Syllabus for CS/IS 485 (Fall 2024)

This is the official course syllabus. You can find its latest version as well as most of the same information in a more accessible format (elsewhere) on the course website.

Course information

Course number

IS/CS 485

The CRN for the IS section of this course is 95790; for CS it's 95792.

Course title

Usable Security & Privacy

Detailed description

Cybersecurity and privacy incidents are often blamed on people's choices, but what led to these decisions? If we understand the reasons for these failures and how the systems themselves contributed to them, we can create better technologies that help improve people's security and privacy. In this course, we will study how security and privacy decisions are made in the real world, how incomplete or faulty assumptions may cause mistakes to be made, and what it takes to design and develop systems that overcome these issues. The course will synthesize and present important research in security, privacy, and human-computer interaction. In addition, students will learn and practice techniques, which are commonly used by user experience researchers, that will help them independently evaluate the usability of systems."

Prerequisites

Enrolling students are expected to have passed *one* of the following courses:

- IT 230. Computer and Network Security
- CS 351. Introduction to Cybersecurity
- CS 608. Cryptography and Security
- CS 645. Security and Privacy in Computer Systems

Additionally, the following courses are *recommended*:

- IS 247 - Designing the user experience
- IS 375 - Discovering user needs for UX
- IS 448 - Usability & measuring UX
- IT 331 - Privacy & information technology

If you have a strong interest in the topic but lack the formal prerequisites, please contact me in advance.

Learning outcomes

Students completing this course will:

- Discuss concrete instances of security and privacy failures in common technologies
- Be able to explain how human factors contributed to these issues
- Learn about research findings in a variety of domains in usable privacy and security
- Practice methodologies for evaluating the usability of systems
- Understand how to apply human-centered design for security and privacy systems

Meeting-by-meeting outline

> 🔥 Subject to change
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> Please keep in mind that the schedule may change as the course progresses, so please regularly check the course website for any changes.

Week	Day	Date	Class	Lecture	Due
1	Tue	9/3	1	Security	
	Thu	9/5	2	Usable encryption	
2	Tue	9/10	3	UsabilityQualitative methods	
	Wed	9/11			Homework 1

Week	Day	Date	Class	Lecture	Due
	Thu	9/12	4	Quantitative methods	
3	Tue	9/17	5	Experiment designEthics	
	Wed	9/18			Homework 2
	Thu	9/19	6		
4	Tue	9/24	7	Passwords	
	Wed	9/25			Homework 3
	Thu	9/26	8	Password managers & MFA	Project: partners
5	Tue	10/1	9	Password alternatives	
	Wed	10/2			Homework 4
	Thu	10/3	10	Phishing & security warnings and indicators	
6	Tue	10/8	11	Mobile permissions	
	Wed	10/9			Homework 5
	Thu	10/10	12	Privacy in social media	Project: proposal
7	Tue	10/15	13	Web tracking	
	Wed	10/16		Privacy	Homework 6
	Thu	10/17	14	Deceptive design	
8	Tue	10/22	15	Privacy policies	
	Wed	10/23			Homework 7
	Thu	10/24	16	Smart home privacy	
9	Tue	10/29	17	Usable anonymity and censorship circumvention	
	Wed	10/30			Homework 8
	Thu	10/31	18	Election security	Project: background
10	Tue	11/5		*Election day*	
	Wed	11/6			Homework 9
	Thu	11/7	19	Software developers / Security professionals	
11	Tue	11/12	20	Vulnerable populations	
	Wed	11/13			Homework 10
	Thu	11/14	21	Accessibility	
12	Tue	11/19	22	Children & teens	
	Wed	11/20			Homework 11
	Thu	11/21	23	Older adults	Project: artifact
13	Tue	11/26	24	International & multicultural perspectives	
	Thu	11/28		*Thanksgiving*	
14	Tue	12/3	25		Project: presentation
	Wed	12/4			Homework 12
	Thu	12/5	26		
15	Tue	12/10	27	Reflections on trusting trust	

Week	Day	Date	Class Lecture	Due
	Wed	12/11		Project: report
	Thu	12/12	*Reading day*	
16	Tue	12/17		
	Thu	12/19		

Grading

Grade weights

Homework (x12) + current events assignment	50%
Project	20%
Final exam	20%
Attendance & participation	10%

The relative weights of each assignment are subject to change without notice.

