Instructor: Aylin Yener, yener@ee.psu.edu, 228A EE West, 865-4337
Meeting Time & Place: Mondays and Wednesdays 3:35pm-4:50pm in 225 EE West

Course Objective: To have a fundamental understanding of the design and performance of wireless communication systems. Topics covered include state of the art wireless standards and research and thus changes substantially form one offering of this course to the next.

Course Material: The course material will be based primarily on notes prepared by the instructor, and will be made available to registered students on ANGEL. The textbook is Wireless Communications Systems by A. Goldsmith, Cambridge, 2005, selected chapters of which will be loosely followed. Other designated books below are references to follow the general material. References specific to material not in the books (e.g. newer standards, research articles) will be made available when needed.

Mobile Wireless Communications, M. Schwartz, Cambridge University Press, 2005

Prerequisites: EE360 and STAT418. Please note that pre-requisites are non-negotiable and are strictly enforced. Also note EE 460 is sufficient to replace both pre-requisites.

Assignments: We will have homework problems. The semester project may require MATLAB programming. Some homework problems may also have MATLAB component.

Class Project: Students will have a semester long project related to wireless systems; at the end of the semester we will have formal presentations. The projects will need to be relevant to the current and future wireless communication system issues. Students may be working in teams depending on the class population. A proposal and an action plan will be required by February 15, 2010. Each project must have a webpage where progress can be tracked and must be online with full content by February 22, 2010. Web pages must detail weekly progress. Blogs with more frequent (daily etc.) posts are highly encouraged.

Grading Policy: Instructor reserves the right to make minor adjustments to the %s.
Midterm Exam %25
Homework %20 (percentage includes all assignments + course participation)
Project %55 (includes web page updates, progress, presentation and final report)

Course Topics: (Not necessarily in order)
Evolution of wireless communications
Mobile radio channel modeling
Modulation techniques and their performance
Multiple antennas
Multiple access techniques (F/TDMA, CDMA, SDMA, MU-MIMO, OFDMA)
Capacity enhancement methods (Power control, receiver design)
Cooperative communications
Introduction to wireless networks
Current and upcoming wireless standards: 3G, 4G, LTE, 802.11a/b/g, WiMAX, 802.22
Project presentations

Academic Integrity: See http://www.psu.edu/dept/oue/aappm/G-9.html for the academic integrity policy of the university. The sanctions as per this policy will be pursued to their full extent if necessary.