Dept Number	CS 406	Course Title	Basic Linux System Administration
Semester Hours	3	Course Coordinator	Norman Carver
Catalog Description	This course will be an introduction to the administration of Linux systems, with emphasis on security for networked systems. Topics to be covered include: installation and configuration of Linux distributions, typical maintenance activities, and security measures for networked systems. Students will have access to lab machines for hands on practice.		

Textbooks

Linux system administration,2nd ed., by Nemeth, Snyder, and Hein (Prentice Hall 2006)

References

- Linux system administration, by Nemeth, Snyder, and Hein (Prentice Hall 2002)
- Linux Pocket Guide, Daniel J. Barrett, O'Reilly,2004

Course Learning Outcomes

- To learn to install and maintain networked Linux systems.
- To learn the security issues that face networked systems.
- To learn how to assess, secure, and monitor networked Linux systems.
- To gain some familiarity with common network server software packages.

Assessment of the Contribution to Program Outcomes

Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →	X							X		

Prerequisites by Topic

306 with a grade of *C* or better.

Major Topics Covered in the Course

1. Linux Basics
   GUI: X11, KDE, Gnome, etc.
   CLI: shells, key commands
   OS basics: root, UIDs, GIDs, file system, processes, signals {4 classes}
2. Linux distribution selection, installation, and configuration
   Preparation: network settings, hardware, disk partitioning, backups boot loaders and booting multiple OS
   Installation: settings, software, services
   Configuration: distribution tools, initial settings, network
   Basic security: services, permissions, tcp wrappers, etc {9 classes}
3. System maintenance
   Software installation: compiling from source vs. packages
   Software updating/patching, system monitoring and log files, backup's kernel compilation. {4 classes}
4. Overview of computer security issues: software bugs (buffer overflows, format string bugs), privilege escalation, passwords, users/groups, and permission, networking basics, foot printing, scanning, OS detection, and enumeration, network attacks and services, denial of service attack {6 classes}
5. System security measures: security scanners, firewalls, port scanning, scan detectors, log file assessment, intrusion detection systems, server configuration/hardening {9 classes}
6. Encryption 2:encryption basics
   Tools: SSH, SSL, GPG/PG {2 classes}
7. Servers and service: remote access (e.g., SSH, FTP, Telnet), file/print sharing (e.g., NFS, Samba, CUPS), mail and web (e.g., Send mail, Apache, Tomcat), authentication (e.g., NIS, LDAP), DNS (Bind), database (mySQL) {10 classes}