Instructor Information and Office hours

Thomas Kunz, CB 5202, tkunz@sce.carleton.ca, Office hours: Tuesdays 2-3 pm

Calendar Information

SYSC 5306: Systems to build mobile applications. Covers data link layer to application layer. Emphasis on existing wireless infrastructure and IETF protocols. Focuses on view of mobile application developer; communication systems, middleware and application frameworks, defacto standards proposed/developed by industry consortia. See also http://calendar.carleton.ca/grad

Prerequisites

Prerequisite(s): EACJ 5607 (ELG 5374) or SYSC 5201 (ELG 6121) or permission of the Department.

Precludes additional credit for COMP 5402 (CSI 5142).

Course Objectives

Wireless Communication and Mobile Applications are recent paradigms in communications and computer science. This course will provide an introduction and overview of communication alternatives for mobile data applications, focusing on mobility-related aspects of higher-level protocols, and examines in depth the infrastructure, available services, and application paradigms for mobile applications.

Learning Outcomes

Student should be able to understand, compare, and analyze network protocols designed for infrastructure-based wireless networks (such as WLAN or Cellular Networks) or infrastructure-less (multihop) wireless networks. Specific protocol areas are wireless MAC protocols, routing in the presence of mobility (infra-structure networks, infrastructure-less networks), transport layers and upper protocol layers suitable for (multi-hop) wireless networks, QoS in wireless networks.

Textbooks (or other resources)

I will post my slides, plus other reference material, on the course webpage, http://kunz-pc.sce.carleton.ca/sysc5306/. I will also post marks, etc. on this webpage. There is no single textbook that adequately covers the diverse range of topics (and buying multiple textbooks is clearly not very appealing financially). Here are two reasonably complete books, though:

Additionally, you may want to look at the following books:


Evaluation and Grading Scheme

There will be a final exam worth 50%, two assignments during the term worth 15% each, and an in-class presentation, which is worth 20%. The final exam will be scheduled during the Winter term exam period in April. The first assignment will be handed out in class on Thursday, January 23, due Friday, February 14 (submit via e-mail BEFORE midnight). The second assignment will be handed out Tuesday, February 25 and is due Friday, March 13 (again, submitted via e-mail BEFORE midnight). The assignments will ask you to explore a topic related to the course using NS2, a network simulator. We will discuss this tool in class in some detail, the course website also has some information on how to install it on your PC. Your in-class presentation will be a 20 minute presentation on a course-related paper, from a list of papers provided by the course instructor. Depending on final enrollment numbers, you may work on the assignments and in-class presentation as group projects, we will finalize this after the deadline for registering in courses for the Winter term (January 17).

Breakdown of course requirements (labs, assignments, quizzes, exams, etc)

The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the final grades have been made available.

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<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Assignment 1</td>
<td>Midnight, February 14</td>
<td>15 %</td>
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<tr>
<td>Assignment 2</td>
<td>Midnight, March 13</td>
<td>15 %</td>
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<tr>
<td>In-Class Presentation</td>
<td>Late March/Early April</td>
<td>20 %</td>
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<tr>
<td>Final Exam</td>
<td>April Exam Period</td>
<td>50 %</td>
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Week-by-Week breakdown

• Introduction and History
  • Overview of technologies for wireless communication
  • Marketplace (growth, dominant technologies)
• Data in Wireless Cellular Systems
• Introduction to NS2 and Experimental Research using Simulators
• Data in Wireless Local Area Networks
  • Wireless LANs: IEEE 802.11
  • Personal Area Networks: Bluetooth
  • High-Speed Wireless Networks: HiperLan
• Internet Protocols, Mobile IP
• TCP over Wireless Links
• Ad-Hoc Networks
• Wireless Sensor Networks

General Regulations

Student Responsibility: It is the student's responsibility to remain informed of all rules, regulations and procedures required by their program and by the Faculty of Graduate and Postdoctoral Affairs. Ignorance of regulations will not be accepted as a justification for waiving such regulations and procedures.

Academic Integrity: Students should be aware of their obligations with regards to academic integrity. Please review the information about academic integrity at: https://carleton.ca/registrar/academic-integrity/. This site also contains a link to the complete Academic Integrity Policy that was approved by the University's Senate.

Plagiarism: Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated.

Deferred Term Work: Students who claim illness, injury or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases this must occur no later than three (3.0) working days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. For more information, see the current Graduate Calendar, Academic Regulations of the University, Section 9.3.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://www.carleton.ca/equity/
For an accommodation request, the processes are as follows:

- Pregnancy or 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 see https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
- 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). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca PMC) 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 where 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/](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 [https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf](https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf)

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**Health and Safety:** Every student should have a copy of our Health and Safety Manual. A PDF copy of this manual is available online: [http://sce.carleton.ca/courses/health-and-safety.pdf](http://sce.carleton.ca/courses/health-and-safety.pdf)

**Students from the University of Ottawa:** You can request to have access to cuLearn: please see [http://gradstudents.carleton.ca/forms-policies/](http://gradstudents.carleton.ca/forms-policies/)