Carnegie Mellon University

Academic Year 2024-2025

Software and Societal Systems Department
School of Computer Science

Master's Student Handbook

Masters in Privacy Engineering

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SECTION 1: Welcome & Introduction

Welcome to the MSIT-Privacy Engineering program. We have prepared this handbook to provide some guidance about the requirements of your academic program as well as resources at Carnegie Mellon University (CMU).

While this handbook is specific to your academic experience in the program, there are several other resources and offices graduate students are encouraged to consult during their tenure at Carnegie Mellon University.

- University-Wide Graduate Student Handbook (Office of Graduate & Postdoctoral Affairs)
- The Word Student Handbook

SECTION 2: Program Vision, Mission, and Values

The Privacy Engineering program will equip you, to grapple with the ever-changing legal landscape in privacy while at the same time arming you with a tool-kit of deep privacy engineering fundamentals.

Privacy Engineering Master's program is the first and only program dedicated to training software engineers to develop products and services which respect user privacy. Classroom instruction, student research projects, internships, and capstone projects done in partnership with industry give our students the skill set needed to identify and resolve privacy challenges in modern software systems.

Our first-of-its kind Master of Privacy Engineering degree is designed specifically for computer scientists and engineers who want to make a meaningful impact as privacy engineers or technical privacy managers. Students who elect to take a summer internship typically finish the program in 16 months, and those who do not take an internship may finish in 12.

SECTION 3: Degrees Offered

The Privacy Engineering program is a full-time master's program for students at Carnegie Mellon's Pittsburgh campus. It requires 162 units to complete and offers two tracks: 12 months and 16 months.

Students enrolled in the 12-month track will typically begin in the Fall semester, complete the program at the end of the following summer, and will graduate in August.
Students that are enrolled in the 16-month track will typically begin in the Fall semester and will complete the program at the end of the following fall to allow for a summer internship graduating in December.

Additionally, a Part-Time Privacy Engineering program is offered. This is designed to be delivered remotely online. However, students who are in Pittsburgh are welcome to attend classes in-person Student in this program take 159 total units (typically over the course of two or more years but timelines can be adjusted with consultation from the student's advisor) and compete the Capstone over two semesters.

Students in the 12- or 16-month programs can choose to switch between the tracks but we expect students to commit to a track by the end of the first (Fall) Semester.

Students on F-1 or J-1 documents must report program changes to OIE within 10 days of any changes.

SECTION 4: Departmental Personnel

Office of the Dean

- Martial Hebert - Dean and University Professor
- Nichole Merritt - Assistant Director of Administration

Department Head

- Nicolas Christin- Software and Societal Systems Department

Graduate Education

- David Garlan - Associate Dean for Masters Programs

Software and Societal Systems Department

- Victoria Poprocky - Assistant to the Director
- Monika De Reno - Deputy Director

Privacy Engineering

- Lorrie Cranor – Co-Director
- Norman M. Sadeh – Co-Director
- Hana Habib – Associate Director
- Adam Miller – Academic Coordinator

SECTION 5: Departmental Resources

All students have access to the Privacy Engineering student space in TCS Hall (TCS 434)

Keys

Keys to TCS 434 as well as the shared spaces and kitchenette cabinets are distributed to each student at Orientation or in advance by contacting **Adam Miller** (adamm2@andrew.cmu.edu)

-It is the responsibility of the student to return the keys upon leaving the program.
-Lost keys may be replaced on request

Security

In the event of an emergency, contact Campus Police at: (412) 268-2323

Keycard Access to TCS Hall is included with the student's Carnegie Mellon identification card.

For the security, safety, and privacy of your fellow Privacy students, please do not invite friends into the Privacy space on a regular basis.

In case of theft of property, either personal or University, please notify Paul Stockhausen, Campus Security.

Conference Rooms

Conference meeting rooms are available for students. These rooms are reserved by **Adam Miller**. Please contact him reservations.

Computing equipment

Notify S3D IT technical support staff for assistance with technical needs.

Computers: contact the Andrew help desk (Ext. 4357) or the S3D Systems Mgr. (Ext. 7138).

