

CENTRAL TEXAS COLLEGE
ITSC 1316
LINUX INSTALLATION AND CONFIGURATION

Semester Hours Credit: 3

INSTRUCTOR: _____

OFFICE HOURS: _____

I. INTRODUCTION

- A. Introduction to Linux operating system. Includes Linux installation, basic administration, utilities and commands, upgrading, networking, security, and application installation. Emphasizes hands-on setup, administration, and management of Linux.**
- B. This course serves as a required or elective course on various degree plans. Curriculum plans for degrees and certificates are listed in the current Central Texas College catalog.**
- C. The delivery method of this course may be traditional lecture/lab, blended lecture/lab, or online.**
- D. Prerequisites: None**

II. LEARNING OUTCOMES

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

- A. Install, administer, and manage a Linux system. (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).**
- B. Demonstrate proficiency with Linux utilities, commands, and applications. (C5, C6, C8, C15, C19, C20).**
- C. Identify and resolve security-based issues. (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).**
- D. Integrate a Linux system into an existing network. (C1, C5, C6, C8, C19, C20, F1, F3, F8, F9, F12).**

III. INSTRUCTIONAL MATERIALS

- A. The instructional materials identified for this course are viewable through www.ctcd.edu/books**
- B. Lecture Classes also require at least one USB storage device. (spinning HDD with 30-60 GB storage is preferred).**

IV. COURSE REQUIREMENTS

- A. Attend both lecture and lab or in the case of online delivery, be actively engaged in Blackboard and maintain constant progress.**
- B. Be prepared to participate in discussion, team projects/assignments and take unannounced assessments relating to the lecture materials.**
- C. Complete all exams/assessments.**
- D. Submit all assignments on time.**

V. ASSESSMENTS

- A. Student content mastery will be evaluated in the following areas:**
 - Assessments (midterm exam, quizzes, projects, discussion etc.)**
 - Final Assessment (final exam and/or semester project, participation)**
- B. Scheduled and unscheduled assessments will be given at the discretion of the instructor.**
- C. Exams/assessments may be composed of both subjective and objective questions plus computer output.**
- D. A student must take all exams/assessments. Both online and on campus students who know in advance that they will be absent due to school sponsored trips, military duty or orders, or any other valid reason, must arrange to take an early exam/assessment. Unexpected absences due to illness or other extenuating circumstances will require the student to contact the instructor about make-up work in lieu of the missed exam/assessment.**
- E. Students with unexcused absences will be given a zero for each missed assignment.**

VI. SEMESTER GRADE COMPUTATIONS

Course Requirements	Points	Points	Grade	Quality Points
Assignments	300	900-1000	A-Superior	4
Assessments	300	800-899	B-Above Average	3
Final Assessment	400	700-799	C-Average	2
		600 - 699	D-Passing, but unsatisfactory	1
TOTAL	1000	0 -599	F-Failure	0

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

- A. **Information on the following Academic Policies, as described in the CTC Course Catalog will be followed:**
1. Withdrawals
 2. Grading
 3. Class Attendance and Course Progress
 4. Scholastic Honesty
- B. **Cell Phones and Pagers:** Students will silence cell phones and mobile devices while in the classroom or lab.
- C. **Americans with Disabilities Act (ADA):** Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Review the website at www.ctcd.edu/disability-support for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.
- D. **Instructor Discretion:** The instructor reserves the right of final decision in course requirements and may make changes to the course outline and/or assignments as needed.
- E. **Civility:** Individuals are expected to be aware of what a constructive educational experience is and be respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion.

VIII. COURSE OUTLINE

A. Lesson One: Introduction to Linux and Open Source Applications

1. Learning Outcomes: Upon successful completion of this unit the student will be able to:
 - a. Describe the considerations for choosing an operating system.
 - b. List the timeline events for Linux Operating System Development.
 - c. Define the criteria for comparing operating systems.
 - d. List common applications and tools available within the Linux operating system distributions.
 - e. Discuss the three distinct components covered when purchasing a software license.
2. Learning Activities:
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. Unit Outline: Follow the sequence of unit objectives.

