

SOFTWARE AND WEB SITE SECURITY
Syllabus and Course Schedule
Cristian Balan
Spring 2008

Course Descriptions

This course focuses on the tight interrelationship between programming software, World Wide Web (WWW) servers and services, and information security. Software is the basis of everything in the digital realm -- applications, services, operating systems, and more. The Internet, and particularly the Web, has emerged as the universal network for applications ranging from entertainment to international commerce. Students will learn about the information security strengths and weaknesses of various programming languages, flaws in software systems, vulnerabilities inherent in common Web and other server and client (i.e., browser) implementations, ways to secure Internet servers and services, and methods to make server administrators more security aware.

Course Goals

Upon Completion of this course students will be able to:

- Describe ways to incorporate security into the design of software systems and Web server and e-commerce applications.
- Articulate best practices and user policies related to developing software systems and installing Internet server applications
- Determine the security vulnerabilities of various software tools various Web (and other) server applications software, and design mechanisms to mitigate those vulnerabilities.
- Describe the process for maintaining secure software and Internet server systems.
- Apply best information security practices for software systems to the specific needs of an organization.
- Select the optimal tools for implementing software systems and server-based Internet applications given project constraints.
- Document the impact and management of secure software and server systems, and the impact on the organization, for both professional peers and managers (technical and non-technical).
- Understand and use cryptography used on the web and the mechanisms for deploying a public key system

Course Textbooks

Required Text: Web Security For Network and System Administrators, by David Macke, Thomson Course Technology (now Cengage Learning), 2003, ISBN # 0-619-06495-1.

Readings in WebCT and links at <http://www.nycomputernetworks.com/sec>

The text has 3 disks with Red Hat Linux Professional Ver 8.0 – we will use these disks in class.

Software and Computer Requirements:

System Requirements:

Windows XP, Windows 2000, or NT 4.0

Pentium class processor

32 MB RAM

20 MB free hard disk space

CD-ROM drive (for software installs)

Printer - Used to print web pages including graphics.

Microsoft Word 2000 or newer. If you decide to use Open Office or Word Perfect, you need to save files as .rtf for posting in the course. For MS Word 2007, ensure you save files in 2003 format – some of your peers might have issues opening documents in the latest format.

You need a reliable Internet service provider and at least a 56K modem installed on your system.

Instructor Contact Information

Cristian Balan

West Hall RM 106

(802)865-6477

Home Office (518)561-5174 up to 9PM

Cell: (518)569-1423

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Office Hours: TBA

Course Schedule

The basic course schedule is detailed below. Occasionally the instructor may deem it appropriate to deviate from the schedule

Reading and work assignments correspond to the lectures and are found next to the corresponding lecture in the table. **All work assignments are to be submitted via WebCT to the instructor for grading and on paper in a folder marked with your name for easy correction.** The instructor will hand the corrected copies back to you the following Friday and post a grade in WebCT.

Additional assignments or quizzes may be listed or given in the text of the lecture. Depending on the progress during class, the instructor may choose to give other assignments during the course and these will be posted in the discussion area as well as emailed to all class participants

Quiz will be given unannounced to ensure that that you read the assigned material. Assignments are due by Friday following the week of posting.

Projects deliverables are due on the Friday of the week shown. **Projects must be delivered in electronic form and on paper in a folder with your name on it.** The instructor may request additional backup and research material, if required, to further understand project work undertaken

All papers in this course will use 12 point, Times New Roman font. Papers will be single spaced, with two spaces between paragraphs and will use standard headers, footers and margins. All references will be cited and formatted using standard APA, MLA or Turabian formatting for references.

Weekly Topics		Homework Assignments		
		Reading	Exercises	Project/Lab
Week 1 ()	Syllabus Introduction to Security	Ch 1		Set up Server
Week 2 ()	Web Vulnerabilities and The Structure of the Web Programming and Programming Languages	WebCT	Assignment 1	IPCop Installation
Week 3 ()	Cryptography/Encryption	Ch4		IPCop Configuration
Week 4 ()	Windows Security	Ch 9	Assignment 2	Secure Windows IIS
Week 5 ()	Hacking the web Routes to Invasion Client Side SSL Active Content	WebCT	Assignment 3	Scan Web Servers for Vulnerabilities
Week 6 ()	Unix Security	Ch 10		Project Assigned Secure Apache
Week 7 ()	Mid Term Web Servers Types of attacks Database Vulnerabilities	WebCT	Assignment 4	Mid Term
Week 8 ()	The Programming Process Program Architecture Secure Design Hacking from the software perspective	Ch2 and WebCT		Project Outline Site-to-Site VPN
Week 9 ()	Privacy Viruses	WebCT	Assignment 5	Road warrior VPN
Week 10 ()	Viruses Worms	Ch 8 and WebCT		Remote Access Project First Draft and Review
Week 11 ()	Online Electronic Sales or Gateways	WebCT	Assignment 6	Webgoat
Week 12 ()	Access Control	Ch 8		TBA
Week 13 ()	Incident Response Teams	Ch 12	Assignment 7	TBA
Week 14 ()	Servers and Firewalls	WebCT		TBA
Week 15	Final Exam and Lab			Finished Project