Accidents on CMU Property

Please report all accidents to Paul Stockhausen. You will be asked to complete an accident report PRINTING AND COPYING PRINTER/COPY MACHINES. These are located on each floor of TCS Hall in the Kitchenettes

Office Supplies

Kitchenettes on each floor of TCS Hall are stocked with basic office supplies. If additional office supplies are needed, please contact **Adam Miller.**

SECTION 6: Advising

6.1: Role of an Advisor and Advisor Assignments

Advisors for the Masters in Privacy Engineering Program will be one of the two program directors – Prof. Lorrie Cranor or Prof. Norman Sadeh -- or the associate director, Hana Habib. Students will be informed of their assigned advisor prior to first year Orientation.

Advisors will assist students by:

- Consulting with student on course planning
- Approving which technical and regular electives will count for course requirements.
- Approving increases to max units for a semester
- Consulting on and approving adjustments to course plan

- Giving advice and guidance on internship planning
- Approving switches between 12, 16 and part-time tracks of the program
- Specific questions related to student's coursework and academic progress

Student Expectations

Students are expected to give Advisors or Program Staff adequate advance notice on any requests or concerns that may affect the student's Academic progress. (ie. required paperwork, changes to course plan, switching between the Program tracks, course adds or drops)

Meeting with Advisors

Meetings with advisors can be scheduled as needed. There is no pre-set schedule for meeting with advisors. Each semester, a Student Town Hall will be conducted to give students an opportunity as a group to ask questions and give feedback to the Program Directors and Staff

To set up individual or recurring meetings their advisors, student can contact their advisor directly or contact the program's Academic Coordinator – Adam Miller – adamm2@andrew.cmu.edu

Adam can be contacted first for assistance with course registration and scheduling, academic forms or paperwork in need of processing or any general questions regarding the program.

Questions or requests regarding the Privacy Student Room in TCS Hall can also be directed to Adam.

Changing Advisors

Students are welcome to request a change of Advisor.
If a student feels it necessary to change Advisors, they may contact the Academic Coordinator – Adam Miller with their request and it will be considered and resolved by the Program Directors.

Procedure for written notification of inadequate progress toward degree

It is recommended that student confirm the courses they plan on taking each semester with their Advisor or Adam to ensure they are on track to meet their degree requirements. If there are concerns about a student's academic progress, the student will be notified of the specific concerns via email from their advisor and will be set up with an advisor meeting to discuss to issue in detail. The advisor will then consult on a plan to address the issue.

6.2 Review/Redress of Academic Conflicts

Please refer to the Summary of Graduate Student Appeal and Grievance Procedures for University policy and procedures.

SECTION 7: Master's Degree Requirements

7.1: Residency Requirements

U.S. government regulations require F-1 and J-1 international students to be enrolled in an in-person degree program, with in-person expectation coursework.

7.2: Registration Process

Students are responsible for registering for their own courses but should consult their advisors when selecting their courses for each semester. For assistance with waitlists or registration for core Privacy courses please contact **Adam Miller (adamm2@andrew.cmu.edu)**

Refer to the Registrar Website for policies and deadlines regarding course ads, drops and withdraws.

7.3: Required Units for Degree Attainment

Full-Time (12 or 16 Month) Privacy Engineering Program

Overall Requirements:

162 Total Units

66 Units of Required Courses

- (17-631) Information Security, Privacy, and Policy - 12 units
- (17-562) Law of Computer Technology - 6 units
- (17-731) Foundations of Privacy – 12 units
- (17-733) Privacy Policy, Law, and Technology – 12 units
- (17-734) Usable Privacy and Security – 12 units

- (17-735) Engineering Privacy in Software – 12 units

12 Units of Technical Electives

30 Units of General Electives

(17-609) Internship for Privacy Engineering (3 units)

(17-702) Three Instances of Privacy Seminar (3 Units Each)

(17-607) Privacy by Design Practicum project (“capstone”) – 24 units
(17-606) by Design Workshop – 6 units each

Part-Time Privacy Engineering Program

Overall Requirements:

159 Total Units

72 Units of Required Courses

- (17-631) Information Security, Privacy, and Policy - 12 units
- (17-562) Law of Computer Technology - 12 units
- (17-731) Foundations of Privacy – 12 units
- (17-733) Privacy Policy, Law, and Technology – 12 units
- (17-734) Usable Privacy and Security – 12 units
- (17-735) Engineering Privacy in Software – 12 units

