Introduction to Probability (Math 203)
Sabancı University, Summer 2020-2021

This syllabus may be subject to update and change.

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Office Hour: Thursdays 12:40 - 13:30 or by appointment, online via Zoom in both cases. Students are encouraged to make use of flexible online office hours.

Lecture Hours: Mondays 11:40 - 14:30
Tuesdays 11:40 - 13:30
Wednesdays 15:40 - 17:30.

Lecture Format: Lectures will be live-streamed (Monday, Tuesday and Wednesday) unless a technical difficulty occurs. You can find the Zoom links for the lecture on SUcourse+ under the tab "Zoom Links". **In order to have access to them, you must be logged in with your Sabancı account.** The online lectures will be made available afterwards, so that you can also watch them at a later time. I will also share some material for you on SUCourse+ to read or watch before/after the lectures. You will find a tentative breakdown of course material in the syllabus.

You are responsible for every announcement made in the online lecture or in SUCourse+. Not attending the online lecture or not following SUCourse+ regularly is not an excuse, in case you miss something.

Recitation Hours: Wednesdays 17:40 - 19:30 (A1.)

Recitation Format: Recitations will be live-streamed and held as Zoom polls integrated discussions with the TAs via Zoom. You can find the Zoom links for recitations on SUcourse+ under the tab "Zoom Links". In order to have access to them, you must be logged in with your Sabancı account. Students must attend the online recitation classes to which they are registered.

Textbook: John Freund's Mathematical Statistics with Applications, 8th Edition, Pearson- Prentice Hall, 2014.

Prerequisite: Prerequisite is a grade at least D for MATH 102.

Tentative Course Outline:

- Introduction and Combinatorial Methods [Chap. 1]
  The Basic Principles of Counting, Permutations, Combinations, Multinomial Coefficients.

- Probability [Chap. 2]
  Sample Space and Events, Axioms of Probability, Some Rules of Probability, Conditional Probability, Independent Events, Bayes' Theorem.

- Discrete Random Variables [Chap. 3, 4]
  Discrete Random Variables, Discrete Probability Functions and Cumulative Distribution Functions, The Expected Value of a Discrete Random Variable, Moments, Variance of a Discrete Random Variable, Moment Generating Function a Discrete Random Variable

- Special (Discrete) Probability Distributions [Chap. 5]
  The Uniform Distribution, The Bernouilli and Binomial Distributions, The Negative Binomial and Geometric Distributions, The Hypergeometric Distribution, The Poisson Distribution.

- Continuous Random Variables [Chap. 3, 4]
  Continuous Random Variables, Continuous Probability Densities and Cumulative Distribution Functions, The Expected Value of a Continuous Random Variable, Moments, Variance of a Continuous Random Variable, Chebyshev's Theorem, Moment Generating Function a Continuous Random Variable

- Special Probability Densities [Chap. 6]
  The Uniform Distribution, The Gamma and Exponential Distributions, The Normal Distribution, The Normal Approximation to the Binomial Distribution.

- Multivariate Random Variables [Chap. 3, 4, 5, 6]
  Multivariate Distributions, Marginal and Conditional Distribution Functions, Product Moments, Covariance, Moments of Linear Combinations of Random Variables, Conditional Expectation, Special Joint Probability Distributions.

- Functions of Random Variables [Chap. 7]
  Distribution Function Technique, Moment Generating Function Technique.

Grading:

Your grade exclusively depends on the below listed items. **There will be no other extra-credit opportunities**.

Midterm (31.07.2021 at 09:30)	35%
Final (23.08.2021 at 09:00)	35%
Self Study (Online Assignments)	20%
Lecture Attendance	5%
Recitation Grade	5%

The passing grade will be determined after the last exam. Be aware that this passing grade may not match the overall average of the students.

Important Warning I:

Every document that requires a student submission,

i. must be in **pdf** format, and **hand-written**,

ii. must have **name, surname, student ID, and signature** on the top left corner of the document **on each page** submitted, that is if you write on the two sides of the paper, write the information on both sides.

iii. **Sabancı Student ID card** or any legitimate photo ID card must be placed on the top right corner of the **first page**.

Submissions must be uploaded as a **single pdf file**. Any submission that is not in the described format will **NOT** be taken into account. Moreover, any solution that contains notations that are not used in the lectures/recitations will be completely ignored.