Late policies

Homework late policy

The following late policy applies to assignments designated as homeworks:

- For each day (fraction of 24 hours) an assignment is late, it will receive a deduction of 10% of the maximum allotted point value.

  - e.g., an assignment submitted up to 24 hours late and earning a score of 77% will become a score of 67%

- Assignments submitted more than 4 days (96 hours) late receive no credit.
- At the end of the semester, 3 late days will be automatically waived from *homework* assignments.

These late days are intended to be used for exceptional circumstances (illnesses, family emergencies, etc.), so please plan accordingly. No additional credits will be granted. For extended absences, please first contact the Dean of Students office to obtain supporting documentation.

Other assignments

For other assignments, each one will specify its own late policy.

Attendance

A portion of your grade will be determined by your attendance and participation in class discussions. This is because I think that participating in these discussions — articulating your own thoughts and discussing them with others — are a key part of learning in this class. I understand that life happens — for example, you might get sick or your car might break down — so **you will not be penalized if you miss a small number of classes, and you don't need to contact me about individual absences**. For extended absences, please follow standard university policies about contacting the Office of the Dean of Students.

Grading scale

The course will be graded using the standard absolute scale, converting numerical scores to letter grades; i.e., this course is not curved. Final letter-grade cut-offs may be adjusted to reflect natural clusters of performance.

	Score
A	$> 90\%$
B	$80\% - 90\%$
C	$70\% - 80\%$
D	$60\% - 70\%$
F	$< 60\%$

Alternative grading

In exceptional circumstances, solely at the instructor's discretion, any assignment or examination grade may be replaced by the student's score on an oral examination with topics equivalent to those covered in the assignment. Students who choose not to participate in this examination will receive no credit for the assignment or exam in question.

Instructor information

Nathan Malkin

Office hours

There will be two types of office hours in this course. Both will be held in **GITC 3800**.

Open office hours

These will be **Tuesdays, 5:30–6:30 PM**.

- These are unscheduled, so please come without any prior notice.
- If multiple people show up, I will try to accommodate everyone, for example by answering questions in a group or focusing on topics that the plurality of those in attendance are interested in.
- If you have a question about course topics or assignments or anything else you think might be of interest to others, please try to come to these office hours.

Individual office hours

These will be **Thursdays, 5:30–6:30 PM**, in 15-minute slots.
To reserve a slot, follow this link.

- These office hours are for questions you're more comfortable discussing one-on-one, such as grading issues, career advice, etc.
- I'll prioritize anyone who has a reservation, but if a slot is unscheduled, I'll treat it like the open office hours above (so come on by!).

Course materials

Required

No required textbooks. All required readings will be linked from the course website.

Optional

Any optional readings will be linked from the course website.

Communication expectations

Ed Discussion (EdStem) should be used for all course-related communications; this makes it easier for the staff to manage and ensures more timely responses. For non-public topics (absences, grading concerns, etc.), please create a private thread. **Emails on course topics may be left unanswered.**

Please start on assignments ahead of time and ask questions early. **Assignment-related questions may be left unanswered if posted within 24 hours of the due date.** In

general, please don't expect immediate responses. We will aim for next-day replies to most topics and questions.

When submitting assignments, please follow instructions about formatting precisely — this speeds up grading so we can get you feedback faster. Any submissions that do not follow the exact specified format will lose 10% of the maximum allotted points per deviation. Those deemed ungradeable will receive no credit.

Examination details

This course will have a final exam on the date prescribed by the university.

Make-up exam policies

There will be no make-up exams or special accommodations for missed assignments, except as required by university policy. However, if you know about your absence in advance, contact me as early as possible to discuss potential paths forward.