12 Units of Technical Electives

24 Units of General Electives

(17-702) Three Instances of Privacy Seminar (3 Units Each)

(17-607) Privacy by Design Practicum project (“capstone”) – 24 units
(17-606) Two Instances Privacy by Design Workshop – 6 units

7.4: Core Courses

17-631 Information Security, Privacy, and Policy

As layers upon layers of technology mediate increasingly rich business processes and social interactions, issues of information security and privacy are growing more complex too. This course takes a multi-disciplinary perspective of information security and privacy, looking at technologies as well as business, legal, policy and usability issues. The objective is to prepare students to identify and address critical security and privacy issues involved in the design, development and deployment of

information systems. Examples used to introduce concepts covered in the class range from enterprise systems to mobile and pervasive computing as well as social networking. Format: Lectures, short student presentations on topics selected together with the instructor, and guest presentations Target Audience: Primarily intended for master students with a CS background or equivalent. Also open to motivated undergrads as well as PhD students interested in a more practical, multi-disciplinary understanding of information security and privacy.

17-662 Law of Computer Technology (A1 6-unit mini)

This course consists of the first half of the 12-unit course 17-762. It is both a survey of computer law and an examination of how courts evaluate technological evidence in their decision-making. It deals with the most important and controversial issues in technology law today. The material is divided into six primary subjects: 1. Legal process: how courts operate, how lawsuits are conducted, what happens in appeals, who has to obey the determination of a court, over whom can a court exercise power, and regulatory law. 2. Evidence: what has to be proven to a court and how it is done, rules of evidence, burdens of proof, expert testimony. 3. Business Transactions: software licenses, clickwrap contracts, electronic transactions. 4. Personal Intrusions: social media, libel and defamation, data privacy, position monitoring. 5. Intellectual Property: trade secrets and confidentiality agreements. No legal background is required or assumed. This is not a law school course. Great effort is expended to keep the syllabus current based on breaking legal events. Therefore, the content and ordering of lectures may vary somewhat as the course progresses.

17-731 Foundations of Privacy

Privacy is a significant concern in modern society. Individuals share personal information with many different organizations - healthcare, financial and educational institutions, the census bureau, web services providers and online social networks - often in electronic form. Privacy violations occur when such personal information is inappropriately collected, shared or used. We will study privacy in a few settings where rigorous definitions and enforcement mechanisms are being developed - statistical disclosure limitation (as may be used by the census bureau in releasing statistics), semantics and logical specification of privacy policies that constrain information flow and use (e.g., by privacy regulations such as the HIPAA Privacy Rule and the Gramm-Leach-Bliley Act), principled audit and accountability mechanisms for enforcing privacy policies, anonymous communication protocols - and other settings in which privacy concerns have

prompted much research, such as in social networks, location privacy and Web privacy (in particular, online tracking & targeted advertising).

17-733 Privacy Policy, Law, and Technology

As new technologies are developed, they increasingly raise privacy concerns- the Web, wireless location-based services, and RFID are a few examples. In addition, the recent focus on fighting terrorism has brought with it new concerns about governmental intrusions on personal privacy. This course provides an in depth look into privacy, privacy laws, and privacy-related technologies. Students will study privacy from philosophical, historical, legal, policy, and technical perspectives and learn how to engineer systems for privacy. This course is appropriate for graduate students, juniors, and seniors who have strong technical backgrounds. 8-733 is for PhD students. 8-533 and 19-608 are for undergraduate students. Masters students may register for any of the course numbers. This course will include a lot of reading, writing, and class discussion. Students will be able to tailor their assignments to their skills and interests, focusing more on programming or writing papers as they see fit. However, all students will be expected to do some writing and some technical work. A large emphasis will be placed on research and communication skills, which will be taught throughout the course.

17-734 Usable Privacy and Security

Our "Usable Privacy and Security" course, developed at CMU in 2006 by faculty in three departments, is designed to introduce students to usability and user interface problems related to privacy and security and to give them experience in designing studies aimed at helping to evaluate usability issues in security and privacy systems. The course was designed for students interested in privacy and security who would like to learn more about usability, as well as for students interested in usability who would like to learn more about security and privacy. In addition to faculty and guest lectures, students present and discuss usable privacy and security research papers. Students work in interdisciplinary teams on a project throughout the semester under the guidance of faculty mentors.

