

# Discrete Mathematics (Math 204) Sabancı University, Fall 2020-2021

*This syllabus may be subject to update and change.*

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**Office Hour:** Monday 13:40 - 14:30 or by appointment, online via Zoom in both cases.

**Lecture Hours:** Tuesdays 16:40 - 17:30 and Thursdays 12:40 - 14:30.

**Lecture Format:** Lectures will be live-streamed (Tuesday and Thursday) unless a technical difficulty occurs. You can find the Zoom links for the lecture on SUCourse+.

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. They are going to be published on SUCourse+ via Google Drive. 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.**

## Recitations Hours:

Thursdays 17:40 - 18:30 (A1, A2, A3),

Fridays 15:40 - 16:30 (B1, B2, B3),

Fridays 16:40 - 17:30 (C1, C2),

Fridays 17:40 - 18:30 (D1, D2).

## Recitations Format:

Recitations will be live-streamed and held as Tophat and Zoom polls integrated discussions with the TAs via Zoom. You can find the Zoom links for recitations on SUCourse+. 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.

## Objectives

We hope to gain an understanding of:

- First-order logic, proof techniques, mathematical induction.
- Sets, functions, sequences, sums,
- Algorithms, analysis of time and space complexity,
- Divisibility and primes,
- Basic and advanced counting techniques, recurrences, solving recurrences,
- Relations
- Graphs, trees (if time).

## Textbook

Discrete Mathematics and its Applications, 7th ed., Kenneth H. Rosen.

## Tentative Course Outline

Below is a very hopeful tentative breakdown of topics. It may vary due to time and holiday constraints.

Week	Topics (Sections from the textbook)
1	1.1, 1.2, 1.3, 1.4
2	1.5, 1.6, 1.8, 1.9
3	5.1, 5.2
4	2.1, 2.2, 2.3
5	2.4, 2.5
6	3.1, 3.2, 3.3
7	4.1, 4.3
8	6.1, 6.2, 6.3
9	6.4, 6.5, 6.6
10	8.1, 8.2, 8.4
11	8.5, 9.1, 9.5
12	10.1, 10.2, 10.3
13	10.4, 10.5, 10.6,
14	10.7, 10.8, 11.1, 11.2

## Grading:

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

Midterm	35%
Final (date TBA)	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:

Every document that requires a student submission,

- must be in **pdf** format, and **hand-written**,
- must have **name, surname, student ID, and signature** on the top left corner of the document **on each page** submitted,
- **Sabancı Student 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.

## Midterm:

The midterm exam will be given online. It will be held on **November 30, 2020 (19:40-22:40)**. 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. More details will be announced on SUCourse+ in due time.

**Both exams will be online proctored and recorded.**

## 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 or 7 such online assignments. The best 5 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, 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 TopHat and 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 8 scores will be counted for the final recitation grade.

## Weekly worksheets

Weekly worksheets will be uploaded on SUcourse+. It will consists of 3 sections. You will find the the solution of exercises given in first section in form of recorded videos (in Google shared drive on SUcourse+). The exercises given in second section will be discussed in recitation hours. Exercises given in third section are for you to solve to get a better understanding of the topic.

## Make Up Policy

Make-ups are only allowed for the midterm and the final exams. 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 **beforehand**. 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 (after the finals period ends). The make-up exam will contain all topics covered throughout the semester. The make-up exam will be done as a face-to-face online verbal exam. .

One can have a make-up exam for **ONLY** one of the exams. If a student miss 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.

## 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 quizzes, 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.

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.

### **Suggestions:**

- Feel free to ask me and your TA questions in and out of class, especially during office hours.
- Major part of Math 204 is theoretical and abstract mathematics (that is abstract definitions and Theorems). Students will be taught to think logically and mathematically. Whenever you encounter an abstract concept in the lecture, take a pause and give yourself some time to think about it.
- In Discrete Mathematics, definitions and Theorems build on each other quickly. If you fall behind, it will be difficult to catch up. Work hard from the beginning, and come to office hours immediately if you do not understand something.
- 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.**