

Carleton University School of Computer Science
COMP 4203 - Wireless Networks and Security
Course Outline -- Winter 2018
Final version
Last modified: Thursday, January-04-18

Class Schedule

Class times:	Tue. and Thu. 14:30 - 16:00
Classroom:	TB 240
Course web site:	cuLearn

Instructor Information

Instructor	Office	Email	Office Hours
Dr. Christine Laurendeau	5376 HP	christine.laurendeau@carleton.ca	Tue. 12:30 - 14:00

Teaching Assistants

Detailed TA information can be found in [cuLearn](#).

Course Description

An introduction to wireless networks covering both networking issues and security aspects of modern wireless environments. Fundamentals of mobile LANs, ad hoc, sensor networks, secure routing, searching, clustering, multicasting, localization, mobile IP/TCP, confidentiality, key establishment, authentication, broadcasting, RFIDs, and rogue attacks.

Topics Covered

The course will cover the following topics, although some material may be omitted due to time constraints:

- Wireless communications
 - Overview
 - Basics of wireless communications
 - Antennas and propagation
 - Signal encoding techniques
 - Multiple radio access
 - Multiple division techniques
- Wireless technologies
 - Mobile networking
 - Cellular networks
 - Satellite systems
 - Wireless LANs, PANs, MANs
 - Ad hoc networks
 - Sensor networks
- Wireless security
 - Network security basics
 - Threats in wireless communications
 - Mobile network security
 - WiFi security
 - Location tracking

Prerequisites

COMP 3203

Textbook(s)

- Dharma Prakash Agrawal and Qing-An Zeng, *Introduction to Wireless & Mobile Systems*, 4th edition, Cengage Learning, 2016, ISBN: 978-1-305-08713-2
- Michel Barbeau, *Wireless Mobile Communications, Networks & Security*, 2017, available in [cuLearn](#)

Additional Resource

William Stallings and Lawrie Brown, *Computer Security Principles and Practice*, 4th edition, Pearson Education, 2018, ISBN: 978-0-134-79410-9

Evaluation

Students will be evaluated in this course according to the following measures:

Component	Weight	Due Dates
Assignments (2)	8 %	TBA
Project	40 %	Various, to be posted in cuLearn
Midterm Exam	12 %	Feb. 15
Final exam	40 %	TBA

Evaluation Notes

- In order to pass the course, students must obtain a passing grade on the project, **and** a passing grade on the final exam.
- The group project weight is distributed over the following deliverables:
 - 10%: project proposal with presentation
 - 15%: project final report
 - 15%: project simulation code with demo
- The group project involves a written proposal with an in-class presentation, a written final report, and simulation code with a demonstration to the instructor. Project proposals must be presented in class in order for the written proposal to be evaluated. Working project code must be demonstrated to the instructor in order for the simulation code to be evaluated. In cases where the work cannot be evaluated because of student absence for the presentation and/or the demo, a grade of zero will be assigned to the absent student.
- Project topics will be selected by students and must be approved by the instructor. Duplicate projects or projects with significant overlap between groups will not be accepted.
- All marking disputes must be addressed with the individual responsible for marking the work (TA or instructor), within **one week** of the marks being posted. In cases where a student and a TA cannot agree, the matter will be referred to the instructor for resolution.
- There will be no extra credit available in this course.

Important Dates

- Presentations of project proposals will take place in class on Feb. 27, Mar. 1, Mar. 6, and Mar. 8. Each group is required to present their proposal during those times. Every member of the group is required to present for an equal amount of time.
- Project demos will take place with the instructor on Apr. 3 and Apr. 5. Each group is required to present working code and discuss their contributions to the project on those dates. Every member of the group is required to present for an equal amount of time.

Course Material

- All concepts covered in class are part of the course material, including the course notes and annotations, in-class exercises, and in-class and forum discussions.
- All materials created for this course (including, but not limited to, course notes, sample project examples, project descriptions and deliverables, marking schemes, tests/midterms, exams, and test/midterm/exam solutions), except where otherwise noted, remain the *intellectual property of the instructor*. They are intended for the personal and non-transferable use of students registered in the course. Reproducing, reposting, and/or redistributing any course materials, in part or in whole, without the written consent of the instructor, is **strictly prohibited**.

Collaboration Policy

- Collaboration on assignments is **strictly** disallowed and will be reported to the Dean of Science as an instructional offence. Assignment work must be completed individually.
- Collaboration on the project is restricted to members of the same group, which will consist of no more than three (3) students. Inter-group collaboration on the project is **strictly** disallowed and will be reported to the Dean of Science as an instructional offence.
- Posting assignment solutions online and distributing assignment solutions to other students **at any time** is strictly prohibited and will be reported to the Dean of Science as an instructional offence. This includes work **publicly** posted on source control sites like GitHub.

Communications Policy

- Students are expected to check their email on a **daily** basis. Important course-related announcements will be posted on [cuLearn](#) and forwarded to students' cmail accounts.
- Due to a high volume of emails, *the instructor will be unable to answer emailed questions*, unless they are of a confidential nature. Course policy requires that students post **all questions** about the course, assignments and project in the appropriate forum in [cuLearn](#). Please verify whether your question has already been answered. If not, you can post your question and it will be answered in the forum within 24 hours on weekdays, excluding statutory holidays and the week of the Winter Break.
- The instructor's office hours are in effect from Jan. 8 to Apr. 11, excluding the week of the Winter Break.
- Students are expected to behave and communicate in a **courteous** and **professional** manner at all times. Any communications, either in person, or online in forum posts and email, that do not follow the basic precepts of common courtesy and professionalism will not be answered, and in extreme cases will be reported to university authorities.
- **Email etiquette:**
 - Emails are the equivalent of short and concise business letters, not text messages. Complete sentences and decorum are expected.
 - If this is your first course with your instructor, emails should be addressed using the "Dr." or "Prof." title before the instructor's surname.
 - If you have already completed at least one course with your instructor (regardless of outcome), this instructor is fine with being addressed using her first/given name, *as long as the rest of the email is professional*.
 - Please indicate the course number in the subject line in every email.
 - It is a basic courtesy to use the words "please" and "thank you" where appropriate, especially when making a request.
 - Please be aware of the tone of your email. [This](#) says it all.

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 the Writing Tutorial Services.

University Policies

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 offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate 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.

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.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable) at <http://www2.carleton.ca/pmc/>

Religious Obligation

Write to the 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 the Equity Services website: <http://www2.carleton.ca/equity/>

Pregnancy Obligation

Write to the 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 the Equity Services website: <http://www2.carleton.ca/equity/>

Medical Certificate

The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to <http://www.carleton.ca/registrar/forms>