Las Positas College
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Course Outline for CNT 7401

INTRO TO LINUX/UNIX, LINUX+

Effective: Fall 2014

I. CATALOG DESCRIPTION:
CNT 7401 — INTRO TO LINUX/UNIX, LINUX+ — 4.00 units

This course provides hands-on training covering basic installation, management, configuration, security, documentation and hardware topics for the Linux/UNIX operating system on workstations in a LAN environment. The objectives for basic technician certifications such as LPI, RHCT, CompTIA Linux+ are covered. Topics include desktop security objectives and major types of security vulnerabilities, physical security, file protection, basic system and network configuration, account security, logging, backups, Linux/UNIX desktop security features and useful utilities, detecting and preventing DOS attacks, hacking, authentication and data recovery.

3.00 Units Lecture 1.00 Units Lab

Strongly Recommended
CIS 50 - Intro to Computing Info Tech

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	54.00
Lab Hours:	54.00
Total Hours:	108.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. CIS50

IV. MEASURABLE OBJECTIVES:

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

A. outline the key features, advantages and uses of the Linux/UNIX operating system
B. install and configure a basic desktop Linux/UNIX OS
C. install and configure default IRQs, I/O addresses, DMAs and peripheral devices
D. Identify the default permissions created on files and directories, and apply special file and directory permissions
E. use basic shell programming, perform text manipulations, and use Linux/UNIX programming tools.
F. describe common types of CPU's, memory, disk drives, system boards, and peripheral devices
G. outline the major steps necessary to configure boot loaders, dual booting, the init daemon and runlevels
H. demonstrate an understanding of X Windows, window managers, and desktop environments
I. demonstrate the ability to configure system and network settings
J. discuss and evaluate account security, logging, backup methods
K. demonstrate an understanding of TCP-IP basics related to Linux/UNIX/UNIX on LANs
L. discuss the characteristics DOS and hacking attacks
M. describe and evaluate file sharing options
N. use standard utilities to secure a desktop system on a LAN

V. CONTENT:
A. Introduction to Linux/UNIX
    1. History
    2. Development
B. Installing a Linux/UNIX system
    1. Understanding hardware requirements
    2. Gathering pre-installation information
    3. Installing Linux/UNIX
    4. Live CDs, ISOs, distributions
C. Interfaces and filesystems

1. Access and authentication
2. Basic shell commands
3. Working with files and directories
4. Searching and editing text files

D. Managing the file system
1. Filesystem Hierarchy
2. File and directory permissions
3. Default and special permissions

E. Managing system processes
1. X Windows system
2. Foreground and background processes
3. Process priorities and scheduling
4. Printer administration
5. Log file administration

F. Users, groups, and file administration
1. User Management
2. Group management
3. File Management
4. Output formats

G. Backup / data recovery
1. Software
2. Backup
3. Compression
4. File restoration / recovery

H. System Monitoring
1. Configuration
2. Troubleshooting
3. Performance monitoring
4. Internet connections, Telnet, SSH
5. Troubleshooting methods, tools, skills

I. Network Configuration & Security
1. Networks and TCP/IP basics
2. PPP, DNS / BIND
3. Network resources, services
4. System Security
5. Hardware/Software security
6. Physical security
7. Best practices
8. Intrusion detection
9. Troubleshooting methods, tools, skills

J. Linux Certifications
1. Linux+
2. CompTIA
3. Novell
4. RHCT
5. LPI
6. Objectives

VI. METHODS OF INSTRUCTION:

A. **Lecture** -
B. **Demonstration** -
C. **Research** -
D. **Lab** -
E. Assigned reading
F. **Discussion** -

VII. TYPICAL ASSIGNMENTS:

A. Reading / listening to presentations and readings
1. Presentations and lectures Example: Lecture on X Windows configuration
2. Selected current online readings
Example: read Linux/UNIX Installation Guide tutorial, at www.Linux.org

B. Search for relevant material and read
1. Students use search engines to find readings relevant for each module.
2. Example: Find resources describing DOS attacks, select 3 to read

C. Online flash based training
Example: Complete Skillsoft training modules for Linux on updates and network configuration

D. Write reports
Example: analyze an example Linux system for security flaws, describe, and provide mitigation strategies.

VIII. EVALUATION:

A. **Methods**

B. **Frequency**

1. Frequency
   a. 6-10 module assignments
   b. Weekly discussion of group work
   c. 6-10 module quizzes
   d. 6-10 labs
   e. 1 final project
2. Typical quiz question
   a. What is the difference between telnet and SSH?

b. Describe the relationship between directory and file permissions?

3. Final exam

IX. TYPICAL TEXTS:

1. Batista , Alfred *Linux Operations and Administration.* 1 ed., Cengage Press, 2013.
2. Association of Computing Machinery ACM.org student membership

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Students require access to a computer connected to the Internet, with word processing and browser software, and an email address.
B. Association of Computing Machinery ACM.org student membership