

Pellissippi State Community College  
Master Syllabus

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**LINUX SYSTEM SECURITY ADMINISTRATION  
CSIT 2476**

Class Hours: 3.0  
Laboratory Hours: 3.0  
Credit Hours: 4.0  
Revised: June 2009

Instructor:  
Office:  
Phone  
E-Mail:

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**Catalog Course Description:**

A study of system security administration topics for the Linux operating system. Topics include SELinux, console access control, firewalls, TCP wrappers, xinetd access control, tripwire configuration, PAM configuration, system monitoring techniques, encryption, PKI and OpenSSH configuration.

**Entry Level Standards:**

The student must have knowledge of system administration tasks such as network installation, kernel configuration and customization, user administration, package management and backup, automating and scheduling tasks, filesystem management and maintenance, system initialization and services. The student must have college level reading and math skills and keyboarding skills of at least 28 wpm.

**Prerequisites:** CSIT 2411 or appropriate Linux/Unix system administration experience.

**Textbooks and Other Related Material Basic to the Course:**

Brian Hatch & James Lee, *Hacking Linux Exposed – Linux Security Secrets & Solutions*, Latest Edition, McGraw-Hill/Osborne.

**I. WEEK/CHAPTER/TOPIC BASIS:**

Week	Lecture Topic
1	System security basics
2	SELinux
3	SELinux
4	System monitoring techniques
5	Console access configuration
6	PAM configuration
7	TCP wrappers & xinetd access control
8	Tripwire configuration
9	Review and Midterm
10	Firewall configuration
11	Firewall configuration

- 12 Local user attacks
- 13 Securing data – encryption and PKI
- 14 Digital certificates & OpenSSH server configuration
- 15 Final Exam

## II. **COURSE OBJECTIVES:**

- A. Setup workstation, server and network security for Linux systems. II, III, IV, VI, VII, VIII, IX, X, XII
- B. Understand concepts and capabilities of the Unix/Linux environments. III, IV, VII, XI
- C. Produce and use system security assessment reports. I, III, VII, IX, X, XI, XII
- D. Understand data security tools and techniques. II, III, IV, VIII, IX, XII
- E. Monitor system for potential security threats and use good administration techniques, logic, utilities and procedures. III, IV, VI, VIII, IX, XI

## III. **INSTRUCTIONAL PROCESSES:**

Students will:

1. Use system security administration tools to configure and manage applications and system resources. *Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies*
2. Create a well-documented system security assessment report for clients. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies*
3. Plan and install Linux system security tools and utilities based on client input and specifications. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies*
4. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Communication Outcome, Active Learning Strategies*
5. Use industry accepted practices to administer systems and environments in a stand-alone or clustered environment. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies* .
6. Use professionally accepted methods and materials in their approach to system administration. *Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies*

## IV. **EXPECTATIONS FOR STUDENT PERFORMANCE:**

The student should be able to

1. Be familiar with Linux system security tools and techniques. A, B, C, D
2. Be able to perform firewall, PAM and access control configurations. A, B, E
3. Produce documents and working utilities using Unix/Linux tools. B, D, E
4. Understand and apply SELinux concepts. A, D, E

5. Be able to monitor and secure system against local and network attacks. A, B, C, D, E
6. Understand and configure data security techniques like digital certificates, encryption and PKI. D, E
7. Apply knowledge and concepts to specific problems. B, D, E

## V. **EVALUATION:**

### A. **Testing Procedures:**

Two tests will be given during the course of the semester. There will be no make-up tests unless prior arrangements have been made with the instructor. Quizzes will be given during lab time for almost every chapter covered. Quizzes may only be made up for excused absences. An excused absence is one that can be verified by supporting documentation. Failure to make a passing quiz average may result in a grade of F for the course.

### B. **Laboratory and Project Expectations:**

Several lab assignments will be given during the course of the semester. In addition, students may be assigned a team project. A late penalty will be imposed on any overdue assignment. Failure to make a passing average in lab assignments and team project may result in a grade of F for the course.

### C. **Field Work:** N/A

### D. **Other Evaluation Methods:**

You are expected to do your own work in this class. If you are unable to complete an assignment on your own, it is your responsibility to get help from the instructor (before the assignment is due). Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited. A student caught cheating or infracting specific rules will be given a grade of "F" for the course and a letter from the department head will be placed in the student's academic record file, or dismissal from the college will be recommended.

In the event that you have an emergency beyond your control, you must notify the instructor in advance, if at all possible.

### E. **Grading Scale:**

93 – 100	A
88 – 92	B+
83 – 87	B
78 – 82	C+
73 – 77	C
65 – 72	D
Below 65	F

## **VI. POLICIES:**

### **A. Attendance Policy:**

Pellissippi State Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. (*Pellissippi State Online Catalog*)

### **B. Academic Dishonesty:**

Plagiarism, cheating and other forms of academic dishonesty are prohibited. A student guilty of academic misconduct, either directly or indirectly through participation or assistance, is immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions that may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course. (*Pellissippi State Online Catalog*)

### **C. Computer Usage Guidelines:**

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State's computing resources in an effective, efficient, ethical and lawful manner. (*Pellissippi State Online Catalog*)

### **D. Accommodation for Disabilities:**

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins134 or 126 or by phone: 694-6751(Voice/TTY) or 539-7153. More information is available at [www.pstcc.edu/departments/swd/](http://www.pstcc.edu/departments/swd/).