Assignments/Homework and Labs

The homework and lab assignments are given to assist your understanding of the concepts. The only way to learn is to practice. Everyone is encouraged to share solutions to the problems or to look online for alternative solutions. Discuss the solutions in class and outside and work together. Your efforts on the labs will count towards your participation grade. Although, you will not be required to formally hand in every lab assignment, you may be chosen to share your solution with the class at any time. Failure to provide a solution will affect your participation grade. Both the midterm and the final have lab pieces – take notes and document your labs for reference during the test.

Project

A course project will be required from every student. The Project assignments are staged to allow each student to complete one phase before moving onto the next. Grades for the project will be based on the assignments.

- 20% on the proposal or initial draft
- 20% on the design documentation or final draft
- 20% on supporting material and
- 40% on the final deliverable.

Evaluation

This is a project based course where the assignments are designed in such a way that you must demonstrate your skill and expertise.

- Midterm 10% - ½ of the midterm is lab based
- Final 10% - ½ of the final is lab based
- Homework 30%
- Project 30% (Please note that 10% of your project grade includes the project assignments.)
- Participation 10% (lab grade)

Grade Calculation

The following scale will be used to determine letter grades:

Grade	Range
A	93+
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	Below 60

Academic Honesty

In the preparation and presentation of any assigned work-including examinations, tests, quizzes, term papers, reports, themes and other written or oral Assignments-every student shall conform to a strict standard of academic honesty. Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard. In all assignments, students must acknowledge the words and/or ideas of others taken from print or electronic media, whether a direct quotation or a paraphrase; any omission of this is dishonest. Cheating on examinations or tests consists of knowingly giving, receiving or using-or attempting to give, receive or use-unauthorized assistance during an examination or test. A faculty member may record a grade of "zero" for any assignment on which a student has plagiarized or cheated. For repeat offenses within a single course, the faculty member may record a grade of "F" for the course. Violations of this policy in multiple courses may result in dismissal from the College. A student may appeal these decisions according to the Academic Grievance Procedure.

Need for Assistance

If a student believes that s/he has a disability requiring accommodations in this class, the procedure is to contact the Coordinator of Support Services for Students with Disabilities as soon as possible. After receiving an accommodation form, the student should contact the instructor so that adjustments can be implemented in a timely fashion.

Contact:
Allyson Krings
Coordinator of Support Services for Students with Disabilities
Office: Hauke 106
(802)651-5961 Email: krings@champlain.edu

Assessment criteria for written assignments

A = The paper fulfills all the criteria necessary to earn a C and B grade and fulfills the following additional criteria:

1. The document shows a clear and significant central idea.
2. The document is organized to support that idea
3. All arguments are carefully considered and supported

B = The paper fulfills all the criteria necessary to earn a C and fulfills the following additional criteria:

1. The organization and structure of the document demonstrates careful planning.
2. The document demonstrates a concern for analysis and evaluation, rather than just reporting.
3. The document demonstrates an awareness of audience and purpose.

C = The document must fulfill all the following criteria:

1. The document has a clear plan with an identifiable introduction and conclusion.
2. Sentences make sense and conform to conventional patterns.
3. Generalizations are supported by details or cites that provide the details.
4. Grammar, punctuation and spelling is conventional and reasonable.
5. THE DOCUMENT PROVIDES THE INFORMATION PROSCRIBED IN THE ASSIGNMENT
6. THE DOCUMENT CONFORMS TO THE INSTRUCTIONS PROVIDED IN THE ASSIGNMENT

D = This document does not adequately meet the criteria to be as C paper and may also display the following problems:

1. The document is incoherent and unstructured
2. There are frequent errors in word usage, grammar, spelling, or and they compromise the reader's ability to understand the intention of the writer