

Revised Summer 2016

ITN 195

Topics in Networking

Hands-on Introduction to Linux

COURSE OUTLINE

Prerequisites:

Prerequisites: some networking fundamentals preferred

Course Description: (must be word-for-word from the College Catalog)

Provides an opportunity to explore topical areas of interest to or needed by students.

Further description:

This course offers an 8-week introduction to working with Linux, and it is intended to help students work with tools commonly used in CS courses as well as provide an overview of common industry standard security practices. The class is comprised of both discussion and hands-on exercises. Topics covered include working with the command line, installing and maintaining the OS and software packages, compiling programs, and more

Semester Credits: 1 Lecture Hours: 1

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Course Objectives

At the completion of this course, the student should be able to:

- Understand the basics of Unix and Linux
- Be able to execute commands from the command line
- Understand the basic file system layout and OS basics for Linux
- Be able to describe the differences between popular Linux distributions
- Understand simple programming and scripting command in Linux
- Be able to set up environmental variables and configure the system
- Understand subversion control
- Work with more advanced Linux commands
- Understand the basics of UNIX
- Work with security issues and traffic monitoring
- Understand Linux's position in the World Wide Web



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Required Materials:

None – software download is free and no text is required

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Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

Lecture 1: What is Unix/Linux?

- Basic overview and history of unix/linux
- Command line basics
- Commands: `ssh`, `ls`, `pwd`, `cd`, `cp`, `rm`, `mv`

Lecture 2: Using the Command Line

- Accessing remote servers and files
- Editing and manipulating files
- Piping commands and saving output
- Searching in command line history
- Commands: `mkdir`, `nano`, `cat`, `head`, `tail`, `less`, `clear`, `grep`, `sort`, `uniq`, `man`, `>`, `|`, `ssh-keygen`

Lecture 3: Operating System Organization

- OS basics, processes
- Filesystem layout
- File permissions
- Commands: `chmod`, `find`, `locate`

Lecture 4: Your Own Copy of Linux

- Overview of popular Linux distributions
- Running Linux in a virtual machine
- Super user powers
- Installing applications
- Commands: `make`, `apt-get`

Lecture 5: Programming in Linux



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- Simple Bash shell scripting
- Compiling C/C++ files
- File processing: `awk`, `sed`
- Commands: `gcc`, `sh`

Lecture 6: Programming & Scripting

- Scripting

Lecture 7: Configuring the System

- Basic system administration
- Setting environment variables
- Listing users and processes
- Basics of mount and NFS
- Commands: `uname`, `users`, `finger`, `alias`, `ps`, `top`, `kill`, `mount`, `df`, `du`

Lecture 8: Subversion Control and Advanced Topics

- Source control with SVN
- More powerful editors: `emacs`, `vim`
- More commands: `svn`, `tar`, `screen`, `nohup`, `disown`, `nice`, `cron`, `whereis`, `which`, `diff`, `scp`, `rsync`

Lecture 9: UNIX Networking Basics

- Network Configuration
- Network background knowledge
- Basic Networking debugging

Lecture 10: Security Issues and Traffic Monitoring

- IP Addressing
- Address Resolution Protocol
- Packet Sniffing
- Unsecure vs Secure Network Connections

Lecture 11: Network Connections and WWW

- HTML
- CSS

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Lecture 12: Review and all the others

- Course Evaluations
- Review
- Random Cool Topics

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Notes to Instructors

(List information about optional topics, departmental exams, etc.)

None

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