



CS 195 The Cybersecurity Clinic (2025-2026 Academic Year)

Bulletin Description

Students are placed in interdisciplinary teams to work on a cybersecurity project with non-profit organizations¹, pro bono. Students must complete application in March, and enrollment is permission of instructor only.

Course Description

Governments of all levels (small, state, federal, and international), non-profits, and small businesses have struggled with cyberattacks for far too long, growing worse each year. In addition, there has been a significant shortage in the cybersecurity workforce for over a decade.

The Tufts University Cybersecurity Clinic offers a wide range of Cybersecurity services to underserved and under-resourced non-profit organizations pro bono. Services include business continuity planning, risk mitigation, source code review, vulnerability assessments, and penetration testing. This initiative, in partnership with the School of Engineering, Tisch College of Civic Life, and The Fletcher School, builds on the interdisciplinary expertise at Tufts, and aims to build a diverse and inclusive cybersecurity workforce in the strong tradition of teaching, research, and public service at Tufts. The Cybersecurity Clinic is a full year Capstone experience.

Students will participate in both a class and clinic component. The class component will cover Cybersecurity concepts and skills, including risk management, ethics, access control, vulnerability assessment, and incident handling. The concepts and skills covered early in the course are necessary for clinic engagement with clients. Students' clinic responsibilities "will include learning about an organization's mission and context, assessing its vulnerabilities, and ultimately recommending, designing, and implementing mitigations to the identified security risks. The emphasis will be on pragmatic, workable solutions that take into account the unique operational needs of each partner organization"².

It is anticipated that students will spend on average 10 hours per week on Clinic work, but that number may fluctuate depending on needs from clients.

¹ Formerly non-profits in the Medford, Somerville, Cambridge, and Greater Boston communities, but now open to any non-profit organization in the United States.

² [Citizen Clinic Course Syllabus, Center of Long-Term Cybersecurity at the University of California, Berkeley](#)

Learning Objectives

Students will:

1. Learn how to assess, prioritize, and mitigate cyber risks to small organizations through case studies and simulated exercises on access and authorization controls, vulnerability scanning, network configuration and monitoring, penetration testing, and cyber incident response, amongst other topics.
2. “Understand how to communicate cybersecurity risks and solutions with organization and business leaders with no prior cybersecurity knowledge or experience.
3. Prepare to provide supervised hands-on cybersecurity services on a day-to-day basis to a small business, public sector organization, or nonprofit organization.

Attribution of Learning Objectives

These learning objectives are from the Applied Cybersecurity Foundations Course for the Applied Cybersecurity Community Clinic at the University of Texas, Austin.

Prerequisites

Students must have taken CS 116 Introduction to Security at Tufts, or an equivalent course at another institution. To be considered as a clinician, students must complete an application form. Ideal candidates will bring their perspective and interests from a field/sector outside of tech and Computer Science to the Clinic.

Clinic Communications

For chat among the Clinic, messaging, and announcements, we will use Discord. The Discord is invite-only.

Why Discord?

Why Discord for meetings? First, this course and ultimately the Clinic is open to students enrolled in our online graduate programs. *Second, and most importantly, we want to build a community of clinicians and Cybersecurity practitioners for the long run. Once you are a part of the Clinic, you will always be a member of the Clinic.* Alums of the clinic can mentor students, provide job opportunities, and share news related to Cybersecurity. While this course and Clinic is part of an academic environment, we need to start to transition to a professional environment, and many Cybersecurity teams and organizations use Discord for engagement and communications.

Limitations of Discord

Not everything can be done on Discord. File sharing, especially confidential information, on Discord is an absolute no-no. We will need to use Tufts Box for such files.

Class Meetings

Class meetings will be held at night on Zoom on Monday evenings at 5:30 PM EST. Class meetings will NOT be recorded and will only be limited to one hour per meeting.

Wait, Why Not Discord for Class Meetings?

We could. The problems are (1) guest speakers and (2) screen sharing when we do presentations. To be consistent and not constantly flip-flopping, we might as well use Zoom for meetings.

