EE 507 – Random Processes in Engineering
TuTh 7:45 AM, Sloan Hall 163

Course Overview: Engineers often need to understand the impact of uncertainties on their designs. It is especially common that uncertain responses or time-signals, also known as *random processes*, need to be characterized. With this motivation in mind, EE 507 gives a comprehensive introduction to the representation and analysis of random processes. Specifically, we will thoroughly review probability theory, formalize and analyze random variables, and finally define and characterize random processes. The course also discusses applications of random processes.

Instructor: Dr. Sandip Roy. I would strongly prefer that you call me just by my first name, Sandip. If you insist on using my title, please call me Dr. Roy or Professor Roy. I am an Professor in the School of EE&CS. My contact information is: EME 402, 509-335-2448, sroy@eecs.wsu.edu.

Teaching Assistant: none.

Office Hours: We will set up office hours during the first class.

Course Prereqs.: Successful completion of an undergraduate course on Probability. An understanding of linear systems is helpful but not absolutely necessary.

Course Texts: My teaching will roughly follow my course notes, and draw on the text of Papoulis: *Probability, Random Variables, and Stochastic Processes,* McGraw Hill (ISBN: 9780073660110). My notes can be found online at www.eecs.wsu.edu/~sroy/ee507_lecA.pdf and www.eecs.wsu.edu/~sroy/ee507_lecB.pdf .

Grading: Homework - 18%
Midterm Exams (2) (22% each)
Final Exam - 38%

The final course grades will be assigned as follows: I will compute each student's average according to the breakdown above. Students who score more than 60% of the highest score will pass the class (get grades of C or above), while students who score less than 60% of the highest score will fail (get a grade of F). Among the passing students, those scoring between 60% and 70% of the top score will receive a grade of C. The remaining students will be ranked, with roughly the top half receiving grades in the A range and the bottom half receiving grades in the B range. I would like for all students in the class to receive a grade in the A and B range, which requires achieving 70% of the top score.

Homework Policy: I generally expect to assign homework on Tuesdays, and they will be due in 1-2 weeks. Sorry, homework will not be accepted late (except if a formal letter is provided regarding a medical or family emergency).

Midterm Exam Dates: Tentatively, Oct 4th and November 15th, 7:00-9:15 PM.

About the Exams: You are permitted to bring any inanimate references that you would like to the exams, but no electronic devices or other people please. The exams will be quite thorough, and will test for understanding of the course material.

Exam Make-up Policy: In general, medical emergencies and emergencies among the student's immediate family will be the only accepted reasons for missing an exam. If a midterm is missed

due to a valid excuse, an alternate make-up exam will be given. Students who miss the final exam with an appropriate excuse will take a make-up final exam. Please let me know in advance about if you may miss exams or class periods.

Computer Accounts: If you do not have an EECS account, please contact the EECS Helpdesk located on the 3rd floor of Sloan Hall. This class largely will not require computer work, although you may need to use Matlab on a few occasions.

Academic Integrity: The academic integrity policy described at http://www.eecs.wsu.edu/~schneidj/Misc/academic-integrity.html applies to this course. Any cheating will result in a failing grade for the course, and will also be reported to the department for appropriate action. In this course, the exams are individual assignments, and any collaboration will be considered cheating. Some collaboration on homework is acceptable; however, the written text of the homework must be your own.

Special Needs Students: Reasonable accommodations are available for students who have a documented disability. Please notify the course instructor during the first week of class of any accommodations needed for the course.

Feedback: Please ask questions in class! Also, I would appreciate your feedback about the course material or my teaching. You can tape a note to my door or slip one under it if you wish to be anonymous.

Topics: The course has five units: 1) Introduction to Classical Probability (2 weeks), 2) Random Variables (4-5 weeks), 3) Estimation (1 week), 4) Random Processes (4-5 weeks), 5) Linear Systems Driven by Random Processes (1-2 weeks).