

***NIX System Administration - Syllabus**

Fall 2017

Course Description:

This course will cover the basics of setting up and administering a Linux-based server environment in the manner of the EECS Instructional Servers (hivexx.cs.b.e) and the Open Computing Facility (tsunami.ocf.b.e, etc.). By the end of this course, we expect you to have enough knowledge to be completely comfortable interfacing with Linux, be broadly familiar with various fundamental things like daemons, understand basic networking, have a good sense about maintaining system security, understand system administration essentials in general and have a practical taste of what's new in the field.

An important skill for system administrators is the willingness to quickly learn about new and unfamiliar technologies, so while we expect many students will be in CS, the only real prerequisite for this course is a desire to learn. We assume minimal prior experience and will get started and move quickly - there's a lot of material to cover.

Course Goals:

By the end of this course, you should be able to take a blank computer and turn it into a reliable, production quality, reasonably secure, general-purpose Linux server. Furthermore you should know how to configure this server and others for special purposes, have a sysadmin's knowledge and understanding of services/daemons, authentication, networking, databases and other utilities as well as how to configure them to fit your needs.

Tentative Schedule:

This will primarily be a lecture/lab-based course. There are no required readings.

1. Introduction to UNIX, the shell, OSS
2. Text editors, core shell utilities, man pages, navigating UNIX
3. More CLI (less, grep, awk, sed, find, xargs, tar, gzip, etc.), scripting (bash, py)
4. Getting started with Debian, package management, compiling software
5. Networking 101 - TCP/IP, network stack on UNIX
6. Services: systemd, ssh, ftp, http, cron, irc, monitoring
7. Networked services: NFS, SSH, LDAP/Kerberos, more services
8. Security: auth, encryption, secrets, keys, certs, TLS, FDE, 2FA, RSA, SHA
9. Applications: web frameworks, other servers
10. Special Topics: backups, automation/configuration management, containers, version control, etc.