

**ALLAN HANCOCK COLLEGE
COURSE OUTLINE**

DEPARTMENT: MATHEMATICAL SCIENCES

PREFIX & NO.: EL 107 (COM SC 107)

CATALOG TITLE: Networking Essentials 2

SCHEDULE TITLE: Network Essentials 2

UNITS: 3

WEEKLY LECTURE HOURS: 2

WEEKLY LAB HOURS: 3

TOTAL NUMBER OF WEEKS: (if other than 16)

GRADING OPTION: Credit/No Credit Option

PREREQUISITE: COM SC 106 or EL 106

ENTRANCE SKILLS 1) explain the concept of networking; 2) explain and identify the OSI model; 3) explain and identify IP addressing; 4) describe the function of routers, switches, and hubs; 5) demonstrate the processes of laying and terminating networking media; 6) design and install a local area network; and 7) describe various troubleshooting tools and techniques of LAN maintenance.

CATALOG DESCRIPTION

Second course in a series designed to provide students with knowledge of and laboratory experiences with current and emerging computer networking technology. Focus will be on LANs, WANs, OSI models, IP addressing and router programming and the theory behind the various kinds of network architectures and data transmission methods including network troubleshooting. This course is not open to students who are enrolled in or have received credit for ComSc 302. Emphasis will be placed on Cisco Systems Certification.

COURSE GOALS To encourage and enable students to:

1. comprehend basic router components.
2. master lab skills: associated hardware and software.
3. master documentation skills: maintain engineering journal; cable management techniques.
4. comprehend router basics, configuration, and setup.
5. understand the functions of the TCP/IP transport-layer protocols.
6. apply deductive reasoning to solve router setup and programming problems.
7. understand router and switched based networks.
8. support popular WAN technologies.

INSTRUCTIONAL OBJECTIVES At the end of the course, the student will demonstrate the ability to:

1. examine router elements (RAM, ROM, CDP, show).
2. define flow control and describe the three basic methods used in networking.
3. identify the functions of the TCP/IP transport-layer protocols.
4. control router passwords, identification, and banner.
5. check an initial configuration using the setup command.
6. configure and use telnet applications for accessing routers.
7. use ping and trace programs to troubleshoot network problems.

8. log into a router in both user and privileged modes.
9. load Cisco IOS software from: flash memory, a TFTP server, or ROM.
10. list problems that each routing type encounters when dealing with topology changes, and describe techniques to reduce the number of these problems.
11. configure IP addresses.
12. prepare the initial configuration of a router and enable IP.
13. add RIP and IGRP routing protocol to the configuration.
14. configure extended access lists to filter IP traffic.

COURSE OUTLINE

	<u>WEEKS</u>
1. The OSI Model; Layers 1,2,3,4,5,6, and 7; WANs	2
2. Routing concepts and routing using routers and *CIM tools (Labs)	2
3. Router Components	2
4. Router Startup, setup, and router configuration (Labs)	2
5. IOS	2
6. TCP/IP and IP addressing (Labs)	2
7. Routing Protocols (Labs)	3
8. Course Review and Practice for Final Exam and Laboratory	1

*CIM – Lab simulations using the Cisco Interactive Mentor (CIM) tool.

APPROPRIATE READINGS (Other than Textbook)

1. Jenkins, N. Understanding Local Area Networks, SAMS. 1998
2. Tittlel, E. A guide to Networking Essentials, Course Technology, 1998
3. Palmer, M. A Guide to Microsoft Windows NT Server 4.0, Course Technology. 1998
4. Palmer, M. Hands-On Microsoft Windows NT 4.0 Server with Projects, Course Technology. 1997

ASSIGNMENTS

1. Read online study units and take end of unit exams from Cisco Systems courseware (requires Internet connection from laboratory stations for taking online exams).
2. Readings from adopted text and instructor handouts, evaluate sample problems and work end of chapter problems.
3. Study laboratory experiments.
4. Prepare laboratory written reports.
5. Participate in post-lab evaluation discussions.
6. Quizzes and Exams covering assigned and related topics.

Sample Writing Assignment: Allan Hancock College is planning to add a new client/server system (with new hardware), so that all of the department chairs and administrators and administrative assistants (total of 134 clients) can view the status of their budgets. How would you plan for the resulting impact on the network?

EVALUATION

1. Exam reports for each study unit from Cisco Systems.
2. Written and performance based examinations for each major study area. Examinations will include problem solving techniques and word type problems. Examinations are graded for accuracy.
3. Class project will be graded for accuracy, content, and applied techniques.
4. Assigned homework problems will be graded for accuracy.
5. Laboratory reports are graded for accuracy and content.
6. A comprehensive written final examination will be administered and graded for accuracy and applied techniques as well as a laboratory examination evaluating the student's abilities in applying networking concepts.

Sample Essay Question: What is capacity planning? Why is it important for a network manager to perform capacity planning?

Describe the procedures and equipment you will use to determine where the problem exists. In addition, outline the steps you will take to alleviate the problem.

TEXTS AND SUPPLIES

Adopted Text: Lammle Todd, CCNA Cisco Certified Networking Assoc. Study Guide, Sybex Inc. 1999, ISBN: 0-7821-2381-3 Cisco Systems Networking Academy Curriculum - Semester Two

Other Materials: Computer Data diskettes
Graph paper and normal school supplies
Scientific Calculator
Three-Ring Binder