CS 5460: Computer Security
Spring 2016

Location & Time:	Main 117, TH 9:00 AM – 10:15 AM
Instructor:	Dr. Chad Mano
Office:	Old Main 435
Office Hours:	TH 1:30 – 2:30 or by appointment
E-mail:	chad.mano@usu.edu
Phone:	435-797-5794
TA:	Sarbajit Mukherjee, sarbajit.usu@gmail.com
TA Office/Hours:	Main 422, Fri 2:00-3:00
Website:	Canvas
Required Textbook:	Charles P. Pfleeger and Shari Lawrence Pfleeger, *Security in Computing 5th edition.* Published by Prentice Hall PTR. ISBN 0134085043.
Credits:	3

Prerequisites

CS 2420 (Algorithms and data structures) and CS3100, Graduate Student, or Permission of Instructor. Note: This course assumes prior knowledge of computer systems and networks. An understanding of programming is required.

Course Description

This course introduces students to the basic computer and network security concepts, common attacks and methods to defend against them. Students will learn basic cryptography techniques, network protocol vulnerabilities and defenses, program, web and operating system security, case studies of security mechanisms and architectures deployed in practical networks/systems.

Topics include:

- Basic security concepts, threats/vulnerability/attacks, security mechanisms and services
- Cryptography basics: secret key cryptography, hashes and message digests, public key cryptography.
- Network security: vulnerabilities of TCP/IP protocols, Denial-of-Service (DoS) attacks, authentication and public key infrastructure, intrusion detection, firewalls, Kerberos, SSL/TLS, IPsec/VPN.
- Computer system security: operating system security (access control, capability, security policies, etc.), software vulnerabilities and malicious logic (buffer overflow, trojan horses, viruses, and worms), and web security (cross-site scripting, SQL-injection).

Course Objectives

- [Essential] Gaining factual knowledge (terminology, classifications, methods, trends in computer & network security);
- [Essential] Learning to apply course material to improve thinking and problem solving in computer & network security;
- [Essential] Learning fundamental principles of computer & network security;

- [Important] Developing specific skills, competencies, and points of view needed by professionals in the computer & network security field.

Grading

Requirement	Percentage of Grade
Assignments	60%
Midterms (2)	25%
Final	15%

Final grades will be based on the following percentages. The grading scale may possibly be adjusted down, but will not be adjusted up. This means, for example, that if your final percentage is 82%, you will be guaranteed a B- grade, but may receive a B depending on the overall performance of the class.

A	93%	C+	77%
A-	90%	C	73%
B+	87%	C-	70%
B	83%	D+	66%
B-	80%	D	60%

Exams

There will be one midterm exam and one final exam. These dates will not change.

Midterm 1	Thursday February 11, in-class or take-home
Midterm 2	Thursday March 24, in-class or take-home
Final	Tuesday May 3, 2016, 9:30 AM

Assignments

Assignments will vary throughout the semester and may include written response, programming, or the completion of labs. Unless otherwise specified, all homework will be submitted through Canvas. Please pay attention to any special instructions for submitting homework. There will be some very simple assignments such as completing a survey or showing proof of some activity/accomplishment.

Special Bonus! If you submit EVERY ASSIGNMENT on time, you have an option for the final exam. You will have the option to choose a portion (~50%) of the questions on the final exam to answer. Your final exam score will be comprised of 75% of your homework average and 50% of your final exam score.

Late Policy

Assignments are due at 11:59PM of the due date. The official clock is the Canvas system. Thus, if Canvas says it is late, then it is late. You can turn in assignments up to two days late with a 25% penalty each day. Assignments are typically due on Friday night, meaning you will have until Sunday night to turn it in. You are given one free pass where you are able to turn in an assignment up to two days late without penalty. This will occur automatically on the first assignment you turn in late. Use this wisely. If you turn in an assignment late and do poorly you will get 100% of the poor score. If you turn in a second assignment late and do great, you will get 75% or 50% of that great score.

Exams may not be made up except in extreme circumstances, and I must be notified as soon as reasonably possible in such an event.

Communication

Please sign up to receive an email when I post an announcement to the Canvas system. This will be the main way I communicate with the entire class outside the classroom.
The best way to contact me is during office hours, or via email. I will do my best to answer emails promptly, but emails coming in after 5:00 PM will typically be answered the following school day. Communication skills are an important part of your future career, and thus, are an important part of this course. Please use proper grammar, spelling, and etiquette in your communication with me, the TA, and your fellow classmates, and me. I will respond to you according to what you write/say, not necessarily according to what you intended to say. (If you ever write, "Let's eat Grandma," I will be calling the police, not letting your Nana know it's time for dinner).

When emailing, please include the course number and section in the subject line. This will help me answer emails in a more efficient manner.

Add Policy

The last day to add this class is February 1, 2016. Attending this class beyond that date, without being officially registered, will not be approved by the Dean's Office. Students must be officially registered for this course. No assignments or tests of any kind will be graded for students whose names do not appear on the class list.

Drop Policy

The last day to drop this class without notation is February 1, 2016. The last day to drop this class with a notation on transcript is March 18, 2016.

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Learning Aids

Lecture notes and other useful information will be available in electronic form on the class's section of the Canvas system. Please check the class's news and notes sections on a regular basis.
The Computer Science Department is a member of the Microsoft's DreamSpark program. Through this program, students in CS courses can obtain and use a number of Microsoft's operating and software packages. If you are interesting in downloading any of this software for your use, please follow the directions found on the department's website.

Academic Integrity – "The Honor System":

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students.
The Honor Pledge: To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity." A student who lives by the Honor Pledge

is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- is a welcomed and valued member of Utah State University.

Plagiarism and Cheating:

Plagiarism includes knowingly "representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged used of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling
This course adheres to the cheating policy for courses in the Department of Computer Science posted on the bulletin board outside the CS office on the 4th floor of Old Main and posted online at http://cs.usu.edu/policies-forms/cheating-policy.

Students with Disabilities:

Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

Sexual Harassment:

Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

Academic Freedom and Professional Responsibilities (Faculty Code):

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 further defines academic freedom and professional responsibilities: USU Policies Section 403