

**Syllabus**  
**MATH 203, Introduction to Probability**  
**Fall 2022-2023**

## 1 Instructors and Teaching Assistants

Instructors	Section A	Section B
	Turgay Bayraktar	Gökalp Alpan
Email	tbayraktar@sabanciuniv.edu	gokalp.alpan@sabanciuniv.edu
Office	FENS 1013	FENS L023
Phone	02164839513	02164839619
Teaching assistants:		
	Melike Efe (coordinator TA)	melikeefe@sabanciuniv.edu
	Afrim Bojnik	afrimbojnik@sabanciuniv.edu
	Burcu Barsakçı	burcubarsakci@sabanciuniv.edu
	Çiğdem Çelik	cigdemcelik@sabanciuniv.edu
	Mahdiyeh Zahrabi	mahdiyeh.zahrabi@sabanciuniv.edu
	Oussama Amit	oussama.amir@sabanciuniv.edu
	Rizwan Jahangir	rizwan@sabanciuniv.edu
	Shawqi Farea	sfarea@sabanciuniv.edu

## 2 Recitations

Recitations will be physical and in-class and for each recitation their schedule are as follows:

Section A1	Rizwan Jahangir	M 9.40-10.30 FENS L047
Section A2	Afrim Bojnik	M 9.40-10.30 FENS L056
Section B1	Shawqi Farea	M 13.40-14.30 FENS G025
Section B2	Oussama Amir	M 13.40-14.30 FENS L048
Section B3	Çiğdem Çelik	M 13.40-14.30 FENS 2019
Section C1	Burcu Barsakçı	T 8.40-9.30 FENS L065
Section D1	Burcu Barsakçı	T 12.40-13.30 FENS L048
Section D2	Mahdiyeh Zahrabi	T 12.40-13.30 FENS L027
Section E1	Rizwan Jahangir	M 11.40-12.30 FENS L067
Section E2	Çiğdem Çelik	M 11.40-12.30 FENS L058
Section E3	Afrim Bojnik	M 11.40-12.30 FENS L048
Section F1	Melike Efe	T 10.40-11.30 FASS G048
Section F2	Burcu Barsakçı	T 10.40-11.30 FASS 1099
Section F3	Shawqi Farea	M 15.40-16.30 FENS L062
Section G1	Mahdiyeh Zahrabi	T 14.40-15.30 FENS 2019
Section H1	Oussama Amir	T 14.40-15.30 FENS G025

### 3 Office hours

**Office hours instructor:**

Turgay Bayraktar	By appointment
Gökalp Alpan	By appointment

**Office hours TA's:**

Afrim Bojnik	
Burcu Barsakçı	Tuesday 14:40 - 15:30
Çiğdem Çelik	Monday 12.40 - 13.30
Melike Efe	Monday 12.40 -13.30
Oussama Amir	
Rizwan Jahangir	Monday 10:40 - 11:30
Shawqi Farea	Monday 14:40 - 15:30
Mahdiyeh Zahrabi	Thursday 17:40-18:30

### 4 Lecture Time and Venue

All lectures will be physical and in-class. Lectures won't be broadcasted nor recorded. However, lecture notes will be posted on SuCourse after each class.

Section A	Wednesday 8.40-9.30	Friday 8.40-10.30	FENS G077
Section B	Wednesday 9.40-10.30	Friday 12.40-14.30	FENS G077

### 5 Textbook

John Freund's Mathematical Statistics with Applications, 8th Edition, Pearson-Prentice Hall, 2004, ISBN 978-1-292-02500-1. It can be obtained through the following link: <https://www.homerbooks.com/urun/john-e-freunds-mathematical-statistics-with-applications>

### 6 Prerequisite and Corequisite

Prerequisite is a grade at least D for MATH 102. 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
- Chapter 3,4,5: Discrete Random Variables
  - Discrete Random Variables (Ch. 3.1)
  - Discrete Probability Functions and Cumulative Distribution Functions (Ch. 3.2)
  - The Expected Value of a Discrete Random Variable (Ch. 4.1)
  - Moments, Variance of a Discrete Random Variable (Ch. 4.3)
  - Moment Generating Function a Discrete Random Variable (Ch. 4.5)
  - Special (Discrete) Probability Distributions (Selected Sections)
    - \* The Uniform Distribution (Ch. 5.2)
    - \* The Bernoulli and Binomial Distributions (Ch. 5.3 and Ch. 5.4)
    - \* The Negative Binomial and Geometric Distributions(Ch. 5.5)
    - \* The Hypergeometric Distribution(Ch. 5.6)
    - \* The Poisson Distribution (Ch. 5.7)
- Chapter 3,4,6: Continuous Random Variables
  - Continuous Random Variables (Ch. 3.3)
  - Continuous Probability Densities and Cumulative Distribution Functions (Ch. 3.4)
  - The Expected Value of a Continuous Random Variable(Ch. 4.2)
  - Moments, Variance of a Continuous Random Variable (Ch. 4.3)
  - Moment Generating Function a Continuous Random Variable (Ch. 4.5)
  - Special Probability Densities (Selected Sections)
    - \* The Uniform Distribution (Ch. 6.2)
    - \* The Exponential Distribution (Ch. 6.3)
    - \* The Normal Distribution (Ch. 6.5)
    - \* The Normal Approximation to the Binomial Distribution (Ch. 6.6)

- Chapter 3,4,5,6: Multivariate Random Variables
  - Multivariate Distributions (Ch. 3.5)
  - Marginal and Conditional Distribution Functions (Ch. 3.6 and Ch. 3.7)
  - Product Moments, Covariance(Ch. 4.6)
  - Moments of Linear Combinations of Random Variables (Ch. 4.7)
  - Conditional Expectation (Ch. 4.8)
  - Special Joint Probability Distributions (Selected Sections)
    - \* Multinomial Distribution (Ch. 5.8)
    - \* Multivariate Hypergeometric Distribution (Ch. 5.9)
    - \* Bivariate Normal Distribution (Ch. 6.7)
- Chapter 7: Functions of Random Variables
  - Distribution Function Technique
- Chapter 8: Sampling Distributions
  - Samples, the Distribution of the Mean
- Ch 8+: Basic Methods for Statistical Estimation and Testing
  - Point Estimation
  - Confidence Interval
  - Hypothesis Testing

## 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: Tuesday, November 22nd between 19.40 -21.10  
 MT2: Saturday, December 24th between 10.00-11.30am 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 faculty board. The tentative dates are posted 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 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 from 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.