Important Warning II:

After any submission (i.e. online assignments, midterm exam, final exam), some of the students may be called for an oral examination. In this case, some students will be selected randomly and some will be selected based on any irregularities in their performance and/or level of work they submit. Oral examinations will be done over Zoom and each oral examination will be recorded. During an oral examination, students must

i. keep their camera on at all times,

ii. share their entire screens (not specific tabs or windows).

Performance of the student in an oral examination will affect their grades of the grading item they have been called upon. If a student fails to show up at an oral exam, or does not obey the aforementioned rules, (s)he will automatically get 0 (zero) points from that grading item.

Midterm:

The midterm exam (31.07.2021 at 09:30) will be given online. More details will be announced on SUCourse+ in due time.

Final Exam:

The final exam will be given online, at the end of the semester any day between August 21 - August 24. Exact date will be announced by student resources. More details will be announced on SUCourse+ in due time.
Both exams will be online proctored and recorded. For proctored exams, your webcam and microphone must be on during the exam. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam.

Self Study (Online Assignments):

This consists of online assignment which will be given via SuCourse+, consisting of up to 3 problems. You will be asked to solve the questions on A4 size papers to be submitted as in the format prescribed above. There will be 6 such online assignments. The best 4 of your online assignment scores will determine the self study grade. **There will be no make up for any of these assignments for any reason.** Students found having a behaviour in contrast with Academic Integrity multiple times, will receive 0 from the Self Study Grade.

Lecture Attendance:

There will be attendance checks during online lectures. There may be up to 15 lecture attendance checks, and only the best 10 will be counted. Attendance during the lectures will be taken via Zoom registration with SU email. **In order to be counted as present during the lecture, you must be logged in with your Sabancı account and attend the lecture for a reasonable amount of time, otherwise, your attendance will not be recorded.** Students with time conflicts, please see the **Registration Overrides** section of the syllabus.

Recitation Grade:

You are expected to study the lecture notes before you enter the recitation so that you can actively participate in the discussion. In each recitation, a certain number of pop-up questions will be presented to the students, via Zoom polls. Students attending their correct Zoom sessions will get participation point if they also answer all of the questions. Disturbing your classmates, being late, leaving early during online classes will not be tolerated and will affect your recitation grade. At the end of the semester, the best 5 scores will be counted for the final recitation grade.

Supplementary Exercises:

There will be supplementary exercises assigned each week via SuCourse+. You are not expected to return the solutions but you are strongly advised to solve them (even if not in full detail) before the recitation. It will be given in two parts, the ones that will be solved in the recitation and the ones whose written solutions will be shared via SuCourse+ later on.

Make Up Policy

Make-ups are only allowed for the midterm and the final examinations. Since there is limited access to health services during this period, any verbal (and legitimate) excuse can be accepted, provided that you contact the instructor **before the exam**.
Any excuses that will be taken into the instructor's account after the exam will not be considered. **No exceptions to these rules**.
Makeup for the midterm or the final exam will be held at the end of the semester. The make-up exam will contain all topics covered throughout the semester. The make-up examination will be done as a combination of face-to-face online verbal and written exam.
One can have a make-up exam for **ONLY** one of the exams. If a student misses both (Final and Midterm) exams even with a valid excuse , then he/she will be allowed to take make-up for Final exam only, and receive 0 points for Midterm exam. **If a student do not contact with the instructor and do not take neither the exams nor the make-up, then (s)he gets NA (even though online assignments and attendance checks appear in the grading).**

Academic Honesty

All university policies on academic integrity apply to our course, and they will be enforced. (more information on http://www.sabanciuniv.edu/en/academic-integrity-statement).
In particular, no form of cheating is welcome in the exams or online assignments, such as copying whole or part of each other's answers, using cheat-sheets etc. The action against such violations could range from getting a zero on the particular exam to explaining the case in front of the Disciplinary Committee.

Suggestions:

- Feel free to ask me and your TA questions in and out of class, especially during office hours.

- Summer school has a busy schedule, so please try to follow the lectures and the recitations regularly.

- Studying out of class for this course should become a routine. Key to success in mathematics is practice.

- Students are expected to follow the announcements made during the lectures or in SUCourse. Not attending the class or not following SUCourse+ regularly is not an excuse, in case you miss something.

Registration Overrides

Time conflict requests for lecture hours will be accepted. However, any and all negative outcomes that may result are solely the student's responsibility.