17-735 Engineering Privacy in Software

Privacy harms that involve personal data can often be traced back to software failures, which can be prevented through sound engineering practices. In this course, students will learn how to engineer privacy using modern methods and tools for software requirements, design and testing. This integration includes how to collect and analyze software and privacy requirements, how to reconcile

ambiguous, inconsistent and conflicting requirements, and how to develop and evaluate software designs based on established privacy principles, including how to analyze design alternatives to reduce threats to personal privacy. After completing this course, students will know how to integrate privacy into the software development lifecycle and how, and when, to interface with relevant stakeholders, including legal, marketing and other developers in order to align software designs with relevant privacy laws and business practices.

7.5: Electives

A list of potential electives can be found at:

https://privacy.cs.cmu.edu/masters/plan/courses/index.html

7.6: Protocol for Evaluation of Transfer Credit

The Privacy Engineering program does not accept transfer credit from other universities. Students who have previously completed coursework equivalent to a required course should speak to their advisor about the possibility of enrolling in a more advanced course to meet the requirement.

7.7: Internship/Co-op Requirements and Opportunities

Students who wish to take a summer internship must be enrolled in the Privacy Engineering Practice 16-month track and will be required to register for the 3-unit course Internship for Privacy Engineering (17-609).

This option is open to all students, US and International. International students are required to consult with the Office of International Education for eligibility for work authorization before starting or seeking an internship/co-op or consulting opportunity. International students will benefit from proactively reviewing OIE guidance regarding off-campus work authorization. Off-campus work authorization processing times can take several weeks or months, and international students will benefit from starting the off-campus work authorization process as early as possible.

Student will not be charged tuition for the 3-units.

Students are expected to enroll in the Current Topics in Privacy Seminar course when returning from their internship in the Fall. Students will be required to write and present a final

report on the experience at the beginning of the Fall semester. Students who wish to enroll in a course that conflicts with the seminar may do so only with the approval from the program directors.

Resources to Explore Potential Internships:

- Faculty Recommendations
- Career and Professional Development Center

7.8: Credit for Courses Taken Towards Other CMU Degrees

Students who have earned CMU degrees in other programs may count towards their privacy engineering degree up to 24 units of graduate-level coursework they took and counted towards graduation in the other program as long as they received a B- or better in these courses and if they satisfy privacy engineering requirements. If students took more graduate level courses than required to graduate in the other program, they may additionally count the extra courses towards their privacy engineering degree if they received a B- or better and if these courses satisfy privacy engineering requirements.

Students who took the 9-unit undergraduate version of a privacy engineering core course and received a B- or better may use that course to satisfy the relevant core course requirement if they complete an additional 3 units of independent study that involves completing the extra work, they would have been assigned had they taken the 12-unit version of the course. Students should contact the professor who taught the 9-unit course to arrange for independent study.

7.9: Capstone Requirement

Students completing their Capstone will be registered in **courses 17606 - Privacy by Design Project Workshop and 17607 - Privacy by Design Practicum**

At the beginning of the Semester in which they are enrolled in these courses, student will be presented with project options and given the opportunity to rank their preferred selections. Based on these preferences (with no guarantee of receiving first choice) students will be assigned to project groups.

Students will work in small teams on a large semester-long project for a project sponsor. Students will be expected to deliver a final report and project presentation at the end of the semester. Students work on the Capstone project 30+ hours per week over the course of the semester.

Project sponsors specify a real-world privacy challenge they would like students to address and outline deliverables which may include reports, surveys, prototypes, user studies, frameworks, competitive analyses, training materials, and more.

Project teams will set up weekly meetings with their sponsors to discuss their progress and goals. Each project team is supervised by a privacy engineering faculty member. Sponsors are invited to attend final project presentations in person or virtually to see the results.

SECTION 8: Department Policies & Protocols

8.1: New Policies / “Grandfather” Policy

When policies change, it is because the department recognizes that the newly adopted rule is an improvement. Students enrolled in a degree program that is affected by a change in policy may, in some cases, choose to be governed by the policy in effect at the time of their matriculation.

8.2: Time Away from Academic Responsibilities

University Holidays are also student holidays, and students need to consult their faculty about coverage if they have challenges with taking time off during University Holidays. For example, if experiments are running that need to be monitored continuously, students should speak with their faculty about arrangements to take an equal number of days off at another time.

