA certification, Certified Cisco Networking Associate.

IV. Place of Course in College Curriculum

- Required for the *Computer Networking Certificate – Cisco Emphasis*
- CIS Elective
- Free Elective

V. Outline of Course Content

Course 2 – Intermediate Cisco Networking [Cisco CCNA 2 Semester]

Students will gain valuable insights into Networking Protocols and the ability to connect networks with the Internet. The fundamentals of routers and the basics of Cisco Routers will be covered. The major topics covered in this semester are:

1. Review of the OSI Model
2. Routing over WANs
3. Introduction to Routers and Routing algorithms
4. Router configuration; Router startup/setup
5. Introduction to Cisco's IOS
6. TCP/IP, IP addressing, Routed Protocols and Routing Protocols
7. Basic Router Troubleshooting
8. Access Control Lists

VI. Education Goals and Learning Outcomes

Education Goals

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

1. Apply critical and creative thought in designing networking solutions based on networking protocols principles (G.E. 1)
2. Apply quantitative reasoning to interpret data used in solving computer networking problems (G.E. 7)

VII. Learning Outcomes

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

1. Construct various media design for WAN hardware interconnection
2. Describe various Routing and Routed Protocols
3. Describe and configure various Routing algorithms used in Cisco Routers
4. Identify various WAN types including the appropriate criteria for selection
5. Simulate a T1 WAN, configure workstations to run TCP/IP, and configure a Cisco Router
6. Create backups of Cisco IOS and Router Configuration Files
7. Design and Configure Static Routes in Routers
8. Demonstrate the ability to use ICMP for WAN troubleshooting
9. Design and configure Access Control Lists (ACLs) for Routers

VII. Modes of Teaching and Learning

Combinations of instructional techniques are utilized in the presentation of the Academy Program. Each topic is introduced by the Instructor using the traditional lecture. The major tutorial material has been developed by Cisco and is standard at any registered Cisco Academy. It is online and can be accessed by the student at RVCC and worked on *at his/her own pace*. Each unit includes an online quiz and examination. At the end of the semester, a final, online exam is given. The result of the final exam is recorded centrally by Cisco. Each student must pass a skills test for the semester in which he/she demonstrates a mastery of the material covered in the online tutorials as well as the hands-on Lab. Other exercises may be assigned at the discretion of the Instructor.

VIII. Papers, Examinations, and other 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 Examination (Successful configuration of Lab Routers, including ACLs, and simulation of a T1 LAN)
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

IX Grade Determinants

- Chapter Exams
- Final Examination – students must pass the final examination in order to proceed to the next 7.5 week course in the series
- Skills Examination
- Laboratory Exercises

X. Textbook: Suggestions

- *Routers and Routing Basics – CCNA 2 Companion Guide*, Odom, Wendell and McDonald, Rick, Cisco Press 2007, ISBN: 1-58713-166-8
- *Routers and Routing Basics – CCNA 2 Labs and Study Guide*, Johnson, Allan, Cisco Press 2007, ISBN: 1-58713-167-6

XI. Resources

- Access to General Purpose Computers with Internet Access
- Access to Cisco Routers and Switches as specified in the Academy Program
- Access to a Cisco Lab environment, isolated from the RVCC Network