BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

CSCI 25 - Linux 1, Essentials **3 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level IV; English Level IV; Math Level III
Transfer Status: CSU
34 hours Lecture
51 hours Lab

In this course students learn the fundamental concepts of the Linux operating system and the basic skills needed to work productively on a Linux system. Topics covered include installation and basic configuration, fundamental command-line tools, text editing with the vi (visual editor), the File Hierarchy Standard (FHS), processes, and permissions. Students will configure, script, and work exclusively in a shell (text-based, command-line) environment.

II. **OBJECTIVES**

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

A. Install and complete the basic configuration of a Linux workstation.
B. Describe the purpose of the Filesystem Hierarchy Standard (FHS) and identify its core components.
C. Edit text files using vi.
D. Create, delete, copy, move, and change the permissions of files and directories.
E. Select and use appropriate command-line utilities for performing specific tasks.
F. Monitor and control processes on a Linux system.
G. Configure a user environment and write scripts for a Linux shell.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Linux and the open source community	1.00
2. System installation and basic configuration	3.00
3. FHS	1.00
4. Working with files and directories	2.00
5. File and directory permissions	2.00
6. Editing with the vi	6.00
7. Manual (man) pages and info	1.00
8. Streams, pipes, and redirection	2.00
9. Text filters	4.00
10. Regular expressions, grep, sed, and awk	2.00
11. Monitoring and controlling processes	2.00
12. Basic features of a shell	2.00
13. Configuring a shell environment	2.00
14. Basic shell scripting	4.00
Total Hours	34.00

Lab

Topics		Hours
1.	System installation and basic configuration	6.00
2.	Working with files and directories	4.50
3.	File and directory permissions	3.00
4.	Editing with the vi	9.00
5.	Manual (man) pages and info	1.50
6.	Streams, pipes, and redirection	3.00
7.	Text filters	6.00
8.	Regular expressions, grep, sed, and awk	3.00
9.	Monitoring and controlling processes	3.00
10.	Basic features of a shell	3.00
11.	Configuring a shell environment	3.00
12.	Basic shell scripting	6.00
Total Hours		51.00

IV. METHODS OF INSTRUCTION

A. Lecture
B. Group Discussions
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Demonstrations
E. Multimedia Presentations

V. METHODS OF EVALUATION

A. Quizzes
B. Homework
C. Lab Projects
D. Mid-term and final examinations

VI. EXAMPLES OF ASSIGNMENTS

A. Reading Assignments
   1. Read the manual (man) page for the grep utility, taking note of the options that are available when executing this command. Be prepared to write grep commands to solve a series of problems in class.
   2. Read the article "In the Beginning was the Command Line" by Neal Stephenson. Be prepared to discuss the culture of Linux as presented by Stephenson, in particular the "Egypt analogy" and the Debian distribution.

B. Writing Assignments
   1. Write a one-page vi "starter guide" for a person who has never used the vi editor. In your guide, include a brief description of the history and key features of vi and an annotated list of the vi commands you consider to be most important for a new user to learn.
   2. Using the Linux Foundation's "Linux Jobs Report" as a starting place, and Internet research to gather additional information, write a 1-2 page report detailing the current demand for Linux professionals in the workforce, and the specific Linux skills required of these professionals.

C. Out-of-Class Assignments

1. Locate and select a BSD distribution to install in your VMWare Workstation or VMWare Fusion client. After installation, explore the basic configuration options and command-line utilities of the BSD system. Be prepared to discuss the differences and similarities between BSD and the Linux system we use in class.
2. Design and implement a shell script to perform a backup of your home directory and all of its contents, including all directories, sub-directories, hidden files, and non-hidden files. Your script should compress the backup into a tarball. Test your script thoroughly and be prepared to demonstrate your working script in class.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Muster, John. Introduction to Unix and Linux. 1st Edition. McGraw-Hill Osborne Media, 2002.
B. Newham, Cameron. Learning the bash Shell. 3rd Edition. O'Reilly Media, 2005.
C. Shotts Jr., William E. The Linux Command Line: A Complete Introduction. 1st Edition. No Starch Press, 2012.

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