Degree Applicable Glendale Community College
January2012

COURSE OUTLINE

**Computer Science/Information Systems 174**
**Unix/Linux System Administration**

## I. Catalog Statement

Computer Science/Information Systems 174 is a course designed to acquaint the student with Unix system administration. This course will introduce the Unix user to the tasks performed by a system administrator. Topics covered will include installation, system startup and shutdown, networking, files system structure, Sun Microsystem's Network File System (NFS), process control, backups, user administration, email, web hosting, interoperability with Windows, and security.

Units – 4.0
Lecture/Demonstration Hours - 4.0

Recommended Preparation: CS/IS 172 or equivalent.

## II. Course Entry Expectations

Skills Level Ranges: Reading 4; Writing 4; Listening/Speaking 4; Math 3.

1. create and maintain their own file systems and shell programs within UNIX in a way which benefits their productivity as either application programmers or program support people in a large group;
2. set up and maintain the file systems needed for high-level UNIX system administration;
3. evaluate the usefulness of the UNIX Operating System as it pertains to specific business and production programming applications;
4. design software which takes advantage of UNIX runtime facilities and write both Bourne shell and Cshell applications.

## III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:
1. install and configure a Unix computer system;
2. startup and shutdown the system;
3. administer user accounts, email and web hosting;
4. setup NFS;
5. configure and connect the system to the Internet;
6. establish and maintain system security.

**IV. <u>Course Content</u>** **Total Contact Hours = 64**

| | |
|---|---|
| A. Introduction | 4 hours |
| 1. Unix history and flavors | |
| 2. The role of the system administrator | |
| 3. System and file security | |
| B. Booting and shutting down | 4 hours |
| 1. Bootstrapping | |
| 2. Run Levels | |
| C. File systems | 4 hours |
| 1. Pathnames and File System Organization | |
| 2. File Types, Attributes, and Permissions | |
| D. Users and Groups | 4 hours |
| 1. Adding | |
| 2. Configuring | |
| 3. Removing | |
| E. Backups | 4 hours |
| 1. Devices and Media | |
| 2. Periodic Processes | |
| 3. Syslog Configuration | |
| F. Adding a disk | 5 hours |
| 1. Formatting: Partitioning and Labeling | |
| 2. Creating a File System | |
| 3. Check and Repair File Systems | |
| G. Networking | 6 hours |
| 1. TCP/IP | |
| 2. Ethernet | |
| H. Email | 4 hours |
| 1. Sendmail | |
| 2. POP | |
| I. Print services | 4 hours |
| 1. BSD Printing | |
| 2. System V Printing | |
| J. Web Services | 6 hours |
| 1. Web Hosting Basics | |
| 2. Apache Installation | |
| K. Daemons | 4 hours |
| L. NFS and Sharing File Systems | 5 hours |
| 1. Server-side NFS | |
| 2. Client-side NFS | |
| M. Security | 6 hours |
| 1. Common Sense Rules | |
| 2. Firewalls | |
| 3. Security Resources | |
| N. Performance analysis | 4 hours |

1. Factors that Affect Performance
2. Analyzing CPU Usage, Memory Usage, Disk I/O

## V. Methods of Presentation

The following instructional methodologies may be used in the course:
1. lecture and demonstration;
2. online activities;
3. hands-on projects.

## VI. Assignments and Methods of Evaluation

1. Projects
2. Written proposals and installation documentation
3. Quizzes
4. Mid-term
5. Final examination

## VII. Textbook

Nemeth, E., et. al., UNIX &LINUX Administration Handbook, 4th Edition
Upper Saddle River: Prentice Hall, 2010
10th Grade Textbook Reading Level. ISBN: 0-13-148005-7

## VIII. Student Learning Objectives

Upon successful completion, the student will be able to:

1. will install and configure a Unix computer system;
2. startup and shutdown the system;
3. administer user accounts, email and web hosting;
4. configure and connect the system to the Internet;
5. establish and maintain system security.