Syllabus for IEOR E3658 (Probability for Engineers) Fall 2016

Course topics This is an introductory course to probability theory, and does not assume any prior knowledge of the subject. The course aims to teach students the foundations required to use probability in applications, but the course itself is theoretical in nature. The content and pace of the course is best suited for students (undergraduates) with strong mathematical skills. The course begins with the basic definitions and axioms of probability and then introduces the notions of independence and conditional probability. The majority of the course focuses on random variables, both continuous and discrete, and covers the topics of expectation, variance, conditional distributions, conditional expectation and variance, and moment generating functions. The course ends with the Central Limit Theorem for sums of random variables. The method of instruction consists of lectures, recitations, weekly homework, and in-class exams.

Prerequisites Calculus, including multiple integration.

Course team The course is taught by Dr. Ton Dieker. We will be using Piazza for class discussion. Rather than emailing me, please ask them in person or post your questions on Piazza. You can post anonymously but also privately. Our class page is available through this link. The teaching assistants are TBA. The course assistants are TBA.

Who should I go to with my question?
- Homework questions (non-coding): the teaching assistants or Professor Dieker.
- Homework regrading requests: the course assistants. See “grading” for more details.
- Anything else: Professor Dieker.

Classroom 233 Mudd; meeting times: 1:10pm – 2:25pm Mon/Wed.

Class material The required book is “Introduction to probability” by Dimitri P. Bertsekas and John N. Tsitsiklis (Athena Scientific, 2008). The recitation is based on the exercises from “The probability tutoring book: an intuitive course for engineers and scientists (and everyone else!)” by Carol Ash (IEEE Press, 1993), which is a recommended book. Supplementary class material will be posted on Courseworks, https://courseworks.columbia.edu. The lecture notes are available through this link.

Homework Assignments You will receive one set of homework assignments every week, and it due before class on Wednesdays.
- Homework needs to be submitted electronically through Courseworks in PDF format.
- Any homework that is not handed in or submitted after the deadline will receive a zero grade and computed in the homework grade. NO EXCEPTIONS. Emails requesting for extensions will be ignored, but your lowest homework score will be dropped.
- A representative sample of the homework problems will be graded, not necessarily all problems.
- Start immediately on the homework so that you can take full advantage of office hours.
- You may discuss homework with classmates, in which case you have to mention on your homework with whom you have discussed it. You will get full credit for any correct answers given. Copying is not allowed.

Exams There are two in-class midterms and a final exam. The in-class midterms will be on October 12 and November 16. See the SEAS final exam calendar on http://Registrar.Columbia.Edu/Content/Exams (once available) for the date and time of our final exam.

Grading Homework 15%; Midterms 25% each; Final exam 35%.

Homework or exams are only re-graded if they are accompanied by a cover sheet with a clear reason for re-grading. No regrading requests can be submitted after one week has passed from returning the homework or exam.

Office hours My office hours are Mondays 7:30pm-8:45pm in 419 Mudd. Call my office at (212) 853-0683 if the DSI door is locked. Further course team office hours will be announced through CourseWorks. No appointments are needed during any of the office hours, please take advantage of them!

Honor Code Students are reminded to observe the IEOR Code of Academic Integrity. Any form of academic dishonesty can result in a serious deduction from your final grade or even a grade of F in the course.
**Miscellaneous** A couple of miscellaneous comments:

- Attending lectures is not obligatory but it is highly recommended.
- No use of cell phones during class.
- Electronic devices in class are only allowed in the back row.
- Do not post course materials on websites such as coursehero, I do not want these websites to profit financially from my work. Since I own the copyright, this is stealing.
- If you miss an exam due to a *real* emergency or *serious* illness:
  - You must notify me immediately (as is feasible) before the exam.
  - It is your responsibility to provide appropriate convincing documentation to support a request.
  - If your documentation is fraudulent in any way, or if you misrepresent your reasons for missing an exam, you will receive an F in the course.

If you miss an exam for legitimate reasons, then it will be my prerogative to either administer a make-up exam of my choosing (i.e., oral or written) or to add the weight for the missed exam to the final exam weight. You will not be excused for any personal business, such as interviews, social gatherings, etc. All unexcused absences will result in an exam grade of zero.

- Special classroom accommodations or testing accommodations such as extended exam time are only made upon recommendation by Disability Services.