Accommodations

If you require accommodations for the exam or any other assignments, you must contact the course staff within the first two weeks of the beginning of semester. Please make a private Ed post with all necessary information.

Course, department, and university policies

Collaboration policy

Except where otherwise noted, submitted assignments must be completed individually. You may discuss the topics and materials with other students, but any write-up you submit must be fully and completely your own work.

If you're not sure whether something would be considered acceptable collaboration, please proactively contact the course staff.

As per standard policy, while you retain all intellectual property rights to your work, we may hold on to copies of it and use it for checking for plagiarism, including through services such as Turnitin.

Generative artificial intelligence policy

AI tools can be very helpful, but they come with flaws and limitations. In the context of this course, I believe that the use of AI tools will hurt rather than help the educational objectives, and therefore the use of AI tools is **discouraged**.

If you choose to use an AI tool for any assignments, somewhere in your write-up you are *required* to clearly specify which one(s), how it was used (including any prompts you provided, and the tool's responses), and specifically identify its outputs and other contributions in any work you submit. You are responsible for the correctness of your work and are therefore expected to take steps to verify that you are not including or citing any hallucinated information. Failure to follow this policy will be treated as a violation of academic integrity, including a score of zero for the assignment and a report to the Office of the Dean of Students.

If you're not sure whether something would be considered acceptable use, please proactively contact the course staff. However, in all cases, not disclosing your usage will receive more serious consequences than if you are forthcoming about it.

While "AI detectors" are known to be unreliable, and we promise not to make any judgments solely on their basis, we retain the discretion to submit your work to any such services.

Mental health and wellness

The academic environment can be stressful. Your well-being should always come first. NJIT's Center for Counseling and Psychological Services offers a variety of resources. Please reach out to them if you need to, and I will do my best to support you with appropriate accommodations.

If you're sick

If you're not feeling well, please stay home. You're likely to feel better more quickly, and you'll be protecting everyone from getting infected. Please reach out to your peers for class notes or, if those are not available, contact me. If you do choose to come to class while not feeling 100%, then please wear a well-fitting N95 or KN95 mask. Please keep in mind that everyone responds to illness differently, and what for some can be a simple cold can manifest in others as serious medical issues. Thank you for protecting your peers (and me)!

Academic integrity

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your

educational investment by knowing and following the academic code of integrity policy that is found at: NJIT Academic Integrity Code.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"

Class recordings

"Class sessions may be recorded by the instructor. These recordings shall only be used as an educational resource and are not to be distributed or used outside of this class. Information on how to access recorded lectures will be made available by your instructor. Any recordings that contain identifiable information about students will not be used beyond this semester.

Students are expected to respect their fellow students' privacy and freedom to learn without disruption. Students are not allowed to capture or reproduce anyone's name, image, or voice without permission. They must be polite and respectful in the online chat. Informal chat is okay, but typing is restricted to things that one would say out loud in front of the entire class. Students must always conduct themselves on their webcam video as they would in person in a classroom."

Extenuating circumstances & other situations

"When a student invokes extenuating circumstances for any reason (late withdrawal from a course, request for a make-up exam, request for an Incomplete grade, request for accommodation due to illness) the student should be referred to the Dean of Students Office. The Dean of Students will make the determination of whether extenuating circumstances exist and will notify the instructor accordingly. Instructors should never request or accept medical or other documents from students; all documents should be submitted by the student to the Dean of Students Office. Except for cases determined by law, an instructor is not required to accommodate student requests even when extenuating circumstances are certified by the Dean of Students; however, all efforts should be made to ensure a student-friendly environment."

Sexual discrimination or harassment

According to federal and university Title IX policy, all instructional staff are *"required to report any Prohibited Conduct involving students to the Title IX Coordinator that they witness or become aware of."*

"Any observed, experienced or known discrimination on the basis of sex, gender identity, or sexual orientation, including the following forms of sexual harassment: sexual violence, dating violence, domestic violence and stalking involving any member of our university community, must be reported."