Electrical and Computer Engineering
EE320 Telecommunications Engineering

James K Beard, PhD
Office: E&A 709
Phone: (215) 204-7932
Email: jkbeard@comcast.net
Office Hours: Tuesdays 3:00 PM
 to 4:30 PM, MWF before class

Location: E&A 518
Time: MWF 11:40 AM – 12:30 PM
Text: Simon Haykin and Michael Moher, *Modern Wireless Communications*, Pearson/Prentice Hall, 2003, ISBN 0-13-022472-3

This spring senior ECE course considers digital data communication with noise, modulation including digital phase coding, codes including linear, block, cyclic, convolutional, and decoding including TDMA, and spread spectrum and CDMA.

The lecture material will be supplemented by coordinated laboratory assignments. Each student will be assigned his own Term Project using computer simulations using *SystemView* by Elanix (http://www.elanix.com). The grade for EE320 will consist of the following:
- Two Exams, 40%
- Individually Assigned Project, 40%
- Final Exam 20%
- Attendance – deductions for absences
- Occasional unannounced 10-minute quizzes – deductions for missed responses

Week 1. Chapter 1, Introduction, and Chapter 2; Propagation and Noise
Week 2. Chapter 3, Modulation and FDMA; elementary methods (through3.3)
Week 3. Chapter 3; pulse shading, power spectra, FDMA, and BER
Week 4. Chapter 4, Coding; information theory, CRC and convolutional codes,
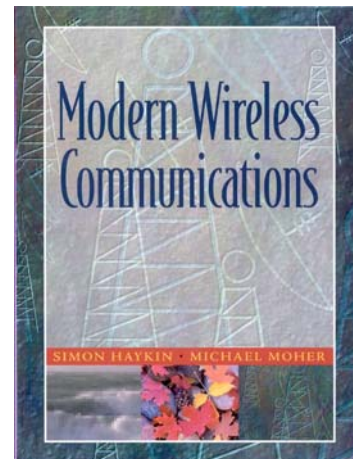   *First Examination*
Week 5, Chapter 4; Maximum likelihood decoding, noise performance, and TDMA
        Project Assignments
Week 6, Chapter 5, Spread Spectrum and CDMA; direct-sequence modulation
Week 7, Chapter 5; spreading codes and orthogonal spreading factors
Week 8, Chapter 5; Orthogonal variable spreading factors

Week 9, Chapter 5; gold codes
        Second Examination
Week 10, Chapter 5; code synchronization
Week 11, Chapter 5; power control – the near-far problem (forward error correction)
Week 12, Chapter 5; Frequency hopping and spread spectrum
Week 13, Chapter 5; Theme example – WCDMA
Week 14, Chapter 7, Wireless Architectures; OSI, power control, handover, network layer
Week 15, ***Project Presentation***
        Final Examination

Appointments: The preferred, professional manner to *schedule* an appointment to discuss the material of this course and for questions or concerns is via *email*.

Accommodation: Any student who has a need for accommodation based on the impact 9of a disability should contact me privately to discuss the specific situation as soon as possible. The student should also contact Disability Resources and Services at (215) 204-1280, located at 100 Ritter Annex, to coordinate reasonable accommodations for students with documented disabilities.

Attendance and Participation: Attendance at the lectures of this course is considered as participation and is *mandatory*. Each unexcused absence will result in a 0.5% reduction of the final grade.

Unannounced Quizzes: Students should be prepared throughout the course by *diligently* performing the problem assignments, even though they are not collected or graded *per se*. Unannounced 10 minute quizzes will be given on material from completed problem assignments in lieu of attendance checks. Absence or unfamiliarity with the material apparent in the quiz answer will result in a 1% reduction in the final grade.

Course Objectives and Outcomes: The objectives and outcomes for all courses in ECE are maintained as part of the ABET accreditation criteria. Students can view them for this course at the Department website:
http://www.temple.edu/ece/ee320.htm

TUARC: ECE students interested in digital data communications should visit the Temple University Amateur Radio Club K3TUwebsites at
http://www.temple.edu/ece/tuarc.htm
and
http://www.temple.edu/k3tu
for an interesting technical diversion.