Syllabus

CS 136 – Computer Security

UCLA

Winter 2021

Our textbook will be Matt Bishop's "Computer Security: Art and Science," 2nd edition.

The due dates listed here for the projects and the date of the midterm are tentative, and may be adjusted after the course starts. DO NOT COUNT ON THEM BEING EXACTLY AS SHOWN IN THE SYLLABUS! IF YOU MISS THE MIDTERM OR AN ASSIGNMENT DUE DATE BECAUSE IT DIFFERS THAN WHAT IS SHOWN HERE, YOU WILL NOT BE GIVEN AN OPPORTUNITY TO MAKE IT UP! Check the dates listed on the class CCLE web site for definitive information, bearing in mind that due dates may be adjusted as the class progresses. If you attend class and pay attention to what's posted on this web page, you will have no trouble with knowing the dates.

Because of the ongoing pandemic, this class will be offered on line. Lectures will be delivered via Zoom at the scheduled hours. The lectures will also be recorded and made available on the CCLE web page. Office hours will also be performed via Zoom. The Zoom links for lectures and office hours will be provided at the start of the quarter.

Grading

There will be a midterm, a final exam, and six projects that will be performed on a remote testbed. Grading will be as follows:

Midterm: 25%

Projects: 41%

Final Exam: 33%

Class evaluation: 1%

The first project is just a warmup that will familiarize you with the Deter testbed, the facility used for most of these projects. It is worth only 1% of your grade. The other five projects are worth 8% each. The class evaluation merely requires you to fill out the evaluation forms (both for the instructor and the TA). You will receive this credit just for turning in the evaluation, regardless of its content.

Formats of the midterm and final exams will be discussed in the week before they are being held. I typically make a sample exam with solutions available for both.

Some of the projects might have extra credit possibilities. That will be stated when the project is assigned. These will be the only opportunities for extra credit in this class.

I do not grade with a formal curve, but I will adjust the grading to match the distribution of student performance for the particular quarter.

Academic Honesty

I expect all students to follow the UCLA Student Conduct Code . This code prohibits cheating, fabrication, multiple submissions, and facilitating academic dishonesty. You can find further information about this code at the Student Guide to Academic Integrity. The Office of the Dean of Students offers a workshop video on academic integrity if you wish to understand UCLA's policies on this issue more thoroughly.

Group study is often useful and is encouraged, but this class' projects are to be performed by each student individually, with the exception of project 5, which will be done in a team. Other than project 5, you are not permitted to use any other students' code or written material in your projects, and you should not give your code or written material to any other students. You are not permitted to post your code to Github or to other web sites. In cases where multiple projects show signs of plagiarism, all involved parties will be reported to the Dean, so even if it was your work that was copied, you could still face consequences. Brief quotations from other sources are sometimes acceptable in project submissions, but submissions should be predominantly your own original work. If you include any material in your project submissions that is obtained from an online source, book, or other place, you must specify the sources for these parts of your submitted work.

I will provide information on the midterm and final exams close to the dates of those tests. ONLY the materials I describe then (if any) may be used during the test. Many winter classes, including this one, are expected to be on line. The tests will also be on line. Each test will be open for a 24 hour period. You may take the test during any time window (of a duration announced before the test) in that period.

If you have questions about the academic honesty policy, please discuss them with me. Be warned that we take academic honesty very seriously. We look for plagiarism in various ways. If you are able to find project solutions on line, we are likely to find them, too. I report all suspected cases to the Dean's Office, as university policy requires. Once reported, the matter is in the hands of the Dean, and I cannot further influence it. I strongly advise that you take no chances on academic honesty issues. If an issue of this kind is unclear to you, talk to me or to the TAs.

Class Schedule

Week 1 (January 4 –10)

Lecture 1: Introduction: Class Description and the Security Problem

Lecture 2: Security Principles, Policies, and Mechanisms

Deter Lab 1: Introduction to Deter due January 8

Week 2 (January 11 - 17)

Lecture 3: Introduction to Cryptography

Lecture 4: Cryptography, Continued

Week 3 (January 18 - 24)

Lecture 5: Cryptographic Keys

Lecture 6: Security Protocols

Deter Lab 2: Permissions and Firewalls due January 20

Week 4 (January 25 –31)

Lecture 7: Authentication

Lecture 8: Operating System Security

Deter Lab 3: Software Exploits due January 27

Week 5 (February 1 - 7)

Lecture 9: Network Security

Lecture 10: Network Security, Continued

Deter Lab 4: Computer Forensics due February 3

Week 6 (February 8 –14)

Midterm exam on February 9

Lecture 11: Intrusion Detection Systems

Week 7 (February 15 - 21)

Lecture 12: Malware

Lecture 13: Secure Programming

Deter Lab 5: Man in the Middle Attacks due February 17

Week 8 (February 22 – 28)

Lecture 14: Secure Programming, Continued

Lecture 15: Web Security

Week 9 (March 1 – 7)

Lecture 16: Evaluating System Security

Lecture 17: Privacy

Project 5 (Security Evaluation) is due March 3

Week 10 (March 8 – 14)

Lecture 18: Securing Your System

Lecture 19: TBA

Final exam: TBA

Other useful information:

UCLA Counseling and Psychological Services (CAPS) provides mental health care and resources for all registered students, including short-term individual and/or group treatment, urgent services and referrals when needed. Your well-being is the #1 priority of UCLA CAPS. Counselors available by phone at (310) 825-0768 24/7. Learn more at http://www.counseling.ucla.edu"

UCLA's Center for Accessible Education (CAE) "facilitates academic accommodations for regularly enrolled, matriculating students with disabilities. The CAE provides access to the numerous educational opportunities available to students on our campus and empowers students to realize their academic potential." If you need such an accommodation, please contact the CAE, as individual instructors cannot arrange these accommodations. Their web site is https://www.cae.ucla.edu/.