B. Lesson Two: Using Linux and Command Lines Skills

1. Learning Outcomes: Upon successful completion of this unit the student will be able to:
 - a. Discuss the advantages and disadvantages between the use of GUI vs. command line interfaces to the Linux OS.
 - b. Perform the steps necessary to install and launch a Linux distribution and access the terminal window.
 - c. Define operating system virtualization and cloud computing.
 - d. Execute basic Linux command line utilities concerned with basic file and directory management.
2. Learning Activities:
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. Unit Outline: Follow the sequence of the unit objectives.

C. Lesson Three: Getting Help and Working with Files and Directories

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Interpret and apply syntax and flags from Linux “man” pages to command line interaction.
 - b. Describe the advantages and advantages of the “man” pages vs. the “info” pages.
 - c. List all the common resources for locating information on Linux command line syntax.
 - d. Execute intermediate Linux command line utilities concerned with basic file and directory management.
 - e. Discuss the application of absolute and relative paths when traversing directories.
2. **Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. **Unit Outline:** Follow the sequence of the unit objectives.

D. Lesson Four: Archiving, Pipes, Redirection and REGEX

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Demonstrate the correct commands and sequence of steps when archiving files and directories using the command line utilities.
 - b. Demonstrate the correct commands and sequence of steps when compressing files and directories using the command line utilities.
 - c. Implement command line pipes to organize and excerpt select data.
 - d. Apply proper syntax of commands to seek, identify and extract required data from user’s partitions and directories.
2. **Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. **Unit Outline:** Follow the sequence of the unit objectives.

E. Lesson Five: Basic Scripting and Understanding Computer Hardware

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Configure Linux operating system and script files to effectively execute.
 - b. Design, code and debug basic shell scripts, using common Linux text editor (vim, pico, etc.) applications.
 - c. Define the criteria for comparing operating systems.
 - d. Evaluate the adequacy of selected hardware suites to run various distributions of the Linux operating system.
 - e. Discuss the Hardware Application Layer and discuss its use in orchestrating devices connected to a Linux distribution.
 - f. Differentiate the various approaches to organizing Linux partitions.
2. **Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. **Outline:** Follow the sequence of the unit objectives.

F. Lesson Six: Managing Packages and Processes and Network Configuration

1. **Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Explain and diagram the Linux file system hierarchy.
 - b. Describe the common package management programs used in Linux application management.
 - c. Generate a summary of features for each component within the Linux kernel.
 - d. Execute various commands which illustrate proper and anomalous behavior for the Linux kernel.
 - e. Implement the correct configuration for DNS and DHCP servers.
2. **Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)
3. **Outline:** Follow the sequence of the unit objectives.

G. Lesson Seven: System and User Security; Managing Users and Groups

- 1. Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Provide secure creation and configure for user and group system and data files.**
 - b. Evaluate user security settings for a selected distribution.**
 - c. Define safe use of root user role as well as steps to move into root user role from common user account configuration.**
 - d. Execute steps to create, modify and delete user accounts.**

- 2. Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)**
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)**

- 3. Unit Outline:** Follow the sequence of the unit objectives.

H. Lesson Eight: Ownership and Permissions

- 1. Learning Outcomes:** Upon successful completion of this unit the student will be able to:
 - a. Plan, organize and implement correct user and group account permissions.**
 - b. Execute command line utilities and scripts which illustrate status and security settings of user and group accounts.**
 - c. Explain the Linux Filesystem Hierarchy Standard (FHS).**
 - d. Implement proper configuration for Linux Special Permissions 9 setuid, setgid and the sticky bit.**

- 2. Learning Activities:**
 - a. Research and discuss the topics of the Lesson in class and in an online collaborative discussion forum (C7, C8, C9, C15, C18, F1, F9, F10, F13)**
 - b. Perform skills and functions in the section (C1, C5, C7, C8, C9, C16, C18, F1, F9, F10, F13)**

- 3. Outline:** Follow the sequence of the unit objectives.