COMP 2109A for Winter 2023 (updated: 5-Jan-2023)
Introduction to Security and Privacy

Course Information
Updated course page: https://people.scs.carleton.ca/~paulv/2109jan2023.html
Brightspace: https://brightspace.carleton.ca/d2l/home/131239
Classroom location: as posted on the public class schedule
Lectures: Tues/Thurs 11:30am–1:00pm (in person), Jan.10-Apr.11 2023, excluding Feb.20-24 (break)
Instructor: Paul Van Oorschot (email: paulv +AT scs.carleton.ca)
TA (head): Srivathsan Morkonda Gnanasekeran (email: see Brightspace)
TA (other): Andy Tran (email: see Brightspace). TA hours: see Brightspace page once course begins

Students not meeting the prerequisites below are required to withdraw from the course
(otherwise you will be de-registered at some time during the term).

Course Calendar Description
A tour of Internet security and privacy. Societal impacts and case studies. Topics from: protection goals of stakeholders; history of public key cryptography; programming languages and security; security engineering and testing; cybercrime and malware; Internet privacy and anonymity; government surveillance; regulation; ethics; blockchain applications.
Prerequisites: COMP 1406 and COMP 2401, both with a minimum C- grade. Lectures: 3 hours/week.

Required Textbook and Other Resources
1. Permanent Record, Edward Snowden (Picador softcover, Metropolitan Books hardcover, 2019).
   Please acquire/order a copy for the first week of class. It is essential for Project 1 (20% of term mark).
2. Other resources will be online or available through Carleton library (electronically) or Brightspace.

Instruction format: In person. All students are expected to attend all classes in person. Students are expected to read the indicated materials indicated on the updated course page prior to each class, in order to contribute to their learning, and their ability to ask relevant questions and contribute in class.

Grading Scheme To pass the course requires a passing grade (50%) overall AND on the sum of the two terms tests (25/50) AND on the sum of the two projects (17/34). For inquiries about marks, contact the following individuals: head TA (for summary reflections and midterms), instructor (for projects).
25% midterm 1 (in class, closed book). Tues 14-Feb-2023
25% midterm 2 (in class, closed book). Tues 28-Mar-2023
16% Weekly summary reflections, 8@2% each. To be written independently by each student.
   Due 11:00pm Fri for each of: Jan.20 Jan.27 Feb.3 Feb.10 Mar.10 Mar.17 Mar.24 Apr.7
14% Project 2. Due: 12-Apr-2023, 11pm. A written report on a prescribed topic (some choice possible).

Academic integrity: Students may discuss general aspects of summary reflections and the projects, but may not share, post or distribute any written, video or voice recordings of any such discussions, or use those from anyone else (your own personal notes of any such discussions may be kept and used); other sharing is considered plagiarism in this course, as is cut-and-pasting of images, and use of...
answer-tools like ChatGPT. Original sources must be cited; any passages used verbatim must be both quoted and cited; failure to cite resources used is considered plagiarism in this course. If unsure about expectations regarding collaboration and academic integrity (or how to cite sources), ASK the instructor. You are NEVER permitted to post, share, or upload course materials without written permission from your instructor. Academic integrity offences are reported to the office of the Dean of Science; information, process and penalties for such offences can be found at: https://science.carleton.ca/students/academic-integrity/

**Timeliness**: Projects are handled electronically using Brightspace. By default, late assignments get a zero (0) grade, unless advance permission has been granted in writing from the course instructor. With advance permission, a penalty of 25% per day for any part or whole day late may be allowed. There is no “grace period” (0 minutes), nor exemption for technical problems. You are therefore advised to submit your final work at least an hour in advance of the official due date/time, in anticipation of electronic glitches, system outages, and connectivity issues.

**Objectives (Learning Outcomes)** Students will gain an overview understanding of security and privacy, and how its subareas fit together and relate to other CS courses, giving context for later studies. Students will gain technical understanding to be in a stronger position to independently evaluate or fact-check (against underlying technical realities) security content in general articles such as media and online reports. Students will gain English technical writing experience over two modest-length technical reports and eight short weekly reports.

