Course Outline

De Anza College

General Information

COURSE ID (CB01A AND CB01B)

CIS 18A

COURSE TITLE (CB02)

Introduction to Unix/Linux

COURSE CREDIT STATUS

Credit - Degree Applicable

EFFECTIVE TERM

Fall 2023

COURSE DESCRIPTION

This course is an introduction to the features of the Unix/Linux operating system including text editing, text file manipulation, electronic mail, Internet utilities, directory structures, input/output handling, and shell features.

FACULTY REQUIREMENTS

COURSE FAMILY

Not Applicable

Course Justification

This course is the starting point for a three-course series on the Unix/Linux Operating Systems. It is a required transfer course for some of the CSUs and is transferable for all CSUs and UCs. The class is also a required course for Unix/Linux Operating Systems Certificate of Achievement.

Foothill Equivalency

DOES THE COURSE HAVE A FOOTHILL EQUIVALENT?

No

FOOTHILL COURSE ID

Formerly Statement

Course Development Options

BASIC SKILL STATUS (CB08)

Course is not a basic skills course.

GRADE OPTIONS

- Letter Grade
- Pass/No Pass

REPEAT LIMIT

0

Transferability & Gen. Ed. Options

Information below is subject to change. For the official listing of courses, their approval dates, and transfer credit limitations, check the De Anza catalog (by academic year), ASSIST.ORG (https://assist.org/) and C-ID.NET (https://c-id.net/).

TRANSFERABILITY

Transferable to both UC and CSU

Units and Hours

Summary

MINIMUM CREDIT UNITS	4.5

MAXIMUM CREDIT UNITS 4.5

Weekly Student Hours

Type	In Class	Out of Class
Lecture Hours	4.0	8.0
Laboratory Hours	1.5	0.0

Course Student Hours

COURSE DURATION (WEEKS)

12.0

HOURS PER UNIT DIVISOR

36.0

Course In-Class (Contact) Hours

LECTURE

48.0

LABORATORY

18.0

TOTAL

66.0

Course Out-of-Class Hours

LECTURE

96.0

LABORATORY

0.0

NA

0.0

TOTAL

96.0

Prerequisite(s)

Corequisite(s)

Advisory(ies)

ESL 272 and ESL 273, or ESL 472 and ESL 473, or eligibility for EWRT 1A or EWRT 1AH or ESL 5
CIS 4

Limitation(s) on Enrollment

Entrance Skill(s)

General Course Statement(s)

Methods of Instruction

Lecture and visual aids
Discussion of assigned reading Discussion and problem solving performed in class Quiz and examination review performed in class Collaborative learning and small group exercises Laboratory discussion sessions and quizzes that evaluate the proceedings weekly laboratory exercises Homework and extended projects

Assignments

A. Reading in textbook and lecture notes
B. 7-10 homework lab assignments to be done on a Unix/Linux system, and the assignments are on using different utilities for file manipulation, networking, and communication

Methods of Evaluation

A. Evaluation of lab and homework assignments for completeness and correctness in using the Unix / Linux operating system utilities and the shell.
B. Exams and quizzes to determine proficiency in working with the components of the Unix/Linux operating system and on using utilities and the shell for file manipulation, networking, and communication
C. Comprehensive final exam to determine proficiency in working with the components of the Unix / Linux operating system and on using utilities and the shell for file manipulation, networking, and communication

Essential Student Materials/Essential College Facilities

Essential Student Materials:
- None.

Essential College Facilities:
- Computer lab with access to a Unix/Linux server

Examples of Primary Texts and References

Author	Title	Publisher	Date/ Edition	ISBN
Sobell Mark, "A Practical Guide to Linux: Commands, Editors, and Shell Programming", 4th Edition, Addison-Wesley, 2017				

Examples of Supporting Texts and References

Author	Title	Publisher
None.		

