ECE 245/445 - Wireless Communications and Networking
Fall 2016

Time: Tuesday and Thursday, 2-3:15PM
Location: Computer Studies Building (CSB) 523

Instructor:
Cristiano Tapparello
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Office hours: Monday, 2-3PM (additional time by appointment)

Teaching Assistants:

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Office hours: TBD	Office hours: TBD

Textbook: *Wireless Communications: Principles and Practice, T. Rappaport, Prentice Hall, 2002.*

References: *Wireless Networking: Understanding Internetworking*, W. Stallings. *Ad Hoc Wireless Networks: Architectures and Protocols*, C. S. R. Murthy and B . S. Manoj. *Wireless Networking: Understanding Internetworking Challenges*, J. Burbank, J. Andrusenko, J. Everett and W. Kasch

Additional course material: Lecture slides and research papers (Blackboard)

Syllabus (*subject to change*)
- Introduction to Wireless Communication Systems
- Channel Modeling
- Digital Modulation: Signal Spaces, Basis Functions
- Channel Coding
- Network Architectures
- Medium Access Schemes
- Communication Protocol Layers
    - Routing Strategies
    - Network Reliability, Congestion Issues
- Cellular Network Concepts
- WiFi: IEEE 802.11
- Advanced Topics in Wireless Research
    - MANETs
    - Sensor Networks
    - Smart Grids

Class objectives:
- Provide an understanding of the concepts that enable traditional cellular radio and wireless data networks.
- Provide an understanding of design trade-offs and methods of improving system performance.
- Provide an opportunity to investigate the area of wireless communication via semester-long research projects.

Prerequisites: Undergraduate course in communications (e.g., ECE 242) or consent of instructor.

Grading: Grades will be based on homeworks, lab reports, exams (a mid-term and a final), and a course project. The weights are as follows:

Mid-term Exam	25%
Final Exam	25%
Course Project (Paper + Presentation)	25%
Homeworks + Labs	25%

There will be approximately 4 homework assignments throughout the semester. In general, late homeworks will not be accepted. There are also 4 labs throughout the semester. Each lab will require a lab write-up.

Each student must complete a course research project related to a topic in the wireless communications and networking area. Projects can be based on simulations, analysis, or field experiments. Any topic in the wireless communications field is acceptable, subject to approval. You may work in groups of 2, but this is not required. At the end of the semester, each group will present their work in class and turn in a conference-style paper describing the project.

Academic dishonesty: Academic dishonesty will be dealt with according to the University of Rochester's Academic Honesty Policy.
http://www.rochester.edu/college/honesty
https://www.rochester.edu/college/CCAS/AdviserHandbook/AcadHonesty.html

It is expected that all work turned in has been completed independently. Students may discuss homework problems, but the solutions should be written up independently. Plagiarism is strictly prohibited. This includes copying any text or ideas not one's own on any homework, labs or other written work such as paper surveys and the final project. Plagiarism, copying of homework or exam questions, or any other acts of academic dishonesty will be brought to the UR academic honesty board. Consequences may include a drop in the final letter grade, or, for more serious or repeat offenses, suspension or expulsion.