ECE 330:541, Stochastic Signals and Systems
Information Sheet and Syllabus
Fall 2002

• The Why: Randomness underlies many physical processes, and therefore understanding tech-
niques to characterize and model the stochastic nature of the world around us is critical for
successful engineering. ECE 330:541 Stochastic Signals and Systems serves as an introductory
graduate course that provides the fundamental material needed for modeling the uncertainties of
nature, and thereby tools that are necessary to do research in a variety of disciplines, such as

• Course Specifics:
  – Place and Time: MW 4:30-5:50, at SEC-211.
    Email: trappe@winlab.rutgers.edu. Office Hours are MW 10:00-11:30 am. If you desire to
    speak with me outside of these times, please email me to arrange an appointment.
  – TA: None.

• Handouts and Materials: All course related materials will be available at the course website
www.winlab.rutgers.edu/~trappe/ECE541.html. Homework assignments will be posted on this
website and announced in class.

• Prerequisites: It is expected that students have had an undergraduate level class in probability.
Additionally, students should have a background in multivariable calculus, linear algebra, and
linear systems. A quick barometer: Do you know what convolution is? Can you calculate double
integrals? Can you invert matrices? You should be able to answer yes to all three of these questions.

• Homework: Homework assignments will be given. However, as there is no TA assigned to the
class, the homework will not be turned in and graded. Instead, two weeks after an assignment is
announced, the solutions will be posted on the course website.

• Texts: Probability and Stochastic Processes, by R. Yates and D. Goodman. John Wiley and Sons,
1999. Note: This is the book that has been used several times at this university.

• Grading: There will be two computer projects that will each require a report, and there will be
3 exams (two midterms and one final).
  – Homework: (0%) There will be homework assignments. However, they will not be graded.
    Solutions to the assigned problems will be provided. Students are encouraged to do the
    problems and practice... practice... practice.
  – Computer Projects: (2 projects at 10% each) The purpose of the two projects is to give
    students hands on experience with the concepts taught in the class. Students will report their
    findings in a short writeup that will be graded. The writeups will be graded based upon the
    technical content and the clarity of the exposition.
  – Midterms: (2 midterms at 25% each) Two midterms will be given during the course of the
    semester. At least one week notice will be given in class to allow students to prepare. The
    exams are closed book. I don’t believe in cheat sheets and such gimmicks that trick students
    into thinking they are prepared for an exam. So, no note sheets are allowed and I reiterate the
    importance of doing the homework problems. I will try to keep a mix of applied and theoretical
    problems in the midterms. I reserve the right to be mean and ask hard questions... I also
    reserve the right to be nice and ask some easy questions. Think of me as a random variable!
  – Final: (30 %) The final exam is comprehensive and then some. Any material covered in class
is fair game. However, I will examine your ability to go beyond the basic course material and
will expect you to be able to apply your knowledge to challenging problems.
There is no set policy regarding the distribution of grades. It is entirely possible that everyone gets an 'A' if everyone does well. Also, it is entirely possible that no one gets an 'A'. After the first midterm, I will announce what I feel to be 'A'-quality work, so students can gauge their performance.

- **Additional Comments:** One goal of this class is to give the skills needed to pass the Preliminary Qualification Exams that are held each semester. I will aim to do my best to make this class prepare students for the exam, and I hope that everyone who takes this class will pass the exam. However, success in this class should not be equated with success on the exam, and I emphasize that further preparation may be needed.