Introduction to Probability (ECE-UY 2233)
Outline

Instructor: Dr. Elza Erkip
E-mail: elza@nyu.edu
Office: 370 Jay Street, 9th floor, 953
Office Hours: Monday and Wednesday 2 pm - 3 pm, in person and online through Zoom. Office hour Zoom links are posted in NYU Brightspace. The password is "prob"

Course Assistants: Kubilay Ulger
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Office Hours: TBA.

Ozlem Yildiz
E-mail: zy2043@nyu.edu
Office Hours: TBA.

Class Time and Place: Monday and Wednesday, 3:30 pm - 4:50 pm, 2 MTC, Room 812

Recitation: Friday 10:00 am - 11:50 am, Rogers Hall, Room 205

- We will have weekly recitations given by the course assistants. They are not mandatory, but *highly encouraged.* During class we will cover the main concepts and solve some examples to illustrate these concepts. The recitations will be devoted to interactive example solving as well as answering questions. The recitations will be approximately for an hour.

- We will also use this time slot for quizzes and exams.

Homework: There will be weekly homework assignments. The homework will also contain Matlab-based problems. The more questions you solve, the better you will understand the concepts. Only selected questions will be graded.

Quiz: We will have weekly quizzes during the Friday recitation session. The quizzes consist of short questions based on the class material, homeworks and recitation. They will be closed book, closed notes, and calculators/cell phones will not be allowed.
We will *not* have a Quiz the first week (September 10).

Matlab Mini-Projects: There will be Matlab mini-projects to reinforce your understanding of the theoretical concepts. Details will be announced later.

Midterm and Final: There will be one midterm and one final. Dates TBA.

Make-up Policy: Make-up exams will only be given under exceptional circumstances, such as illness or other critical emergency. Proper documentation required. Make-ups will be in oral exam format.

Please note that if you are experiencing an illness or any other situation that might affect your academic performance in a class, please email Deanna Rayment, Coordinator of Student Advocacy, Compliance and Student Affairs: deanna.rayment@nyu.edu. Deanna can reach out to your instructors on your behalf when warranted.

Grading:

- Quizzes: 15%

- Midterm: 25%

- Final: 40%

- Matlab mini-projects: 10%

- Homework and participation: 10%

Course Materials: Please check NYU Brightspace for handouts, announcements and other course material.

Textbooks:

1. Athanasios Papoulis and S. Unnikrishna Pillai, *Probability, Random Variables and Stochastic Processes,* McGraw Hill, 4th Edition, 2002, ISBN: 0-07-366011-6.

2. R. Yates and D. Goodman, *Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers*, Wiley, 3rd Edition.

Supplementary Materials:

1. Unnikrishna Pillai and Sourjya Dutta, *Lecture Slides in Undergraduate Engineering Probability,* available in Amazon.

2. Mohammad Junaid Farooq and Unnikrishna Pillai, *Problems and Solutions in Undergraduate Probability,* available in Amazon.

Course Outline:

1. Introduction to probability; axioms of probability.

2. Multiple experiments.

3. Random variables (discrete and continuous); probability distribution and density functions.

4. Mean and variance.

5. Multiple random variables.

6. Functions of random variables.

7. Conditional distributions.

8. Hypothesis testing and estimation.

Inclusion Statement: The NYU Tandon School values an inclusive and equitable environment for all our students. I hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is my intent that all students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. If this standard is not being upheld, please feel free to speak with me.

Moses Center Statement of Disability: If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 3rd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct:

1. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

2. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

   (a) Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

   (b) Fabrication: including but not limited to, falsifying experimental data and/or citations.

   (c) Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

   (d) Unauthorized collaboration: working together on work that was meant to be done individually.

   (e) Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

   (f) Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.