

## Calculus II (MATH 102)

### Sabancı University, Fall 2020-2021

**Section A Lecturer (and Coordinator):** Şirin Kaya  
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**Office Hours:** Monday 18:00-19:00 (on Zoom)

**Section B Lecturer:** Kağan Kursungöz  
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**Office Hours:** by appointment

**Coordinator:** Gamze Kuruk  
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**Class Hours and Lecture Format:** Lectures will be live-streamed and Tophat integrated lectures (Monday and Tuesday). You will be sent a link to access them before the lecture time. Please check your e-mails. 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. We will also share some optional material for you on SUCourse+ to read or watch before/after the lectures. You will find a tentative breakdown of material at the end of the syllabus.

**Lecture Hours:** Section A: Mondays 15:40-17:30 and Tuesdays 11:40-12:30.  
Section B: Mondays 11:40-12:30 and Tuesdays 16:40-18:30.

**Recitation Hours:** Fridays 08:40-10:30, 10:40-12:30 and 13:40-15:30.

**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.**

**Aim of the Course:** We hope to gain an understanding of:

- Improper integrals,
- Sequences and series, approximation of functions by series,
- Functions of several variables,
- Differentiation of functions of several variables,
- Optimizing functions of several variables,
- Integrating functions of several variables,
- Various coordinate systems if time allows.

**Learning Outcomes:** On completion of this course the student should be able to:

1. Understand the idea of integration over unbounded intervals and compute them
2. Define the notion of convergence of series and use various tests to determine series convergence
3. Find Taylor representations of functions and approximate functions via Taylor polynomials
4. Understand and use the concept of a function of several variables, draw graphs in 3 dimensional spaces
5. Use the properties of vectors and operations with vectors
6. Compute partial derivatives, directional derivatives and write equations of tangent planes to surfaces
7. Apply partial derivatives to find and test local extrema
8. Evaluate double integrals in Cartesian and polar coordinates and triple integrals in Cartesian coordinates

**Textbook:** Calculus Early Transcendentals 2nd Edition (Global Edition), Briggs, Cochran & Gillett.

**Recitations:** Recitations will consist of three parts: TA/LAs solving problems, discussing the worksheet with the TA and LA and the quiz.

- **Problem Solving:** The TA and LA will solve a few questions from the textbook at the beginning of the recitation.
- **Worksheets:** The worksheet problems will be published on SUCourse+ after the Tuesday lectures. You are supposed to work on the problems before the recitations, discuss your solutions with your peers and assistants during the recitation and then upload your own solutions on Gradescope. We will review your solutions and provide feedback individually.
- **Quizzes:** There will be short quizzes at the end of each recitation.

**Grading:** Your grade exclusively depends on the following listed items. The details of each item are below.

Midterm (Nov 14 2020)	30%
Final Exam (Jan 21 2021)	35%
Lecture Attendance	5%
Recitation Attendance	5%
Recitation Worksheets	10%
Recitation Quizzes	15%
Online Homework (requires Pearson MyLab account)	5% (bonus)

There will be no other extra-credit opportunities.

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**IMPORTANT:**

Every document that requires a student submission, needs to be in *pdf* format, hand-written and to have name, surname, student ID, and signature on the top left corner of the document, on each page submitted (note: if you write on the two sides of a piece of paper, write the information on both sides).

Any page missing any of these information will be completely ignored.

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**Midterm:** The midterm exam will be given online. The date will be announced later. More details will be announced on SUCourse+ in due time.

**Final Exam:** The final exam will be given online, on January 21st, 2021. 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.

Both exams will be online proctored and recorded.

**Lecture Attendance:** Attendance during the lectures will be taken via *Zoom* registration with SU email.

**Recitation Attendance:** Attendance during the recitations will be taken via the quiz uploads. In order to be counted as present in the recitations, students must upload their handwritten solution to the quiz question on SUCourse+ before the deadline.