Assessment

- Client Deliverables (50%) - Your team's work and support for the client. Deliverables include assessments, presentations, results, recommendations, guides, etc. tailored towards the client's needs. At the end of the year, each team will deliver a final report summarizing work performed with their client.
- Feedback from Client (15%) - Your client will be asked at least twice a semester to provide an assessment of the project (i.e., "how is the project going?"). Assessment will include feedback on the team and on individuals. The comments from the client will be shared with each member of the team.
- 360 Degree Performance Review (5%) - During the semester, you will be asked to complete a performance review for each member of your team. Your comments will not be shared to any team members or with anyone in the course; comments will be kept confidential.
- Participation, Part 1: Weekly Meetings (5%) - You are required to attend a Clinic meeting each week and participate. If there is more than one meeting during a week (e.g., a duplicate of one for those who could not attend the first one), you only need to attend one of the meetings.
- Participation, Part 2: Weekly Contribution of a "Something We Should Know" (5%) - Cybersecurity is a constantly changing field. Being a Cybersecurity practitioner requires keeping up-to-date on incidents, tools and techniques, and happenings. Each week, you are required to share something that you have found or learned with regards to Cybersecurity to the Clinic on Discord. This can be a GitHub repository, a tweet, a news article, something that you contributed (e.g., a bug report to the Wireshark team), etc. No two contributions can be alike (e.g., data breach at a certain company); first come first serve. In the end, this will help grow everyone's professional development, and to provide a knowledge-base that shows how broad and expansive the Cybersecurity field is.
- Fall Closeout Presentation (20%, fall semester only) - At a dinner, each team shall give a presentation no longer than 10 minutes to close out fall semester. Presentation shall address:
 - Team's lessons learned so far
 - Things that we can do better (including your team, me, the entire Clinic, etc.)
 - Workplan for spring semester
- Team Case Study (20%, spring semester only) - Each team will be producing a case study that will be used for public purposes –with client information and sensitive data kept confidential. Case studies for the Clinic serve many critical long-term purposes:
 - To put together a collection of projects done by the Clinic.
 - To measure the effectiveness of the Clinic.
 - To promote the Clinic.
 - To communicate the work done by the Clinic, and ultimately by Tufts University as a whole.

- To serve as a portfolio item for Clinicians for future employers.
- To provide data for Security and Privacy research at Tufts University.

Course Policies

Students will be dismissed from the Clinic for missing 5 or more weekly meetings a semester.

No late deliverables to clients will be tolerated.

Student Code of Conduct

Please read the attached Student Code of Conduct carefully, sign and date the document, and return to the Clinic's supervising faculty.

Disability Accommodation

If you need disability-related accommodations in this class, if you have emergency medical information you wish to share with us, or if you need special arrangements, please inform us as soon as possible.

Schedule

Important note: schedule is subject to changes.

Week 1.1 (week of Monday, September 8th): About the Cybersecurity Clinic

- What is the Clinic and mission?
- TO DO: Read and sign the Cybersecurity Clinic Student Code of Conduct
- TO DO: Review 2024-2025 Case Studies after signing Code of Conduct
- TO DO BY END OF THE WEEK: Select client to work with
- Read: "Cybersecurity for Small Business: NIST Cybersecurity Framework"
https://www.ftc.gov/system/files/attachments/understanding-nist-cybersecurity-framework/cybersecurity_sb_nist-cyber-framework.pdf

TBD: Problem Diagnosis and Reframing. Guest Speaker: Lorna Koppel, CISO at Tufts University. We will use Zoom for this session, and it will be recorded!

- Read: "Surveillance Self-Defense: Your Security Plan" (EFF)
<https://ssd.eff.org/playlist/activist-or-protester#your-security-plan>. Important Note: know the definitions of underlined terms.
- Read: "Digital and Mobile Security for Mexican Journalists and Blogger" (Jorge Luis Sierra)
<https://freedomhouse.org/sites/default/files/Digital%20and%20Mobile%20Security%20for%20Mexican%20Journalists%20and%20Bloggers.pdf>

TBD: Structure and Functions of Nonprofit Organizations. Guest Speaker: Akiyo Fujii, Deputy General Counsel for Business Affairs at Tufts University. We will use Zoom for this session, and it will be recorded!

