

SEC 250-02: Computer and Network Security
Fall 2008 (JOYC Room 305)
TTH – 12:30 PM to 1:45 PM

Instructor: **Zach Tanko**
West Hall – Room 101
Office Hours: M 12:30-1:30, T 2– 3, W 12:30 – 1:30, TH 11:00 - 12:00
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Description

This course will provide an introduction to the many aspects of computer and data network security, and information assurance. We will examine the rationale and necessity for securing computer systems and data networks, as well as methodologies for implementing security, security policies, best current practices, testing security, and incident response. Course concepts are reinforced by demonstrations and research assignments.

The main objective of this course is to provide you with an understanding of the important security-related considerations when implementing computers, servers, and networks. To that end, we will cover a large set of topics, including cryptography, operating systems security, network security, and language-based security. After completing this course, students will be able to analyze, design, and build secure systems of moderate complexity.

This course will present varying levels of technical detail on the topics discussed but won't dwell too much on theory or mathematics. This is intended to be a general, practical course.

Summary of Instructional Methods

In this class students can expect the instructor to use the following techniques to facilitate students' acquisition of knowledge about computer and network security and skills related to putting this knowledge into practice:

- Lecture and discussion on computer and network security issues with a heavy emphasis on concepts.
- In and out of class exercises involving students' application of network knowledge.
- In class problems involving students doing group exercises on security.
- Discussion with the instructor about course material and course-related assignments.
- Textbook assignments intended to develop students' application of course concepts to actual "real-life" circumstances.
- Testing of students' comprehension and understanding of course material to assess students' ability to retain, synthesize and apply basic theories and concepts pertaining to the subject matter presented in the text and lecture.

Learning Objectives

Upon completion of this course, students will be able to:

- Classify and summarize the major components of computer and network security, and information assurance.
- Analyze the impact of security policies and user security awareness to the "secure" operation of a network and the organization, in general.
- Evaluate the security vulnerabilities of common operating systems and data protocols.
- Design countermeasures and other ways to mitigate common security vulnerabilities.
- Plan a security policy for a given networking environment.
- Implement a plan by which you can keep current on security events and notices.
- Describe the ethical and legal considerations associated with "attacking" computer systems and networks.

Materials

Note: Texts are subject to change in future semesters. This syllabus is accurate only for the semester listed at the top page of the document.

Textbook: **Security in Computing**, Charles P. Pfleeger and Shari Lawrence Pfleeger (2006). Prentice Hall (ISBN: 0-13-239077-9)

Criteria and Methods for Evaluating Students

A. Tests - Tests will be used to measure students' basic comprehension, understanding and application of selected theories and concepts introduced in the text, lectures and discussions. In this sense the tests will be used as a means to measure knowledge and skill application across all the aforementioned learning objectives.

Each test will be a combination of multiple choice and essay questions. The instructor will identify the specific concepts and terms to be covered on a test prior to the day of the test to enable students to focus their review of the material.

- i. Multiple choice questions will focus on measuring students' ability to identify theories and concepts and apply those theories and concepts to examples provided in the questions.
- ii. Essay questions will be used to measure students' ability to synthesize and apply material covered to address potential or actual data communications environments.

B. Textbook Assignments - Exercise based assignments will be used to assess students' knowledge and skill levels in relation to specific subject areas within the main topic of data communications. These assignments are also designed to challenge students' ability to demonstrate the course concepts as they relate to specific business environments. **YOU ARE RESPONSIBLE FOR COMPLETING ASSIGNMENTS ON TIME AND TURNING THEM IN TO ME IN A SUITABLE FORMAT. ALL WRITTEN ASSIGNMENTS MUST BE TYPED!** The textbook assignments will count as 10% of a student's final grade.

C. Paper/Demonstration – A paper or presentation of a data communications concept with written explanation (10% of your total grade for the class)

This assignment is designed to evaluate your competency at applying course concepts to 1) research 2) analyze a specific topic related to data communications 3) produce a paper or demonstration model and operate it for the group.

D. Quizzes

There will be approximately 5 quizzes. Each quiz is a short (3-5 questions) short answer exercise. This will test the most recent reading and terms from the textbook and lecture discussions. Quizzes will count for 20% of the final grade.

Assignment Values and Grade Definitions

2 Tests	30%
Quizzes	20%
Textbook Assignments	10%
Participation/Classroom Activities	10%
Paper/Demonstration	10%
Final Exams	20%

Final letter grades will be based on the scale recommended by Champlain College:

Course Policies

Attendance

If the student is unable to attend class, the student is responsible for any assignment or material missed during the absence. Contact the instructor for handouts, announcements or changes to the course calendar. Contact a classmate for notes. Missing 3 classes in a row subjects the student to being withdrawn from the class.

