Course Description

CS 433 COMPUTER SYSTEMS SECURITY (3). Introduces the concept of security in computing. Topics include cryptography, program security, operating systems protection, database security, and network security. Students will explore current security models, internal and external security threats, privacy issues and security laws and regulations.

Course Outcomes

After successful completion of this course, you will be able to:

- Discuss the role of information in the world today along with the importance protecting that information from unauthorized disclosure.
- Explain the basic concepts involved with cryptography along with its contribution to the authentication and encryption schemes used to secure computer systems and resources.
- Discuss the protection of computer software in both an applications program and an operating systems environment including the identification and elimination of virus software.
- Describe methods used to secure wired and wireless networks from both the many well-known and documented attacks of today as well as those attacks yet to be developed.
- Describe the importance of the development of a security policy for the computer environments of today along with the contents of that security policy.
- Discuss the legal and ethical issues involved with securing computer systems, networks, and information.

Course Prerequisites

In order to successfully participate in this course, students are expected to have completed ALL of the course prerequisites. The prerequisites for CS433 are both CS430 and CS450. You need to have already completed all of the above listed courses (or their equivalents) before taking CS433. Necessary skills from the above courses are:

1. Understanding of basic operating system principles (CS430).
2. Familiarity with operating system constructs and techniques (CS430).
3. Understanding of the basic security algorithms used in operating systems (CS430).
4. Understanding of the methods used to carry data on a network (CS450).
5. Detailed understanding of security protocols used when transmitting sensitive information in a network environment (CS450).

Course Materials


Recommended Supplemental Materials:


First Night Assignment

Read Chapters 1 and 2 of the text.
Be prepared to discuss the key concepts in the chapters.

**NOTE:** This is not a formal syllabus. You will receive a detailed course syllabus for the course on the first night of class.

Learning Topics

Learning Topic #1: Overview of Computer Security
Learning Topic #2: Encryption and Cryptography
Learning Topic #3: Program Security and Viruses
Learning Topic #4: Operating System Security
Learning Topic #5: Database Security
Learning Topic #6: Network Security
Learning Topic #7: Security Administration
Learning Topic #8: Legal and Ethical Issues

Assessment Methods: Midterm exam, final exam, research paper on a recent virus attack, research paper assessing the vulnerability of an operating system or network protocol, and class participation in discussion items.