

COMP 4108 (Winter 2021): Computer Systems Security

General Course Information

- **Course Registration Number (CRN):** 11131
(https://central.carleton.ca/prod/bwysched.p_display_course?wsea_code=EXT&term_code=202110&disp=13040335&crn=11131)
- **Classes run:** Jan 11, 2021 to Apr 14, 2021
- **Weekly schedule:** Mondays and Wednesdays, 10:05am to 11:25pm
- **Room:** virtual (Zoom link (<https://carleton-ca.zoom.us/j/91958689347>); passcode available through cuLearn).
- **Instructor:** Prof. AbdelRahman Abdou (abdou at scs.carleton.ca)
- **Office hours:** virtual (Zoom link (<https://carleton-ca.zoom.us/j/95911933787>); passcode available through cuLearn). Wednesdays and Thursdays, 01:00pm to 02:00pm.
- **TAs:** Christopher Bellman (christopherbellman at cmail.carleton.ca), and Cheldon Mahon (cheldonmahon at cmail.carleton.ca)
- **TA's office hours:** TBD.
- **No tutorials.**
- **Prerequisite(s):** one of COMP 3203 or SYSC 4602, and one of COMP 3000, SYSC 3001, SYSC 4001.
- **Material and resources:** Computer Security and the Internet: Tools and Jewels (<https://people.scs.carleton.ca/~paulv/toolsjewels.html>), 2019. Springer. (Textbook by Dr. Paul Van Oorschot).
- **Class discussion forum:** Piazza for COMP 4108 (<https://piazza.com/carleton.ca/winter2021/comp4108>) (please enroll yourselves).

Course Summary

Introduction to information security in computer and communications systems, including network, operating systems, web and software security; Passwords, authentication applications, privacy, data integrity, anonymity, secure email, IP security, security infrastructures, firewalls, viruses, intrusion detection, network attacks.

Grading Scheme

The course has the following grading scheme:

- **60%** Assignments (<https://ccsl.carleton.ca/~chris/comp4108/index.shtml>).
- **40%** Projects.

Page Updates and Action Items

- **Jan 4:** the course's webpage is up.

Course Outline

Week	Date (2021)	Topic
Week 1	Jan 11 Jan 13	Ch.1: Basic Concepts and Principles
Week 2	Jan 18 Jan 20	Ch.2: Cryptographic Building Blocks
Week 3	Jan 25 Jan 27	Ch.3: User Authentication
Week 4	Feb 1 Feb 3	Assignment 1 due Ch.4: Authentication Protocols and Key Establishment
Week 5	Feb 8 Feb 10	Ch.5: Operating Systems Security and Access Control
Week 6	Feb 15 Feb 17	Assignment 2 due Winterbreak (No classes)
Week 7	Feb 22 Feb 24	Ch.5: Operating Systems Security and Access Control (cont.)
Week 8	Mar 1 Mar 3	Project 1 due Ch.6: Software Security
Week 9	Mar 8 Mar 10	Ch.7: Malicious Software
Week 10	Mar 15 Mar 17	Assignment 3 due Ch.8: Public Key Certificate Management and Use Cases
Week 11	Mar 22 Mar 24	Ch.9: Web and Browser Security
Week 12	Mar 29 Mar 31	Assignment 4 due Ch.10: Firewalls and Tunnels
Week 13	Apr 5 Apr 7	Ch.11: Intrusion Detection and Network-based Attacks
Week 14	Apr 12 Apr 14	Assignment 5 due
Week ∞	Apr 19 Apr 21	(No classes) Project 2 due

School of Computer Science Policies

Undergraduate Academic Advisor The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP; by telephone at 520-2600, ext. 4364; or by email at undergraduate_advisor@scs.carleton.ca. The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

SCS Computer Laboratory. SCS students can access one of the designated labs for your course. The lab schedule can be found at: <https://carleton.ca/scs/tech-support/computer-laboratories/> (<https://carleton.ca/scs/tech-support/computer-laboratories/>). All SCS computer lab and technical support information can be found at: <https://carleton.ca/scs/technical-support/> (<https://carleton.ca/scs/technical-support/>). Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00 or by emailing support@scs.carleton.ca.

Faculty of Science Policies

Academic Integrity violations within the Faculty of Science. Students found in violation of the Student Academic Integrity Policy (below) in Computer Science (COMP) courses are subject to severe penalties, as detailed at the Office of the Dean of Science (ODS) page (<https://science.carleton.ca/academic-integrity>). If you are unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with lab- or class-mates is appropriate), ASK your instructor or the head TA for your labs. Sharing assignment or quiz specifications or posting them online (to sites such as Chegg, CourseHero, OneClass) is considered academic misconduct. You are never permitted to post, share, or upload course materials without explicit permission from your instructor.

University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see Carleton' Calendar (<https://calendar.carleton.ca/academicyear/>).

Pregnancy Obligation. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit Equity Services (<https://www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>).

Religious Obligation. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit Equity Services (<https://www.carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>).

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) (<https://www.carleton.ca/pmc>) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two 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 are made.

Survivors of Sexual Violence. As a community, Carleton University 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 as per Carleton's Sexual Violence Policy. For more

information about the services available at the university and to obtain information about sexual violence and/or support, visit this page (<https://carleton.ca/sexual-violence-support>).

Accommodation for Student Activities. Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. More information can be found here (<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>).

Medical Certificate. Please use the official medical certificate form (<https://carleton.ca/registrar/wp-content/uploads/Medical-Certificate-Form.pdf>) for the deferral of assignments due to medical reasons.

Student Academic Integrity Policy. Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of *F* in the course or even being expelled from the program or University. Some examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found here (<https://carleton.ca/registrar/academic-integrity/>).

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. First offence, first-year students (< 4.0 cr): Final grade reduction of one full grade (e.g., A- becomes a B-, if that results in an F, so be it). First offence (everyone else): F in the course. Second offence: One-year suspension from program. Third offence: Expulsion from the University. Note: these are minimum penalties. More-severe penalties will be applied in cases of egregious offences (e.g., a first-year student accessing CULearn from their phone during an exam will be given an F in the course; bribing a faculty member for a better grade would be grounds for suspension, etc.)

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". Please refer to the course outline statement or the instructor concerning this issue.

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