SECTION 9: Grading & Evaluation

9.1: Department Policy on Pass/Fail, Satisfactory/Unsatisfactory

All courses to be used toward degree completion requirements must be letter-bearing. Students may take elective courses for their educational enrichment on a pass/fail basis, with the understanding that they will not fulfill degree requirements.

9.2: Department Policy for Incompletes

Carnegie Mellon students are expected to complete a course during the academic semester in which the course was taken. However, if the instructor agrees, a grade of “I” or

“Incomplete” may be given when a student has been unable to complete the work of a course. Moreover, the work completed up to that date must be of passing quality and the grade of incomplete provides no undue advantage to that student over other students. In awarding an “I” grade, an instructor must specify the requirements for the completion of the work and designate a default letter grade in the event that the student fails to complete the remaining work. Students must complete the required course work by no later than the end of the following academic semester, or sooner if required by the instructor. The instructor must record the permanent course grade by the last day of the examination period of the following semester, or the default grade will be automatically assigned by the Registrar.

9.3: Independent Study

Independent study can be arranged with the approval of the supervising faculty as well as the student’s program advisor.

A student approved for Independent Study will register for **17608 - Privacy Engineering Independent Study**

9.4: GPA Requirements

Grade requirement. Students must earn a "B-" or better in a course for it to satisfy any requirement. Students cannot count pass/fail courses towards any graduation requirement. Students are welcome to switch a course to pass/fail but it will not count towards the total units.

9.5: Satisfactory Academic Standing

Appealing Final Grades

Final grades will be changed only in exceptional circumstances and only with the approval of the instructor and the department, unit or program. Grading is a matter of sound discretion of the instructor and final grades are rarely changed without the consent of the instructor who assigned the grade. The following circumstances are the unusual exceptions that may warrant a grade appeal: (a) the final grade assigned for a course is based on manifest error (e.g. a clear error such as arithmetic error in computing a grade or failure to grade one of the answers on an exam), or (b) the faculty or staff member who assigned the grade did so in violation of a University policy.

Information on the steps of the appeal process can be found here:
https://www.cmu.edu/graduate/resources/appeal-grievance-procedures.html

SECTION 10: Funding & Financial Support

10.1: Travel/Conference and Research Funding

The Privacy Engineering Program may elect to provide limited conference travel funding at the discretion of the Program Directors, but students who receive this funding may only receive it once.

10.2: Additional Sources of Internal & External Financial Support

The following information is designed to help international students in the search for additional sources of financial aid for attendance at SAIS. This list includes a Fellowship Program from the Institute of International Education, several Loan Programs, and relevant websites and online sources of information.

Grants and scholarships:

1. Institute of International Education (IIE)
The IIE is a nonprofit organization that promotes international education. They provide information about the Fulbright Program on their website: www.iie.org. Number and amount of grants differs from country to country. They also publish several useful guides, including *Funding for US Study: A guide for Foreign Nationals, English Language Orientation Programs (*a guide to ESL programs in the US), and *Academic Year Abroad*. Books can be ordered through e-mail to iie-books@iie.org.

You may also write to:
Institute of International Education (IIE)
809 United Nations Plaza
New York, NY 10017-3580

2. Ford Foundation International Fellowship Program (IFP)
The Foundation sponsors three minority graduate fellowship programs - predoctoral, doctoral, and postdoctoral - through the National Research Council. For information write or call the

National Research Council
2101 Constitution Avenue
Washington, DC
20418 tel: (202)
334-2872

The IFP provides support for up to three years of formal graduate-level study. Fellows will be selected from countries in Africa and the Middle East, Asia, Latin America, and Russia where the foundation maintains active overseas programs.

U.S. nationals are not eligible, although fellows may study in the United States. IFP Fellows must be nationals of eligible countries. Please refer to the following website for more detailed information concerning the application process, eligible candidates, and IFP requirements: www.fordfound.org.

International students may find the information on the websites below helpful in researching funding sources:

- www.internationalscholarships.com
- www.edupass.org
- www.educationusa.state.gov
- Native Leadership Scholarship (women only)
- http://www.onsf.uconn.edu/find-scholarships/opportunities-for-non-us-citizens/ • International Options.pdf