

University of Ottawa, Winter 2012

CSI 5169 (COMP 5304) Wireless Networks and Mobile Computing (3 l.p.w.t. - 3 cr.)

List of *projects*:

(chapters needed to be provided by instructor; for large files you might need USB in class)

Projects based on slides from Schiller

1. Chapter 4: Wireless Telecommunication Systems (98 slides)
2. Chapter 5: Satellite Systems (20 slides) + ch. 22 in [WNMC]
3. Chapter 6: Broadcast Systems, DAB, DVB (24 slides) + ch. 12 in [WNMC]
4. Chapter 7: Wireless LANs (127 slides except RFID 118-125)
5. Chapter 8: Network Layer/ Mobile IP (slides 1-40 only, until ad hoc networks) + ch. 25 [WNMC]
6. Chapter 9: Mobile Transport Layer (18 slides)
7. Chapter 10: Support for Mobility (81 slides)

Chapters from:

[WNMC] Stojmenovic (ed): Handbook of Wireless Networks and Mobile Computing, Wiley, 2002

Ensemble planning for digital audio broadcasting (ch. 12), part of **3**.

Topological design, routing and handover in satellite networks (ch. 22), part of **2**.

Mobile IP protocols (ch. 25), part of **5**.

8. Handoff in wireless mobile networks (ch. 1)
9. Location management in cellular networks (ch. 2)
10. Traffic integration in personal, local and geographical wireless networks (ch. 7)
11. Fair scheduling in wireless packet data networks (ch. 8)
12. Data broadcast (ch. 11)
13. Broadcast scheduling for TDMA in wireless multihop networks (ch. 16)
14. Data management and access in wireless mobile environment (ch.26 + other sources)
15. Mobile, distributed, and pervasive computing (ch. 27)
16. Indoor wireless environment (ch. 28)

Additional projects

17. RFID and sensor networks (slides 118-125 from ch. 7 Schiller plus two papers by instructor)
18. Location discovery: GPS, cellular based, indoor location systems with precision in cm and m
19. Security in wireless networks
20. Wireless Internet access and Mesh networks
21. Location based service access, context-aware computing
22. Multimedia wireless transmissions and wireless data compression
23. Mobile commerce
24. Health applications of wireless technology
25. 'Smart city' applications of wireless technology

Project and class presentations:

- 1) Select the first, second, and third choice of possible project from the list (refer simply to project numbers, indicated in **bold** on the list). Select also the first, second, and third choice for the presentation day. If you know that you will not be available for a particular date, include it.
- 2) Send e-mail to ivan@site.uottawa.ca with your preferences for the topic (topic number(s) only) and date, *no later than three days before the third lecture*.
- 3) Topics and dates will be assigned in class, during the third lecture. Bring USB to take some files.
- 4) Prepare 5-10 minutes presentation on your topic. Include brief description of your project, what sources you identified or received so far, plan for future work, problems you have etc. Prepare one page information for instructor and each student in class. Include your e-mail address on the page. If you need two pages, use the back of the same sheet for the second page. 3-6 transparencies may be used during presentation. Transparencies and the page should clearly define the problems you are going to study, and give brief description of the environments where these problems occur.
- 5) Give 5-10 minute presentation on your topics during the fourth week of lecturing. Distribute one page summary to instructor and each student before your presentation starts. The purpose of the short presentation is to confirm your presence in the class, to get familiar with other students for possible cooperation on similar topics, and to clarify possible misunderstandings.
- 6) Prepare your project presentation, and your project report. Communicate by e-mail a student in case you have same or similar topics assigned, or if you discovered an interesting source for their topics. Textbook based projects should take textbook material as the starting point; some additions and modifications should be made from newer sources as appropriate. Projects should be mainly based on the information found on the Internet. It may include articles from journals, magazines, newspapers, and conference proceedings. It is advisable to select 2-3 main algorithms from literature, explain and illustrate them well. Others can be briefly mentioned/described.
- 7) Look at my advice for preparing transparencies at www.site.uottawa.ca/~ivan .
- 8) Give about **30** minutes presentation on the date assigned to you. The allocated time may change due to number of students in class or other considerations. Before the presentation, distribute two evaluation sheets to each student, with your name on them. One should contain few questions (of your choice) with answers from 1 to 10. The last question should be an *overall mark*, in the range 1-10. Your presentation mark is equal to the average overall mark from all students. However, if you apparently did not prepare slides and presentation seriously, the instructor may still assign failing mark. The second sheet should simply ask for comments on your presentation. These sheets will be collected and returned to you.
- 9) Your presentation should include, at end of it, a list of three basic questions out of your presentation, with answers. No multiple-choice questions! These questions are candidates for the quiz during the last lecture. Your questions should be carefully selected, to illustrate main points and algorithms, to invoke critical thinking and relate the concepts, and should avoid pure memorization questions (this is not exercise in memorizing, but in demonstrating what is learned). Perhaps the best question is one asking to follow an important algorithm on an example (and example can then change on later actual quiz). The quality of questions is part of the evaluation, worth 10%.
- 10) Submit your file with transparencies to the email address given on course website, for inclusion on a web page for all the projects, one week before quiz 2 at the latest (otherwise 0% mark for quality of questions will be allocated).
- 11) *Submit project report by the due date indicated on the course outline.* The report should be approximately ten single space pages long (excluding title page, figures and reference lists). Submit project report file (as .doc or .pdf file) to Stojmenovic@gmail.com . Keep articles used to create reports; instructor may ask them by email.
- 12) Keep in mind that the main goal of this course is to apply computer science knowledge in wireless networks and mobile communications, and learn some important algorithms, and not to memorize

existing technologies.