**Topics Covered** (subject to update; notes to be provided + links to available papers)

- 2 classes: Security and privacy landscape (areas and subareas, and what they comprise).
- 2 classes: Computer architecture and Internet architecture, relevant to security and privacy.
- 2 classes: Assets, protection goals of different stakeholders. Case study: secure email.
- 4 classes: Public key cryptography history, impact of technology on society, bitcoin overview.
- 1 class: midterm 1.
- 4 classes: Privacy & anonymity, censorship, metadata, tracking users, social network issues, GDPR.
- 2 classes: Ethics and greyhat hacking, government access, interception, surveillance. Case studies.
- 3 classes: Programming languages & software security (examples: C, Java, Rust).
- 1 class: midterm 2.
- 1 class: Security testing, fuzz testing, security engineering development lifecycle.
- 3 classes: Cybercrime and malware.

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**SCS-specific Information**

**Undergraduate Academic Advisors.** The Undergrad Advisors for SCS are available in 5302HP, or scs.ug.advisor@cunet.carleton.ca. They can assist with information on prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation; and will refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services, and Writing Tutorial Services.

**SCS Laptop Requirement.** Every student enrolled in an SCS 1000-level course after the 2020-21 school year must have a laptop. See https://carleton.ca/scs/scs-laptop-requirement/ and the requirements at https://carleton.ca/scs/scs-laptop-requirement/laptop-specs/ for details.

**SCS Computer Laboratory.** Students in COMP courses can access SCS computer labs. The lab schedule and location can be found at: https://carleton.ca/scs/tech-support/computer-laboratories/.
All SCS computer lab and technical support information can be found at: [https://carleton.ca/scs/tech-support/](https://carleton.ca/scs/tech-support/). Technical support staff may be contacted in-person or virtually, see this page for details: [https://carleton.ca/scs/tech-support/contact-it-support/](https://carleton.ca/scs/tech-support/contact-it-support/).

**University Policies** For information on Carleton's academic year, registration and withdrawal dates, see [Carleton's Academic Calendar](https://carleton.ca/academic-calendar/).

**Pregnancy Obligation.** Contact your instructor to request academic accommodation during the first 2 weeks of class, or as soon as possible once the need is known to exist. For details see [Equity Services](https://carleton.ca/equity/sfs/).

**Religious Obligation.** Contact your instructor for any request for academic accommodation during the first 2 weeks of class or as soon as possible once a need is known to exist. For details see: [https://carleton.ca/equity/focus/discrimination-harassment-religious-spiritual-observances/](https://carleton.ca/equity/focus/discrimination-harassment-religious-spiritual-observances/).

**Academic Accommodations for Students with Disabilities** If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the start of the term. You must also contact the PMC no later than 2 weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements. For details, see the [PMC site](https://carleton.ca/academic-calendar/).

**Survivors of Sexual Violence.** As a community, Carleton is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations per Carleton's Sexual Violence Policy. For information on services available and about sexual violence and/or support, see: [carleton.ca/sexual-violence-support](https://carleton.ca/sexual-violence-support/).

**Accommodation for Student Activities.** Carleton recognizes the substantial benefits to individual students and the university, resulting from students participating in activities beyond classrooms. Reasonable accommodation will be provided to students competing at national and international levels. Contact your instructor with requests for academic accommodation during the first 2 weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see [the policy](https://carleton.ca/academic-calendar/).

**Student Academic Integrity Policy.** Students should be familiar with Carleton’s student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties ranging from a reprimand to an F grade in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](https://carleton.ca/academic-calendar/).

**Plagiarism.** As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one’s own". Such reported offences will be reviewed by the office of the Dean of Science. Standard penalty guidelines can be found [here](https://carleton.ca/academic-calendar/). Further specific information for COMP 2109 is given above under: Grading Scheme.

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is
to be completed on an individual basis”. Refer to the course outline or the instructor concerning this issue.

**Special Medical Information**

COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. You can take a number of actions to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when sick, washing your hands and maintaining proper respiratory and cough etiquette.

**Feeling sick?** Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you must follow Carleton’s symptom reporting protocols.

**Masks:** Carleton has paused the COVID-19 Mask policy, but continues to strongly recommend masking when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances change.

**Vaccines:** Proof of vaccination is no longer required to attend campus or in-person activity, but it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit booster dose information in cuScreen as soon as possible. Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those unable to attend campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent info about Carleton’s COVID-19 website and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca.

**Doctor’s note or medical certificate:** In place of a doctor’s note or medical certificate, students are advised to complete the self-declaration form available on the Registrar’s Office website to request academic accommodation for missed course work including exams and assignments. Students should discuss with their instructor required accommodations arising from COVID-19.