

Carleton University School of Computer Science  
**COMP 4203 - Wireless Networks and Security**  
Course Outline -- Winter 2020  
Final version  
Last modified: Wednesday, December-18-19

### 1. Class Schedule

Class times:	Tue. and Thu. 10:00 - 11:30
Classroom:	SA 518
Course web site:	<a href="#">cuLearn</a>

### 2. Instructor Information

Instructor	Office	Email	Office Hours
Dr. Christine Laurendeau	5320 HP	<a href="mailto:christine.laurendeau@carleton.ca">christine.laurendeau@carleton.ca</a>	Tue. 12:00 - 2:00 pm Wed. 2:30 - 3:30 pm

### 3. Teaching Assistants

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

### 4. 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.

### 5. 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, spread spectrum, multiple radio access, multiple division techniques
  - Error control
- Wireless technologies
  - Wireless LANs, wireless PANs
  - Cellular networks, long term evolution
  - Mobile networking
  - Long distance communications
  - Ad hoc networks, sensor networks
- Wireless security
  - Network security basics, mobile network security, WiFi security

### 6. Prerequisites

COMP 3203 or SYSC 4602

### 7. Textbooks

- Cory Beard and William Stallings, *Wireless Communication Networks and Systems*, Pearson, 2016, ISBN: 978-0-133-59417-1

#### Additional Resources

- Dharma Prakash Agrawal and Qing-An Zeng, *Introduction to Wireless & Mobile Systems*, 4<sup>th</sup> edition, Cengage Learning, 2016, ISBN: 978-1-305-08713-2
- Michel Barbeau, *Wireless Mobile Communications, Networks & Security*, 2017, available in [cuLearn](#)
- William Stallings and Lawrie Brown, *Computer Security Principles and Practice*, 4<sup>th</sup> edition, Pearson Education, 2018, ISBN: 978-0-134-79410-9

## 8. Evaluation

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

Component	Weight	Due Dates
Assignments (2)	8 %	Various, to be posted in <a href="#">cuLearn</a>
Group Project	40 %	Various, to be posted in <a href="#">cuLearn</a>
Midterm Exam	12 %	Feb. 13
Final exam	40 %	TBA

## 9. Evaluation Notes

1. In order to pass the course, students must obtain a passing grade on the project, **and** a passing grade on the final exam.
2. 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.
3. There will be no extra credit available in this course.

## 10. Project

1. The project work is group-based, with each group consisting of no more than three (3) students. Due to the research-based nature of the required work, students are strongly discouraged from working alone.
2. 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
3. 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 or TA 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.
4. 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.

## 11. Important Dates

1. Presentations of project proposals will take place in class on Feb. 25, Feb. 27, Mar. 3, Mar. 5, and Mar. 10. Each group is required to present their proposal on those dates. Every member of the group is required to present for an equal amount of time.
2. Project demos will take place with the instructor on Mar. 31 and Apr. 2. 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.

## 12. Course Material

1. 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.
2. 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*, except where otherwise noted. 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**.

### 13. Collaboration Policy

1. 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.
2. 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.
3. 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.

### 14. Communications Policy

1. Students are expected to check their email on a **daily** basis. Important course-related announcements will be posted on [cuLearn](#) and forwarded to students' email accounts.
2. Due to a high volume of emails, *the instructor will be unable to answer emailed questions*, except for matters 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.
3. The instructor's office hours are in effect from Jan. 6 to Apr. 7, excluding the week of the Winter Break.
4. 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.

### 15. 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](mailto: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.

### 16. 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.

### 17. Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

- **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, see the [Student Guide](#).
- **Religious:** 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, see the [Student Guide](#).

- **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](mailto: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).
- **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 is 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: [carleton.ca/sexual-violence-support](http://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. For more details, see [the policy](#).

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](http://students.carleton.ca/course-outline)