

## **Course Outline**

### **COMP 4203 for Winter 2021**

Wireless Networks and Security

### **Course Information**

Instructor: Ahmad Traboulsi

Contact: [ahmadtraboulsi@cunet.carleton.ca](mailto:ahmadtraboulsi@cunet.carleton.ca)

Classroom: Room location is posted on the public class schedule

Lectures: Tuesdays & Thursdays (online – [Asynchronous delivery](#))

Course Website: <https://carleton.ca/culearn/>

### **Teaching Assistants**

A list of teaching assistants and their contact/office hours information will be posted once the course starts.

### **Course Calendar 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.

Lectures three hours a week.

### **Prerequisites**

COMP 3203 or SYSC 4602.

## Topics Covered

<b>Week</b>	<b>Dates</b>	<b>Topics</b>
<b>1 &amp; 2</b>	Jan. 12, 14, 19, 21	<ul style="list-style-type: none"> <li>• Wireless Communication Overview</li> <li>• Basics of wireless transmission</li> <li>• Antennas and propagation</li> <li>• Signal encoding techniques</li> </ul>
<b>3, 4 &amp; 5</b>	Jan. 26, 28 Feb 2, 4, 9, 11	<ul style="list-style-type: none"> <li>• Project requirements document and topics</li> <li>• Spread Spectrum</li> <li>• Multiple access protocols</li> <li>• Multiple division techniques</li> <li>• Error Control</li> </ul>
Winter Break		
<b>7</b>	Feb. 23 & 25	<ul style="list-style-type: none"> <li>• Project proposal presentation</li> <li>• WLANs</li> </ul>
<b>8 &amp; 9</b>	Mar. 2, 4, 9, 11	<ul style="list-style-type: none"> <li>• WPANs</li> <li>• Cellular Network</li> <li>• LTE</li> <li>• Mobile Networking</li> </ul>
<b>10 &amp; 11</b>	Mar. 16 & 18	<ul style="list-style-type: none"> <li>• Long Range Communication</li> <li>• Ad hoc Networks</li> </ul>
<b>11 &amp; 12</b>	Mar. 23, 25 & 30 Apr . 1	<ul style="list-style-type: none"> <li>• Sensor Networks</li> <li>• Wireless Security</li> <li>• Mobile Network Security</li> <li>• Wi-Fi Security</li> </ul>
<b>13</b>	Apr. 6, 8	Project Demo
	Apr. 13	Project Report

## Textbooks and Other Resources

Michel Barbeau, Wireless Mobile Communications, Networks & Security, Available online.

Upena Dalal, Wireless Communication and Networks Available online.

Cory Beard and William Stallings, Wireless Communication Networks and Systems.

## Assessment Scheme

Component	Weight	Due Date
Exercises	40	TBD
Project proposal presentation	5	<b>Feb. 23</b>
Project demo	5	<b>Apr. 6, 8</b>
Project report	50	<b>Apr. 13</b>

There will be 8 to 10 assignments. Total assignments will be worth 40 of your total mark. For any discrepancies or questions, first contact the TA.  
Assignments should be submitted as a typed pdf or word file.

## Class Schedule

[Asynchronous delivery](#)

Office hours: By Appointment only

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## **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 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/>. All SCS computer lab and technical support information can be found at: <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](mailto:support@scs.carleton.ca).

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## University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see [Carleton's Academic Calendar](#).

**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](#).

**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](#).

**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 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. For more details, visit the [Paul Menton Centre](#)

[website.](#)

**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:

<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. For more details, see the [policy](#).

**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. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](#).

**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.