Any student missing 3 classes (non-consecutive), **for any reason**, will be subject to a 10 point deduction after final grade is calculated. Missing more than 3 non-consecutive classes may result in withdrawal from the class (or additional point reduction).

Homework

Homework assignments are due in the class following their assignment. Late homework **will** receive a lower grade. Partial assignments will be graded as incomplete. Due to the nature of this class, it may not be possible for a student to make-up a missed lab. Class attendance is a must

Exams/Quizzes

Students are required to take all quizzes and exams at the appointed time unless arrangements prior to the test are made with the instructor. Make-up tests will be more rigorous than the regular tests, and will be scheduled at a time convenient for the instructor.

Academic Honesty Policy

The Champlain College Student Handbook (*The Rudder*) describes the College's Academic Honesty policy. It basically says that if I think you've cheated on an assignment — i.e., to either actually or attempt to knowingly give, receive, or use work that is not your own — I can give you a zero on that assignment. I will strictly adhere to this policy. You may trick me, but it will catch up to you somewhere once you enter the workplace. In addition, it is very common for prospective employers to call professors for references. It is really not worth taking the chance of jeopardizing your future as a result of cheating. If you are experiencing any difficulties with the subject matter, or experiencing any personal difficulties, talk to me. I am committed to help make you successful. You must be committed to your own success as well!

This in no way suggests that I am opposed to your collaboration with fellow students and others; in fact, I encourage as much collaboration as possible. The point of this policy is that work that you submit as your own *has* to be your own! If you work with another person or other resource that helps you learn an answer to something, that's fine — what I see, however, should be in your own words and clearly demonstrate **your** understanding. If you're unsure, tell me that you worked with others.

Special Needs: If you believe that you have a disability requiring accommodations in this class, please contact the Coordinator of Support Services for Students with Disabilities as soon as possible. After you receive your accommodation form, please see me so I can work with you to implement them in a timely fashion.

SEC 250 – Computer and Network Security

Section 01 – TTH, 12:30 PM – 1:45 PM

Course Calendar – Fall 2008

Week	Date	Topic	Reading Assignments
1	9/ 2	Introduction to computer security Attacks Computer Criminals Methods of Defense	Chapter 1
2	9/9	Elementary Cryptography Terminology Symmetric and Asymmetric Encryption Data Encryption Standard The Uses of encryption	Chapter 2 Chapter 1 Assignment due
3	9/16	Program Security Secure Programs Non-malicious Program Errors Viruses and Other Malicious Code Controls against Attacks	Chapter 3 Chapter 2 Assignment due
4	9/22	Quiz 1 (Chapters 1, 2, 3) Operating system security Protected Objects and Methods of Protection Memory and Address Protection Control of Access to General Objects User Authentication	Chapter 4 Chapter 3 Assignment due
5	9/29	Designing Trusted Operating Systems Security Policies Models of Security Trusted Operating System Design	Chapter 5 Chapter 4 Assignment due
6	10/7	Database and Data Mining Security Introduction to Databases Security Requirements Sensitive Data Inference	Chapter 6 Chapter 5 Assignment due
7	10/14	Test (Chapter 1 – 6)	
8	10/21	Security in Networks Network Concepts Threats in Networks Network Security Controls Firewalls Intrusion Detection Systems	Chapter 7 Chapter 6 Assignment due
9	10/28	Administering Security Security Planning Organizational Security Policies Physical Security	Chapter 8 Chapter 7 Assignment due

10	11/4	The Economics of Cybersecurity Making a Business Sense Quantifying Economic Value	Chapter 9 Chapter 8 Assignment due
11	11/18	Quiz 2 (Chapter 7 – 9) Privacy in Computing Privacy Concepts Privacy Principles and Policies Authentication and Privacy Data Mining Privacy on the Web	Chapter 10 Chapter 9 Assignment due
	11/25	Legal and Ethical Issues in Computer Security Protecting Programs and Data Information and the Law Computer crime Ethical Issues in Computer Crime	Chapter 11 Presentation topics distributed Chapter 10 Assignment due
12	11/20	Test (Chapter 7 – 11)	
13	12/2	Cryptography Explained	Chapter 12
14	12/9	Presentations	Finals distributed
15	12/16	Final Exam (actual date/times TBD)	Final exam Due