Title: Local Area Network II
Abbreviation and Number: CISB419
School: Business
Department: Computer Information Systems
Credits: 3
Pre-requisite(s): CISB329
Co-requisite(s): None

COURSE DESCRIPTION
Students implement inter and intra networking systems, which require routing within networks: Local Area Networks (LANs) and Wide Area Networks (WANs). Emphasis is on network communication via routing, switching and web-based technologies.

SPECIFIC OBJECTIVES
Upon successful completion of this course, students will be able to
1) convert a class address into constituent Internet Protocol (IP) addresses using a subnet mask;
2) create a subnet mask, given a particular class;
3) determine an IP address, broadcast address, and range of address within a given subnet;
4) evaluate legacy WAN concept of packet-switching service, built on the Frame Relay and X.25 Protocol;
5) differentiate between the ways hosts and routers forward a packet;
6) compare how routing protocols populate each router’s routing tables;
7) examine the function and mechanisms used by Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), including error recovery;
8) design a LAN and a Virtual LAN (VLAN);
9) evaluate the concept behind forwarding frames;
10) demonstrate how to gain access to the command-line interface;
11) configure a variety of switch features;
12) interpret the status of a router interface and identify problems; and
13) design and configure a small Wireless LAN (WLAN).

COURSE CONTENT
I. Routing
   A. Open Shortest Path First (OSPF)
   B. Border Gateway Protocol (BGP)
   C. Routing Information Protocol (RIP)
   D. Routing Information Protocol 2 (RIP2)
   E. Interior Gateway Routing Protocol (IGRP)
   F. Enhanced Interior Gateway Routing Protocol (EIGRP)

II. TCP/IP Related Protocols
   A. Dynamic Host Configuration Protocol (DHCP)
   B. Simple Network Management Protocol (SNMP)
   C. Simple Mail Network Protocol (SMNP)
   D. Telnet
E. File Transfer Protocol (FTP)
F. Address Resolution Protocol (ARP)
G. Reverse ARP
H. Echo

III. Router Components
A. Memory
B. Interfaces and Ports
C. Tables
D. Routing Algorithms
E. Console Port

IV. Router Configuration
A. Host Name
B. Security
C. Domain Name Service (DNS) Resolution
D. Host Tables
E. Basic Scripting

V. Bridging
A. Types
B. Transparent

VI. CISCO Internetwork Operating System (IOS)
A. Uses of Routers and Switches
B. Configuration of routers and switches
   i. TCP/IP (LAN),
   ii. Frame Relay (WAN)
   iii. VLAN

VII. Router Interface
A. Connectivity
B. IP subaddressing
C. Frame Relay
D. Point-to-Point Serial
E. Ethernet Interfaces
F. Token Ring Interfaces
G. Loop Back Interfaces

VIII. Security
A. Access Lists:
   i. Design of Standard Access Control List (ACL)
   ii. Design of Extended ACL
B. Implementation of ACLs
ASSESSMENT
Tests 30%
Assignments 20%
Project 20%
Final Examination 30%
Total 100%

REQUIRED TEXTS
Publishing, Inc.

SUPPLEMENTARY READINGS/MATERIALS
NY: John Wiley & Sons.
Heap, G. & Maynes, L. (2002). CCNA Practical studies practice for CCNA exam #640-607 with hands-on networking
lab scenarios. Indianapolis, IN: Cisco Press.
John Wiley & Sons.

JOURNALS
LAN Times
LINUX Journal
Network Magazine
Wired Magazine

WEBSITES
http://www.technologyreview.com/read_article.aspx?id=13526&ch=infotech
http://www.cse.ucsc.edu/research/ccrg/projects/nice.html