Learning Outcomes and Objectives

Course Objectives

- Edit text using the vim editor
- Create file and directory system
- Investigate security and file permission
- Apply and investigate different shells
- Perform basic file maintenance and use information utilities
- Apply shell features
- Apply quoting rules
- Demonstrate user interaction with email and other communication utilities
- Apply filters
- Apply networking utilities
- Apply the extended set of regular expressions

CSLOs

- Use the Unix/Linux Operating System utilities and shell features for basic file manipulation, networking, and communication.

Outline

A. Edit text using the vim editor
    1. Data input and saving
    2. Insert and command mode
    3. Editing and file manipulation
    4. Local, range, and global commands
    5. Handling text objects in search and substitution
    6. Adding, cutting, pasting, and deleting text
B. Create file and directory system
    1. File names and wild cards
    2. File types
    3. Regular files (text and binary)
    4. Directories (special directories, path and pathnames, relative pathnames, absolute pathnames)
    5. File system implementation (file system structure, inodes, hard and symbolic links)
    6. Operations applied only to directories (pwd, ls, mkdir, cd, and rmdir)
    7. Operations applied only to regular files (more, lpr)
    8. Operations applied to both directories and regular files (cp, mv, ln, rm, find)
C. Investigate security and file permission

1. Users and groups
2. Security levels
3. /etc/passwd file
4. Permissions for files and directories
5. Changing permission (symbolic and octal)
6. User masks

D. Apply and investigate different shells
1. Job control
2. Aliases
3. Variables
4. Shell/environment customization

E. Perform basic file maintenance and use information utilities
1. History
2. Types of UNIX / LINUX systems available
3. Hardware platforms running UNIX / LINUX
4. Logging in/out
5. Basic attributes of UNIX / LINUX commands and filenames
6. Commands such as date, cal, who, passwd, echo, and man
7. Script command

F. Apply shell features
1. Standard file input / output
2. Redirection (input, output, and error)
3. Pipe and Tee
4. Command execution (sequence commands, group commands, chained commands)
5. Command line editing and history files

G. Apply quoting rules
1. Quotes (backslash, single quote, double quote)
2. Command substitution

H. Demonstrate user interaction with email and other communication utilities
1. talk
2. write
3. email

I. Apply filters
1. Concept
2. cat, head, and tail commands
3. cut and paste commands
4. sort command including multiple-field and multiple-pass sorting
5. tr, unique, and wc commands

J. Apply networking utilities
1. ssh
2. sftp

K. Apply the extended set of regular expressions
1. Atoms (single character, dot, class, anchor)
2. Operators (sequence, alternation, repetition, group)

Lab Topics

A. Use basic utilities to explore system data, user data, and common tasks: exit, passwd, who, whoami, finger, w, tty, stty, uname, clear, man, lpr, script, bc, date, cal, echo, exit

B. Differentiate the different file types; explore filename conventions and use wildcards; use utilities that manipulate regular files: cat, more, less, ls, touch, cp, mv, rm

C. Use the vim editor to edit text files with basic commands to move to a certain place in the file, add, delete, search, replace, substitute, copy and paste, cut and paste, bring in another file, save to another file, undo redo, save, quit

D. Work with the directory tree and path name conventioni; use utilities that work with directories: pwd, cd, mkdir, rmdir, which, whereis, find

E. Investigate the concept of links and types of links; create links to regular files and directories; explore inodes

F. Communicate with other users using write and talk; send and receive mail, including reply, forward, save functions; work across the network using ssh and sftp

G. Demonstrate the levels of permission (ugo) and the types of permission (rwx); set file permission; explore the effects of different types of permissions; changing the permission mask

H. Using features of the shell: redirection, tee, pipe, running commands one one command line, command grouping, command substitution, quoting rules, job control, variables, environment variables, aliases, command history; explore the major types of shell

I. Use filters to produce a required output: more, less, head, tail, cut, paste, wc, uniq, diff, comp, sort, egrep

J. Use the extended set of regular expressions for pattern matching: atoms, anchors, operators