

Department of Technology
Fall 2005

EET 395
SPECIAL TOPICS IN CET/CEN – LINUX NETWORKING

Instructor:

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Office:

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Class schedule:

Section: 001, CRN: 15271; MW: 6 - 8 pm, in Room 407/400

Office Hours:

MTWR: 10 - 11 pm, 4.30 - 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:

Instructor approval

COURSE DESCRIPTION:

[Emerging technologies in the area of Computer Electronics Technology (CET) and Computer Electronic Networking (CEN): networking system administration, microcomputers, electronics, hardware, network operating systems, scripting, security, computer industry standard certifications, will be covered in a combination of lecture, demonstration and laboratory.]

The course will cover analysis, installation, configuration, troubleshooting of the Linux operating system. Comparison of Linux with other operating systems; the command interface, X Window interface; Linux architecture, the kernel, boot manager; user management; common networking services, web servers, file and print sharing, DNS services, will be covered in a combination of weekly discussion, homework and laboratory activities.

TEXTBOOK:

Linux. Author – Patrick Regan; Prentice Hall Publishers; 1st edition;
ISBN: 0130984590

References:

1. **Linux pocket guide.** Author – Daniel J. Barrett; O'Reilly Publishers; 1st edition;
ISBN: 0596006284
2. **Linux+ Fundamentals and Certification.** Author – David Engle; Prentice Hall publishers; ISBN: 0131172913

COURSE OBJECTIVES:

1. Installing and configuring Linux.
2. Running and troubleshooting Linux applications
3. Setting up network connections and services in Linux
4. Analyzing Linux architecture
5. Managing users, disk and file systems in Linux

COURSE OUTLINE:

1. Introduction to UNIX and Linux
 - i. UNIX interface, Network Operating System (NOS)
 - ii. UNIX architecture – kernel, utility programs and systems configuration files
 - iii. Linux kernel, general features, interfaces, documentation, text editors
2. Installing Linux
 - i. Hardware requirements for installing Linux
 - ii. Downloading Linux
 - iii. Partitioning hard drives
 - iv. Installing, verifying and troubleshooting Linux installations
3. Shells and X Windows
 - i. Using the Bourne shell – common commands
 - ii. Directory structure under Linux
 - iii. Redirection and filters
 - iv. Virtual terminals
 - v. Environment variables
 - vi. Desktop environment, windows and display managers
 - vii. Configuring X Window, and various Window environments
4. Linux applications
 - i. Packages and compressed files
 - ii. Make program
 - iii. Core dumps
 - iv. Viewing postscript and PDF files
 - v. Printing – printtool program, managing print queues, troubleshooting

5. Networking
 - i. Network cards
 - ii. TCP/IP addressing, subnetting, address resolution
 - iii. Navigating a TCP/IP network
 - iv. Network configuration files
 - v. Modem and broadband connections
 - vi. Troubleshooting

6. Linux Architecture
 - i. Boot process
 - ii. Daemons – starting, stopping, restarting, activating, deactivating
 - iii. Linux Loader, Layers
 - iv. The Kernel – building, configuring, compiling, patching, troubleshooting
 - v. Device drivers
 - vi. Linux model for networking services

7. Managing Users, Disk and File systems
 - i. Usernames and passwords
 - ii. Root account
 - iii. Configuring – modifying, deleting, default settings for users
 - iv. Groups – administration, authentication
 - v. Virtual file systems
 - vi. Planning disaster recovery
 - vii. File and system security – account restriction, detecting intruders
 - viii. Shell scripts – executing, creating, initializing

8. Networking services
 - i. File and print sharing –network file system, accessing remote printers
 - ii. Domain Name Space (DNS) resolution and DHCP services
 - iii. Web services – Web pages and servers (Apache HTTP server), FTP servers
 - iv. Remote access – network security, firewalls, proxy servers, simple network
 - v. Email – simple mail transfer protocol, setting up email services

COURSE REQUIREMENTS:

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

EVALUATION:

Each student will be evaluated as follows:

- Assessments (45%) – 3 assessments
- Lab assignments (30%) – between 10-15 lab assignments
- Linux based design project/Research paper and presentation (15%)
- Homework (10%) – around 10 homework assignments

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

Design project/Research paper and presentation: Research articles of interest in the area of Linux and other open-source operating systems, establishing networking services across multiple operating systems, building Linux clusters, database access through web servers running on Linux, modifying existing Linux kernel code and creating new distributions, Linux tools, etc. Implementation of your designs is strongly encouraged, along with step-by-step procedures for the activities undertaken. You may work in teams of 2-4 students.

A group presentation of your work is required and will be graded both by me and other students. An individually written detailed report, around 6-10 pages in length, and with appropriate bibliographical references [in American Psychological Association (APA) format <http://nutsandbolts.washcoll.edu/apa.html>], is required as well.

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 Wed., October 12, 2005.

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 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.