Statistical Communication Theory

ECE 630

Spring 2016

Instructor  Dr. B.-Peter Paris  
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Time and Place  Monday 7:20pm – 10:00pm, Hanover Hall, Room L002

Office Hours  Monday 5:30pm – 6:30pm and Thursday 4:00 – 5:00pm.


Recommended Further Reading


Homework  will be assigned every week except when an exam is scheduled the following week. A set of solutions will be made available. You are encouraged to work on the assignments in small groups.

Two Exams  will be given: one midterm exam and a comprehensive final exam. All exams are conducted under the rules and regulations of the Honor Code (see University Catalog).

On-line Class Material  Class material will be distributed electronically via the World-Wide Web. Use a browser to find the ECE 630 homepage at URL http://www.spec.gmu.edu/~pparis/classes/ece630.html.

I will also correspond with you through your Mason e-mail account - check your e-mail regularly. The BlackBoard page for this course will contain homework assignments, syllabus, and your grades.
Final Grades are determined as a weighted average of homeworks and exams in the following way:

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Tentative Course Schedule

Brief Review of Prerequisites

- **Week 1:** Review of pertinent material from probability theory and random processes.
- **Week 2:** Review of relevant Linear Vector Space Concepts.

Digital Modulation

- **Week 3:** Complex baseband representation of signals and random processes.
- **Week 4:** Linear, digital modulation methods and their bandwidth.
- **Week 5:** Orthogonal, bi-orthogonal, and differential modulation.

Optimal Reception in White Gaussian Noise

- **Week 6:** Signal space concepts and the matched filter.
- **Week 7:** Principles of hypothesis testing and optimal receivers.
- **Week 8:** Performance analysis of digital receivers.
- **Week 9:** Midterm Exam.
- **Week 10:** Elements of link budget analysis

Advanced Topics: The final third of the class will consider advanced topics, options include:

- Introduction to error correction coding.
- Dispersive channels and equalization.
- Fading channels and diversity.

Final Exam: May 9, 7:30-10:15pm