

# 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 2020  
Department: COMP  
Course Number: 435  
Section Number: 001  
Time: MW 4:00-5:15  
Location: Online  
Website: <https://cs.unc.edu/~csturton/courses/securityconcepts/435-fa20.html>  
CampusWire: <https://campuswire.com/c/GD7918EDD/feed>  
Gradescope: <https://www.gradescope.com/courses/145619>  
YouTube: <https://www.youtube.com>

## Instructor Information

Name: Cynthia Sturton  
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Office Hours: TBD  
Email: [csturton@cs.unc.edu](mailto:csturton@cs.unc.edu)  
Website: <http://www.cs.unc.edu/~csturton>

## Teaching Assistants & Learning Assistants

TAs: TBD  
LAs: TBD

## Resources & Textbook

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

- Security in Computing, 5th Edition by Pfleeger, Pfleeger, and Margulies ISBN: 9780134085043 Publisher: Prentice Hall
- Computer Security and the Internet by Paul C. van Oorschot. ISBN: 1619-7100 Publisher: Springer

It is not necessary to purchase both books. Suggested readings from each book will be posted for every set of lectures.

CampusWire will be the main site for this course. The course schedule, announcements, and reading assignments will be posted there. It is also the best place to contact the instructor, TAs, and LAs. CampusWire 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 Piazza 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, this class will foster in students a security mindset—a way of examining any system to find vulnerabilities and assess their effect on security. Along the way, students will learn about the types of security policies one might care about, how attackers can and have thwarted security, sometimes in surprising ways, and what steps computer scientists and engineers can take to improve the security of their own systems. 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 (COMP535) 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
- Analyze basic legal terms regarding intellectual property

### **Course Requirements**

Classes will be organized around pre-recorded lectures posted to YouTube, weekly discussion meetings on Zoom, and short quizzes submitted to Gradescope. There will be suggested readings from the textbook (students may use either of the two textbooks listed above). There will be weekly or bi-weekly assignments over the course of the semester, one quiz per lecture, one student project, one midterm, and a final exam.

**Key Dates**

Midterm exam: 10/7/2020 (tentative)  
Final exam: TBD

**Grading Criteria**

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

**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 one quiz grade.

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

**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.

**Disclaimer**

The professor reserves the right to make changes to the syllabus, including exam dates. These changes will be announced on CampusWire and posted on the class website as early as possible.