

**EET 343**  
**Network Switches & Routers**  
**Spring 2006**

**Instructor:**

**Prof. Vigs Chandra, PhD**

**Telephone:**

859-622-1187

**E-mail:**

vigs.chandra@eku.edu

**Web:**

<http://people.eku.edu/chandrav>

**Office:**

405 Whalin Technology Complex

**Class schedule:**

**Section 002, CRN 27463; Friday: By arrangement (1 pm – 4.30 pm), in Room 400**

**Office Hours:**

**MW: 8 - 10 am, MTWR: 4.30 pm - 6 pm.** If my office door is open at other times I will most likely be available for discussion. Come right in.

**Credit hours:**

3

**Prerequisite:**

EET303

**COURSE DESCRIPTION:**

This course covers Cisco internetworking, switching, IOS, routing, VLAN's, access lists, and WAN protocols are covered in a combination of lecture, demonstration, and laboratory.

**TEXTBOOK:**

**CCNA Certification Kit, 4th Edition (640-801)**, 4<sup>th</sup> edition; Todd Lammle, William D. Tedder; Sybex publishers; ISBN: 0782143938

**COURSE OBJECTIVES:**

1. Demonstrate a basic understanding of Internetworking.
2. Demonstrate a basic understanding of Internet Protocols.
3. Design and implement networks utilizing IP Subnets with VLSMs.
4. Demonstrate the ability to configure and manage routers and switches using IOS.
5. Configure and troubleshoot static routes in a network.

**COURSE OBJECTIVES (continued):**

6. Configure and troubleshoot EIGRP and OSPF.
7. Configure and troubleshoot layer 2 switches.
8. Configure and troubleshoot VLANs.
9. Configure and troubleshoot an internetwork.
10. Configure, troubleshoot and manage access lists.
11. Demonstrate a basic understanding of WAN protocols.

**COURSE OUTLINE:**

1. Internetworking
  - i. Models of internetworking
  - ii. OSI model
  - iii. Cisco Three-lay hierarchical model
2. Internet Protocols
  - i. TCP/IP and DoD (Department of Defense) model
  - ii. IP addressing
  - iii. Network address Translation
3. Implement networks utilizing IP Subnets
  - i. Subnetting
  - ii. Variable length subnet masks (VLSMs)
  - iii. Troubleshooting IP addressing
4. Configure and manage routers and switches using IOS
  - i. Cisco router user interface
  - ii. Command-Line Interface (CLI)
  - iii. Router and switch administration
  - iv. Modifying router and switch configuration
5. Static routes in a network
  - i. IP routing
  - ii. Configuring IP routing on a network
  - iii. Routing protocols
  - iv. Routing Information Protocol (RIP)
  - v. Interior Gateway Routing Protocol (IGRP)
6. EIGRP and OSPF.
  - i. Enhanced IGRP (EIGRP) features and operation
  - ii. Neighbor discovery in EIGRP
  - iii. Reliable Transport protocol (RTP)
  - iv. EIGRP for supporting large networks
  - v. Open Shortest Path First (OSPF) – configuration, verification, troubleshooting
  - vi. Summary routes

## **COURSE OUTLINE (continued):**

7. Layer 2 switches
  - i. Switching services
  - ii. Bridging vs. LAN switching
  - iii. Spanning Tree Protocol (STP)
  - iv. LAN switch types – cut-through, modified cut-through, store-and-forward
  - v. Configuring Switches
  
8. VLANs
  - i. Virtual LAN (VLAN) configuration, security and operation
  - ii. VLAN memberships and identification
  - iii. VLAN Trunking Protocol (VTP)
  
9. Cisco Internetwork configuration and troubleshooting
  - i. Components of a Cisco router
  - ii. Router boot sequence
  - iii. Managing configuration registers
  - iv. Backing up Cisco IOS and configuration
  - v. Cisco Discovery Protocol (CDP)
  - vi. Telnet
  - vii. Resolving hostnames
  - viii. Network connectivity
  
10. Access lists
  - i. Managing traffic using access lists
  - ii. Standard and extended access lists
  - iii. Monitoring access lists
  
11. WAN protocols
  - i. WAN connections
  - ii. Cabling in WANs
  - iii. High-level Data-Link Control (HDLC) protocol
  - iv. Point-to-Point (PPP) protocol
  - v. Link Control Protocol (LCP) configuration
  - vi. Frame relay
  - vii. Integrated Services Digital Network (ISDN)
  - viii. Dial-on-Demand Routing (DDR)

## **COURSE REQUIREMENTS:**

1. Complete all reading assignments, simulation experiments and submit these on the prescribed dates.
2. Complete assigned laboratory work and assignments as prescribed by the instructor.
3. Complete the assessments covering material from: homework, labs, and from assigned readings in the text.
4. Maintain a 3-ring binder or folder for organizing class materials.

## **EVALUATION:**

Each student will be evaluated as follows:

- Assessments (50%) – 2 assessments (one mid-term and a final, both take-home type)
- Lab assignments (50%) – between 10-15 lab assignments, including network simulations

Mid-term assessment – covering chapters 1 – 5. To be held around Week 7 of the semester (Feb. 27 – Mar. 3).

Final Assessment – **Comprehensive**, covering chapters 1 – 11. To be held around Finals week (May 8 – 12).

The final assessment will be weighed more than the mid-term assessment.

You may rework and resubmit your assessments (excluding the final), labs for limited partial credit.

## **Attendance Policy:**

After the second unexcused absence, each unexcused absence will cause one percent deduction from the “Attendance and Professional Evaluations” average. Eight (8), and nine (9) unexcused absence, will result in one letter grade lower. Your grade will be an automatic F if you have more than ten (10) unexcused absences. Makeup labs/exams will be permitted only if you had sought and received my approval prior to the absence which caused you to miss the related lab/exam.

## **Grades:**

100-90%	=	A	69-60%	=	D
89-80%	=	B	Below 60%	=	F
79-70%	=	C			

Mid-term grades will be made available to students before Sat., March 4, 2006.

CEN/CET majors enrolled in EET343 are required to attend the College of Business & Technology Professional Skills Conference, Friday, April 7, 2006.

## **STATEMENT OF DISABILITY:**

### **ADA**

If you are registered with the Office of Services for Individuals with Disabilities, please make an appointment with the course instructor to discuss any academic accommodations you need. If you need academic accommodations and are not registered with the Office of Services for Individuals with Disabilities, please contact the office on the third floor of the Student Services Building, by email at [disabilities@eku.edu](mailto:disabilities@eku.edu) or by telephone at (859) 622-2933 V/TDD. Upon individual request, this syllabus can be made available in alternative forms.

☺ The work you do in the laboratory, and the grade you earn, should reflect your personal abilities, and accomplishments. Individual homework and lab reports are required from each student. I encourage you to discuss your assignments with other students. However any work you submit must be your own.

☺ Any suggestions leading to improvements in the content or presentation of the course, especially in the laboratory work, are most welcome.