

Course Number and name: **ET 477 Computer Networking II**

Credits & Contact Hours: 3cr. each week has two lectures of 50 min. each, plus a 1 hour 40 minute laboratory per week. Total semester contact hours are approximately 50.

Instructor's name: Dr. Jeff Beasley

Textbook title, author, and year: Networking 2/e, Jeffrey S. Beasley, 2009
supplemental materials - Cisco Networking Academy Semesters 1 and 2

Specific Course Information:

- a. **Course Catalog Description** – Advanced concepts in computer network design and applications including managing the campus network, virtual LANs (VLAN), network security, wireless networks, high-speed optical networks, voice over IP, and Linux networking. Prerequisite(s): E T 377.
- b. **Prerequisite** – ET 377 Computer Networking I
- c. This course is required for the IET degree

Course Goals & Objectives:

- a. The course addresses advanced issues in computer networking. Topics include managing the campus network, network security, wireless networking, optical networking, and voice over IP. The Cisco Academy topics for semesters 3 and 4 include switch configuration, the spanning tree protocol, virtual trunking protocol, scaling IP addresses, WAN technologies, PPP, ISDN, and Frame-Relay.
- b. **Related ABET Student Outcomes:** The following are the student outcomes that directly relate to Criterion 3.

Program Outcomes

- a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines; including:
 - 1. The basic knowledge of digital electronics, electrical components, computer architecture and applications of microcomputer systems, telecommunications and digital signal propagation needed in data transport.
Also ABET 3.b, 3.c, 3.d, 3.f
 - 2. The design techniques, analysis and the building, testing, operation and maintenance of networks, databases, security and computer systems (both hardware and software).
Also ABET 3.b, 3.c, 3.d, 3.f
 - 5. Project management techniques and teamwork necessary for successful information engineering technologies system designs and implementations, and the effective use of communication skills to prepare technical reports, memos, and presentations.
Also ABET 3.e, 3.g, 3.k

Course topics and lecture hours devoted to each topic:

TOPICS

HRS.

• Introduction	1
• VLSM, RIP	3
• The Cisco Switch -Part 1	5
• SNMP	3
• Network Security	3
• Wireless Networking	6
• Optical Networking	3
• Scaling IP, PPP, ISDN	3
• Linux Networking	8
• Voice Over IP	3
• ISDN, DDR	3
• Network Administration	2
• Examinations	<u>2</u>
Total	45 hours

Computer Usage: The use of software such as the Finisar Portable Surveyor (Network Analyzer) is introduced and the students are required to utilize this in their computer network troubleshooting. The students are required to use the computer when performing router and switch configuration.

Laboratory Projects: Each laboratory class is one block of 1 hour and 40 minutes per week. Laboratory exercises are done once each week in conjunction with the text readings and the lecture materials. The laboratories are designed to apply the theory with the application of the network concepts. Students must take a network task, design, assemble, and troubleshoot advanced networks. **Equipment utilized by the students include (but is not limited to):** Network Hubs, Switches, Routers, network interface cards (NICs), UTP cabling, patch panels, Windows XP computers, Windows 2003/2000 Server, Linux Machines, and the Finisar Shomiti Protocol Analyzer

Example of topics for laboratories include:

Standard and Extended Access-List Configuration, Basic Switch Configuration
 Configuring Static VLANs, Configuring and Managing the Campus Network
 Trunking with 802.1q, Configuring Inter-VLAN Routing, 802.11b Wireless Networking, Linux Networking, root access, the Linux file structure, the vi text editor, configuring the network address, configuring a telnet server, configuring a, FTP server, configuring a DNS server, configuring a WWW server, mounting drives

Prepared by: Jeff Beasley

Date: 10/7/2010