**Recitation Worksheets:** The worksheets of the week will be published on SUCourse+ after the Tuesday lectures. Students who submit a complete solution of the assigned worksheet questions will receive 1 point for that week. In order to get points, at least half of the solution must be correct. Solutions are to be submitted on *Gradescope*. The best 10 of your worksheet scores will determine the Worksheet grade. More details will be announced on SUCourse+.

**Recitation Quizzes:** During the recitation time, we will assign a quiz on SUCourse+. Students are required to write down their solution and upload a picture of it on SUCourse+ in *pdf* format. Other filetypes will be disregarded. The best 8 of your quiz scores will determine the quiz grade. There will be absolutely no make-up for missed quizzes. More details will be announced on SUCourse+.

**NA Policy:** (Updated on Nov 3, 2020) Based on the recommendations of the Higher Education Council of Turkey, we have decided to remove the NA policy for this semester for Math102. This means that students who miss 6 or more recitations will no longer receive the NA grade and will be allowed to take the final exam. This decision is effective for this semester only.

**Online Homework:** On the second week of the course, detailed instructions on how to register to Pearson MyLab will be given on SUCourse+. The online homework will be assigned on the weekend and will be due on Thursday at 23:45. To do the homework, after logging into their personal MyLab account, each student will receive a random set of questions. There will be no make-up for any online homeworks if you miss the deadline.

**Academic Integrity:** 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. Students are not allowed to give or receive outside help. The action against such violations could range from getting a zero on the particular quiz/exam to explaining the case in front of the Disciplinary Committee.

In quizzes or exams, if we suspect any breach of academic integrity, we may ask for an oral validation of the quiz/exam. In this case the student will be invited to an oral interview and will be given the opportunity

to explain their solution. If the student cannot provide sufficient explanations, or does not show up to the interview, their quiz/exam grade will be replaced with zero (0).

**Class Discipline:** It is our responsibility to provide students with excellent teaching and learning environments. We are therefore asking you to respect both our responsibility to teach and the right of other students to learn. Any action that disturbs your classmates or disrupts the online activities is unacceptable. Repeated violations of the above common sense rules may cause a student to be counted as absent for a lecture or a recitation.

**Suggestions:**

- Feel free to ask us and your assistants questions via e-mail.
- Remember that you do not have to be a math genius to be successful in this course (although it wouldn't hurt!). Regular study habits are sufficient to get a decent grade.
- Studying out of class for this course should become a routine. Key to success in mathematics is practice.
- Scientific WorkPlace / NoteBook (SWP / SNB) is a math software package available at Information Technology website for download. You are welcome to use it for your self-study.

Below is a tentative breakdown of topics. The order in the tentative schedule might be altered. It is your responsibility to follow the lecture notes posted on SUCourse+.

Lecture	Date	Topic (Sections from the textbook)
Week 1	Oct 5-6	7.8 Improper integrals
Week 2	Oct 12-13	8.1-8.3 Sequences, infinite series
Week 3	Oct 19-20	8.4 The divergence and integral tests
Week 4	Oct 26-27	8.5-8.6 The ratio and alternating series tests
Week 5	Nov 2-3	9.1-9.4 Power series, Taylor series
Week 6	Nov 9-10	11.1-11.3 Vectors, dot product
Week 7	Nov 16-17	11.4, 12.1 Cross product, planes and surfaces
Week 8	Nov 23-24	12.2, 12.3 Level curves, limits and continuity
Week 9	Nov 30-Dec 1	12.4, 12.5 Partial derivatives, chain rule
Week 10	Dec 7-8	12.6, 12.7 Directional derivatives, gradient, tangent planes
Week 11	Dec 14-15	12.8 Maximum/minimum problems
Week 12	Dec 21-22	12.9 Lagrange multipliers, 13.1 Double integrals over rectangular regions
Week 13	Dec 28-29	13.2-13.3 Double integrals over general regions or in polar coordinates
Week 14	Jan 4-5	13.4-13.5 Triple integrals