This syllabus is subject to change due to unforeseen circumstances

MATH 203 – Introduction to Probability
Fall 2023 Syllabus

1 Instructors and Teaching Assistants

<table>
<thead>
<tr>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors:</td>
<td>Kağan Kurşungöz</td>
</tr>
<tr>
<td>e-mail:</td>
<td><a href="mailto:kursungoz@sabanciuniv.edu">kursungoz@sabanciuniv.edu</a></td>
</tr>
<tr>
<td>office:</td>
<td>FENS 2010</td>
</tr>
</tbody>
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Teaching Assistants: TBA

2 Recitations

Recitations will be physical in-class, the schedule is as follows.

A1 - T 12:40 pm - 1:30 pm - SOM G045 - TA TBA
A2 - T 12:40 pm - 1:30 pm - SOM G065 - TA TBA

B1 - M 9:40 am - 10:30 am - FASS 1080 - TA TBA
B2 - M 9:40 am - 10:30 am - SOM G045 - TA TBA
B3 - M 9:40 am - 10:30 am - SOM G065 - TA TBA

C1 - M 1:40 pm - 2:30 pm - FASS 1080 - TA TBA
C2 - M 1:40 pm - 2:30 pm - FENS L048 - TA TBA
C3 - M 1:40 pm - 2:30 pm - FENS L047 - TA TBA

D1 - T 8:40 am - 9:30 am - SOM G045 - TA TBA
D2 - T 8:40 am - 9:30 am - SOM G065 - TA TBA
D3 - T 8:40 am - 9:30 am - FENS L065 - TA TBA
D4 - T 8:40 am - 9:30 am - FENS L067 - TA TBA

E1 - M 11:40 am - 12:30 pm - FENS L067 - TA TBA
E2 - M 11:40 am - 12:30 pm - FENS L058 - TA TBA
E3 - M 11:40 am - 12:30 pm - FENS L048 - TA TBA

F1 - M 3:40 pm - 4:30 pm - FASS 1080 - TA TBA
F2 - M 3:40 pm - 4:30 pm - SOM G045 - TA TBA
F3 - M 3:40 pm - 4:30 pm - SOM G065 - TA TBA

G1 - T 10:40 am - 11:30 am - FASS 1080 - TA TBA
G2 - T 10:40 am - 11:30 am - FENS L065 - TA TBA
G3 - T 10:40 am - 11:30 am - FENS L058 - TA TBA
3 Office hours

Instructors:

Kağan Kurşungöz  TBA, and by appointment.
Gökalp Alpan  W 10:40 – 11:30, and by appointment.

TAs:

TBA

4 Lecture Time and Venue

All lectures are physical and in class. They will not be broadcasted or recorded. Lecture notes will be posted on SUCourse after each class.

Section A  Wednesday 08:40-09:30  Friday 08:40-10:30  SOM 1099
Section B  Wednesday 09:40-10:30  Friday 12:40-14:30  SOM 1099

5 Textbook


6 Prerequisite and Corequisite

Prerequisite is having passed MATH 102 with at least D. MATH 203R is a corequisite.
7 Course Description

The course covers the material listed below. Chapters refer to the above mentioned textbook.

- Chapter 1: Introduction and Combinatorial Methods
  - The Basic Principles of Counting
  - Permutations
  - Combinations
  - Multinomial Coefficients
- Chapter 2: Probability
  - Sample space and events
  - Postulates of probability
  - Some rules of probability
  - Conditional probability
  - Independent events
  - Bayes’ theorem
- Chapters 3, 4, 5: Discrete Random Variables
  - Discrete random variables (§ 3.1)
  - Discrete Probability Functions and Cumulative Distribution Functions (§ 3.2)
  - The Expected Value of a Discrete Random Variable (§ 4.1)
  - Moments, Variance of a Discrete Random Variable (§ 4.3)
  - Moment Generating Function a Discrete Random Variable (§ 4.5)
  - Special (Discrete) Probability Distributions (Selected Sections)
    * The Uniform Distribution (§ 5.2)
    * The Bernoulli and Binomial Distributions (§§ 5.3 – 5.4)
    * The Negative Binomial and Geometric Distributions (§ 5.5)
    * The Hypergeometric Distribution (§ 5.6)
    * The Poisson Distribution (§ 5.7)
- Chapters 3, 4, 6: Continuous Random Variables
  - Continuous Random Variables (§ 3.3)
  - Continuous Probability Densities and Cumulative Distribution Functions (§ 3.4)
  - The Expected Value of a Continuous Random Variable (§ 4.2)
  - Moments, Variance of a Continuous Random Variable (§ 4.3)
  - Moment Generating Function a Continuous Random Variable (§ 4.5)
  - Special Probability Densities (Selected Sections)
    * The Uniform Distribution (§ 6.2)
    * The Exponential Distribution (§ 6.3)
    * The Normal Distribution (§ 6.5)
    * The Normal Approximation to the Binomial Distribution (§ 6.6)
- Chapters 3, 4, 5, 6: Multivariate Random Variables
  - Multivariate Distributions (§ 3.5)
  - Marginal and Conditional Distribution Functions (§§ 3.6 – 3.7)
  - Product Moments, Covariance (§ 4.6)
  - Moments of Linear Combinations of Random Variables (§ 4.7)
  - Conditional Expectation (§ 4.8)
  - Special Joint Probability Distributions (Selected Sections)
    * Multinomial Distribution (§ 5.8)
    * Multivariate Hypergeometric Distribution (§ 5.9)
    * Bivariate Normal Distribution (§ 6.7)
8 Exam Policy and Dates

There will be 2 midterms during the semester and a final exam after the semester. The tentative dates are as follows:

Midterms (30% each):
- MT1: TBA
- MT2: TBA

Final (40%): TBA (During Finals Weeks)

Attendance Quiz (5% Bonus): 8-10 attendance quiz will be given in recitation hours and the best 6-8 will be taken.

- **Midterm**: All the exams will be given in-person on campus unless otherwise determined by the administration. The dates and locations will be announced later. More details will be announced on SUCourse in due time.

- **Final Exam**: The final exam will be given in-person, on campus, during the finals week. The date and time of the final exam is determined by Student Resources and the instructors cannot change it. More details will be announced on SUCourse in due time.

- Do not underestimate this course! It is advised that you study regularly and attend all lectures and recitation sessions. If you do not fully understand the material it is recommended to take an appointment with your TA or your instructor immediately after class.

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

- It is the students’ responsibility to follow all the announcements made in class and those made via SUCourse.
9 Make-up Policy

• If you miss an exam and wish to make it up, you can take a make-up exam. Students who wish to take make-up exam do NOT need to submit a health report or her/his reasoning. If you miss more than one exam then you have to provide documentation and explain the reasoning.

• Make-up for the midterm and the final exam will be held at the end of the final exam period and it will cover all the topics. Only students who miss an exam will be able to take it.

10 Course Policy

• Lectures & SuCourse: Following the lectures and SUCourse activity is a prerequisite for the course. The students are responsible for every announcement made during the lectures or on SUCourse.

• Exercises: There will be exercises given every week starting from second week of the semester. They will not be graded. You are not expected to return solutions but you are strongly advised to solve them and discuss during recitations.

• Recitations: Recitations will be physical and in-class. Their schedule and locations will be posted on the course website. During recitations your TA will solve some questions from the exercises posted in advance.

• Academic Honesty: We expect all students to follow common-sense practices during the exams. Cheating will not be tolerated. 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.

• Registration Overrides: Time conflict requests will be accepted. However, any and all negative outcomes that may result are solely the student’s responsibility.