ENPM604 Syllabus

Course: ENPM604 – Wireless Communication Networks
Semester: Spring 2017
Instructor: S. Farshad Bahari, Ph.D.
Day; Time: Tuesdays, 3:20 PM - 6:00 PM
Location: JMP 2216
Email: fbahari at umd dot edu
Office Hour: Tuesdays, 3:00 PM - 3:20 PM at JMP 2216, and by appointment

Required Textbook

No required textbook

Recommended Resources

Andrea Goldsmith, Wireless Communications, Cambridge University Press

Course Objective

To provide a general understanding of the basic principles which govern the design and operation of wireless communication networks, with emphasis on the wireless link, media access control and interference issues. We begin by considering the cellular architecture model, frequency reuse, power control, handoff and mobility tracking. We then consider wireless local area networks, including a review of proposed standards. Next, ad hoc networks will be studied with a focus on routing/multicasting and capacity notions. Principles of layer integration and energy efficiency will also be addressed. The special case of sensor networks and satellite systems will be reviewed.

Grading System

Students are responsible for all material discussed in class, covered in lecture notes, and posted on course page on Canvas. Active participation in lectures, locally or remotely, is highly encouraged although is not mandatory. All the lecture material will be recorded and will be available on the course page especially for online students.
The grade for the course will be based on homework/reading assignments, a midterm exam and a final project, which their respective contributions to the overall grade are given below. Homework/reading assignments are due weekly and need to be submitted electronically to the course page no later than the beginning of the following lecture, i.e. by 3:20 pm on Tuesdays. Midterm examination will be conducted in open book and take home format on Friday afternoon/evening of the 9th or 10th week of the semester. The exact time and date of the exam will be determined during the first two weeks of the semester. For the final project, each team needs to pre-record their presentation and submit it by the final exam date to the course page.

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It is the student’s responsibility to inform the instructor of any intended absences for religious observations in advance. Notice should be provided as soon as possible but no later than the end of the adjustment period.

Students with disabilities who need any special accommodations should contact me as soon as possible with their approved DDS letter.

Course Syllabus

The following list of lecture topics will vary in terms of pace and emphasis:

- Introductory concepts: wireless medium, multi-access channel, medium access control, interference and quality of service
- Cellular networks: basic architecture, frequency reuse, power control, mobility control-handoff, dynamic channel assignment, registration, paging, mobile IP
- Wireless local area networks: comparison and contrasts with ordinary LANs, Bluetooth, IEEE 802.11, Infrared systems
- Ad hoc networks (multihop): notions of link and graph, layer interaction, routing/multicasting
- Energy efficiency: Forms of energy consumption, effects of power control, MAC and routing/multicasting, limited energy supply
• Sensor networks: objectives and architectures, energy concerns, design approaches
• Satellite networks: modern satellites systems, onboard processing capabilities, satellite constellations, hybrid networks—design and performance

Code of Academic Integrity

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity of the Student Honor Council, please visit http://shc.umd.edu/SHC/HonorPledgeInformation.aspx.

Course Evaluations

If you have any suggestions for improving this class, please do not hesitate to tell me or the TA during the semester! At the end of the semester, please also do not forget to provide your feedback using the campus-wide CourseEvalUM system. Your comments will help make this course better.

Right to Change Information

Although every effort has been made to be complete and accurate, unforeseen circumstances arising during the semester could require the adjustment of any material given here. Consequently given due notice to students, the instructor reserves the right to change any information on this syllabus or in other course materials.