

Calculus II (MATH 102)
Sabancı University, Summer 2023-2024

This syllabus may be subject to update and change.

Lecturer: Çiğdem Çelik
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Office: UC 1089
Office Hours: Wednesday, 09.40-10:30, by appointment

Important: **When you send an email please include “MATH 102” in the subject.**

Lecture Hours: Wednesdays 13:40-16:30 and Fridays 11:40-14:30 (FENS L045).

Teaching Assistants: Burak Kardaş (A1) burak.kardas@sabanciuniv.edu
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Recitation Hours: A1: Thursdays 11:40-13:30 (SBS G065) and Fridays 16:40-18:30 (FASS 1080).
A2: Thursdays 11:40-13:30 (SBS G042) and Fridays 16:40-18:30 (SBS G045).
A3: Thursdays 11:40-13:30 (SBS G041) and Fridays 16:40-18:30 (SBS G065).

Office Hours of TA’s: On SuCourse.

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

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

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

- 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.

You will find a tentative breakdown of material at the end of the syllabus.

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

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

Recitations: Each recitation will consist of the following activities:

Problem solving: The assistants will solve some problems on the white board.

Group-study: Students will discuss and solve problems from a given worksheet in groups.

Quiz: On some weeks, there will be a quiz at the end of the recitation.

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

Midterm	35%
Final Exam	44%
Lecture Attendance	5%
Recitation Attendance	5%
Recitation Quizzes	16%

Exams: There will be one midterm exam and a final exam. The midterm exam will be on the below listed date and time. More detailed information will be available in the due course.

Midterm	04.08.2024, Sunday
Final	TBA

The university will later announce the final exam date. The final may be given on any day between August 24th - August 27th 2024. Student Resources will determine the dates and times for all final exams, and instructors cannot change it. The last day for grade submissions is September 3th, so do not plan to leave İstanbul before September 3th, 2024. We will not accommodate travel arrangements, or other personal business.

During exams, students are **NOT** allowed to have books, notes, electronic devices (including cell phones, smart watches, calculators, computers etc.), or any other kind of supporting learning material. A student violating this rule will receive 0 points for that exam.

Lecture Attendance: Attendance during the lectures will be checked via pop-up quizzes at random times on some weeks. In order to get the attendance points, you must be in the room while the pop-up quiz is asked and you must answer the quiz question. The best 6 of your lecture quiz scores will determine the Lecture Attendance grade. There will be absolutely no makeup for missed pop-up quizzes. Students found having a behavior in contrast with Academic Integrity, will receive 0 from the Lecture Attendance grade component.

Recitation Attendance: Attendance in recitations will be taken by signature, in both hours. **To be counted as present, you need to actively attend both full hours and hand in a valid quiz paper, if there is a quiz.** Latecomers will not be allowed to sign the attendance sheet for that hour. There will be absolutely no makeup for missed recitation attendances. You are required to attend your registered recitation section, otherwise your attendance record will be lost. Each attended recitation is worth 1 point. The best 8 will determine the recitation participation grade. Students found having a behavior in contrast with Academic Integrity, will receive 0 from the Recitation Attendance grade component.

You are responsible for keeping track of your attendance records on SUCourse. If any is entered incorrectly, you must notify your lecturer or your TA, within 2 weeks from when they are published, to change it. In general, if you have serious issues preventing you from regularly following the course for an extended period of time, you are required to contact the lecturer without delay.

Recitation Quizzes: There will be a quiz at the end of the recitation on some weeks. In order to be able to take the quiz, you need to be present during the second hour of the recitation. Latecomers will not be allowed to take the quiz. There will be absolutely no makeup for missed quizzes. The best 4 of your 6 quiz scores will determine the Recitation Quiz grade. More details will be announced on SUCourse.

During quizzes, students are **NOT** allowed to have books, notes, electronic devices (including cell phones, smart watches, calculators, computers etc.), or any other kind of supporting learning material. A student violating this rule will receive 0 points for that quiz.

Important: Every quiz paper (in recitations or pop-up quizzes in lectures) needs to be hand-written and to have name, surname, student ID, and signature on the top left corner of the document, on each page submitted. Any page missing any of these information will be completely ignored.

Midterm and Final Makeup Policy: Make-ups are only allowed for the midterm exam and the final exam. If you miss the midterm or the final and wish to make it up, you must contact Çiğdem Çelik by email, and explain your excuse **before the exam begins**. If it is a health problem you need to bring a doctor's report, which must be given or checked by SU Health Center within 3 days of the date of the report. The ones having other excuses should contact the instructor within the day of and before the exam to be missed and then it will be decided whether these students are allowed to take the make-up exam. Any excuses to be brought to the attention of the instructors after the exam will not be considered. No exceptions to these rules! Make-ups for the midterm exam or the final will be at the end of the semester (during/after the finals period.) Only students who got permission for the makeup will be informed about the exact time and place. The make-up exam will contain all topics. There is no makeup for the makeup exam.

NA Policy: If the student do not contact with the instructor and do not take neither the exams nor the make-up, then (s)he gets NA.

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.

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 learning environment is unacceptable. Repeated violations of these rules may cause a student to be counted as absent for a lecture or a recitation.

Global suggestions for the semester:

- *Always* come to lectures and recitations with a notebook and a pen.
- Feel free to ask your instructor and your assistants questions in and out of class, especially during office hours.
- 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.
- Attend the classes and recitation hours regularly.
- Studying out of class for this course should become a routine. Key to success in mathematics is practice.
- GeoGebra and Desmos are useful softwares/websites to visualize many of the concepts we discuss.

In the *Resources* section of SUCourse, a list of problems will be provided from each section covered in the book. These problems are for self-study and preparation for the recitation quiz. You are not supposed to return their solutions to us.

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.

Lectures	Dates	Topics (Sections from the book)
Lecture 1	July 10	8.1 - 8.2 Sequences
Lecture 2	July 12	8.3 Infinite series 8.4 Divergence Test, Integral Test, p-test
Lecture 3	July 17	8.4 Properties of convergent series 8.5 Ratio Test, Root Test, Comparison Test, Limit Comparison Test
Lecture 4	July 19	8.6 Alternating Series Test, Absolute convergence 9.1 Taylor polynomials 9.2 Power series and their properties
Lecture 5	July 24	9.2 Power series and their properties (cont'd) 9.3 Taylor series 9.4 Working with Taylor series
Lecture 6	July 26	9.4 Working with Taylor series (cont'd) 11.1 Vectors in 2D 11.2 Vectors in 3D
Lecture 7	July 31	11.3 Dot product 11.4 Cross product 12.1 Planes, Cylinders, Quadratic surfaces
Lecture 8	August 2	12.1 Planes, Cylinders, Quadratic surfaces (cont'd) 12.2 Graphs and level curves
Midterm Exam (August 4)		
Lecture 9	August 7	12.3 Limits and continuity 12.4 Partial derivatives 12.5 The chain rule
Lecture 10	August 9	12.6 Directional derivatives and the gradient in 3D 12.7 Tangent planes and linear approximation
Lecture 11	August 14	12.8 Maximum/minimum problems 12.9 Lagrange Multipliers
Lecture 12	August 16	13.1 Double integrals over rectangular regions 13.2 Double integrals over general regions
Lecture 13	August 21	13.2 Double integrals over general regions (cont'd) 13.3 Double integrals in polar coordinates
Lecture 14	August 23	13.4 Triple integrals