

Computer Security Concepts

Bulletin Description

This course provides an introduction to topics in computer security. We will cover a breadth of topics including confidentiality, integrity, availability, and authentication policies, basic cryptography and cryptographic tools, concepts in software security and network security, and legal and ethical considerations for security. The course will incorporate discussion of topical events in the news.

General Course Information

Term:	Fall 2021
Department:	COMP
Course Number:	435
Section Number:	001
Time:	TTh 11:00-12:15
Location:	Murphey Hall Rm 0116
Website:	https://cs.unc.edu/~csturton/courses/securityconcepts/435-fa21.html
CampusWire:	https://campuswire.com/p/GB6E3C104
Gradescope:	https://gradescope.com
Poll Everywhere	https://pollev.com/csturton

Instructor Information

Name:	Cynthia Sturton (she/her/hers)
Office:	FB 354
Office Hours:	TBA
Contact:	Message via Campuswire
Website:	http://www.cs.unc.edu/~csturton

Teaching Assistants & Learning Assistants

TAs:	TBA
LAs:	TBA

Resources & Textbook

There is no required textbook. Students who like to have a textbook to follow along can use the following:

- Computer Security and the Internet by Paul C. van Oorschot. ISBN: 1619-7100
Publisher: Springer

Suggested readings will be posted for every set of lectures.

CampusWire will be the main site for this course. The course schedule, announcements, and assignments will be posted there. It is also where to go to ask and answer questions. Here are some guidelines.

- If you are wondering about something, ask a question!
- Answer other students' questions and refine existing answers.
- Be polite; be kind.
- Do not post code or ask others to post code.
- You may post privately to the instructors, but we reserve the right to make all or part of the post public if we feel the question is of general interest to the class. (If we do this, we won't reveal any personal information about the original poster.)
- We may post questions on CampusWire that get emailed to the instructors if we feel the question is of general interest to the class.

Course Description

Building secure systems is the responsibility of all computer scientists, not just a few security specialists. To that end, the goal of this course is for students to develop a security mindset—an outlook that requires questioning every assumption and asking how that assumption may weaken security. Along the way, students will learn the security policies that matter for different systems and application domains, how attackers can and have thwarted those policies, sometimes in surprising ways, and what steps computer scientists and engineers can take to improve the security of the systems they design. The course will cover aspects of security ethics and privacy and will incorporate discussion of related events in the news.

Target Audience

This class is meant for computer science students who wish to develop literacy in foundational computer security topics. Students who have already taken Introduction to Computer Security (COMP 535) should not enroll in this class.

Prerequisites

The prerequisites are (COMP 401, 410, and 411) or (COMP 210, 211, and 301).

Goals and Key Learning Objectives

By the end of the course students will be able to:

- Apply a “security mindset” across major application domains
- Explain the basic building blocks of security
- Evaluate a given security policy in one of the major application domains
- Assess the support for security in a given system
- Create and apply a strategy for teaching oneself about a new technical domain
- Distinguish privacy as a consideration different from security

Course Requirements

Classes will be organized around pre-recorded lectures posted to YouTube, in-class discussion and lab work, and short quizzes on Poll Everywhere. There will be suggested readings from the textbook. There will be weekly or bi-weekly lab assignments over the course of the semester, one quiz per lecture, one student project, two midterms, and a final exam.

Key Dates

Midterm exam:	9/28/2021 (tentative)
Midterm exam:	11/18/2021 (tentative)
Final exam:	12/9/2021 @ 12 PM

Grading Criteria

Quizzes:	10%
Assignments:	40%
Project:	15%
Midterm exams:	20%
Final exam:	15%

Course Policies

Assignments, quizzes, and exams will be administered electronically. Late assignments, quizzes, or exams will not be accepted. Exceptions will be made only for students with a letter from the Dean of Students. In these cases, a suitable make-up assessment will be issued and graded accordingly. Students may drop one assignment grade and two quiz grades. Students must earn a 50% or higher on each midterm and the final exam in order to pass the course.

The course final is given in compliance with UNC final exam regulations and according to the UNC Final Exam calendar.

Face Masks

This semester, while we are in the midst of a global pandemic, all enrolled students are required to wear a mask covering your mouth and nose at all times in our classroom. This requirement is to protect our educational community -- your classmates and me -- as we learn together. If you choose not to wear a mask, or wear it improperly, I will ask you to leave immediately, and I will submit a report to the [Office of Student Conduct](#). At that point you will be disenrolled from this course for the protection of our educational community. Students who have an authorized accommodation from Accessibility Resources and Service have an exception. For additional information, see [Carolina Together](#).

Honor Code

Assignments are to be done individually. Students may discuss the assignment with others, but may not share code.

In the course of this class we may discuss known vulnerabilities and attacks on computer systems. This is not an invitation to exploit these vulnerabilities in real systems. You may not attempt to break into any system that is not your own; you may not attempt to thwart or circumvent the security of any system that is not your own. Doing so is, at a minimum, a violation of the honor code and likely a violation of the law. Use caution; even accidental exploits may be subject to prosecution.

Course Schedule

The course schedule will be posted on the course Campuswire site.

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Please contact the Director of Title IX Compliance (Adrienne Allison – Adrienne.allison@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gpsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.

Disclaimer

The professor reserves the right to make changes to the syllabus, including exam dates. These changes will be announced on Campuswire as early as possible.