Instructor Information and Office hours

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Course Number and Calendar Description

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.

Precludes additional credit for COMP 5402 (CSI 5142).

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

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


Textbooks (or other resources) if applicable

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 in class on Friday, April 5. The first assignment will be handed out in class on Friday, January 25, due Thursday, February 14 (submit via e-mail BEFORE midnight). The second assignment will be handed out Friday, February 15 and is due Thursday, March 7 (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. The in-class presentation will have you give 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 18).

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.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Due Date</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Assignment 1</td>
<td>February 14</td>
<td>15 %</td>
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<tr>
<td>Assignment 2</td>
<td>March 7</td>
<td>15 %</td>
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<tr>
<td>In-Class Presentation</td>
<td>Late March</td>
<td>20 %</td>
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<tr>
<td>Final Exam</td>
<td>April 5</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 obligation**: write to me 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

- **Religious obligation**: write to me 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). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult https://carleton.ca/pmc/students/dates-and-deadlines/ 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/.

- **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

**Copyright on Course Materials:** The materials created for this course (including the course outline and any slides, posted notes, labs, project, assignments, quizzes, exams and solutions) are intended for personal use and may not be reproduced or redistributed or posted on any web site without prior written permission from the author(s).

**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

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