- Read: “A Primer on Nonprofit Organizations”
https://www.sog.unc.edu/sites/default/files/articles/article3_4.pdf
- Read: “Nonprofit Industrial Complex 101”
<https://communitycentricfundraising.org/2020/08/10/nonprofit-industrial-complex-101-a-primer-on-how-it-upholds-inequity-and-flattens-resistance/>

TBD: Meeting Your Client

- Confidentiality Agreement and Hold Harmless Agreement
- Reminders:
 - “Our students are just that – not experts. We cannot guarantee anything.”
 - “We don’t necessarily have the capacity to fix what our prior students may have done.”
 - “Tufts cannot be liable for a breach of confidentiality by our students.”

TBD: Inclusivity, Ethics, Equity, and Self Awareness in Teamwork. Guest Speakers: Mafalda Gueda and Grace Caldara.

Week 6.1 (week of Monday, October 13th): No Meeting

- Peruse "NIST SP 800-37 Risk Management Framework for Information Systems and Organizations"
<https://csrc.nist.gov/CSRC/media/Publications/sp/800-37/rev-2/draft/documents/sp800-37r2-draft-ipd.pdf> --Chapter 2 only.
- Review: CISA Checklists
https://www.cisa.gov/sites/default/files/publications/CISA_CPG_CHECKLIST_508c.pdf

Week 7.1 (week of Monday, October 20th): Team Presentations: The Cyber Threat to Small Businesses and Nonprofits

- Read: “Top Florida Law Official Describes 'Extremely Lax' Security At Hacked Water Plant (WJCT)”
<https://news.wjct.org/state-news/2021-03-09/top-florida-law-official-describes-extremely-lax-security-at-hacked-water-plant>
- Read: “The SolarWinds Cyber-Attack: What You Need to Know”
<https://www.cisecurity.org/solarwinds>

Week 8.1 (week of Monday, October 27th): 1:1 Meetings with Teams

Week 9.1 (week of Monday, November 3rd): TBD

Week 10.1 (week of Monday, November 10th): Clinic Core Hours / Team Check-In

Week 11.1 (week of Monday, November 17th): Clinic Core Hours / Team Check-In

Week 12.1 (week of Monday, November 24th): No Meeting

Week 13.1 (week of Monday, December 1st): Clinic Core Hours / Team Check-In

Week 14.1 (week of Monday, December 8th): Fall Semester Closeout Dinner. Location and time TBD

Week 1.2 (Wednesday, January 21st): 1:1 Meetings with Teams

Week 2.2 (Monday, January 26th): Spring 2026 Planning

Week 3.3 (Monday, February 2nd): No Meeting (bi-weekly meetings moving forward)

Week 4.2 (Monday, February 9th): Professional Development Meeting

Week 5.2 (Monday, February 16th): No Meeting

Week 6.2 (Monday, February 23rd): 1:1 Meetings with Teams

Week 7.2 (week of Monday, March 2nd): No Meeting

Week 8.2 (week of Monday, March 9th): Professional Development Meeting

Week 9.2 (week of Monday, March 16th): Spring Break

Week 10.2 (week of Monday, March 23rd): 1:1 Meetings with Teams

Week 11.2 (week of Monday, March 30th): No Meeting

Week 12.2 (week of Monday, April 6th): Professional Development Meeting

Week 13.2 (week of Monday, April 13th): No Meeting

Week 14.2 (week of Monday, April 20th): No Meeting (Holiday)

Week 15.2 (week of Monday, April 27th): Final 1:1 Meetings with Teams

Week 16.2 (week of Monday, May 4th): Final Presentations, After-Action Review (AAR), and Team Appreciation Dinner. Location and time TBD.