This syllabus will receive small updates during the first 2 weeks, including midterm dates and office hours

Lecturer (Section A): Canan Kaşkıç
E-mail: canan.kasici@sabanciuniv.edu
Office: FENS L017
Office Hours: Tuesday 11:40 - 12:30 or by appointment

Lecturer (Section B): Nilay Duruk Mutlubaş
E-mail: nilay.duruk@sabanciuniv.edu
Office: FENS 1016
Office Hours: Monday 13.40 - 14.30 or by appointment

Coordinators: Matteo Paganin
E-mail: matteo.paganin@sabanciuniv.edu
Office: UC 1089
Office Hours: TBA

Gamze Kuruk
E-mail: gamze.kuruk@sabanciuniv.edu
Office: UC 1089
Office Hours: by appointment

Class Hours: Section A: Mon 11:40 - 12:30 in SBS 1099, Tue 9:40 - 11:30 in FENS G077
Section B: Mon 16:40 - 17:30 in FENS G077, Tue 14:40 - 16:30 in FENS G077

Recitation Hours: Fri 8:40 - 10:30 (A1 - A6),
Fri 10:40 - 12:30 (B1 - B6),
Fri 12:40 - 14:30 (C1 - C3),
Fri 14:40 - 16:30 (D1 - D2),

You are responsible for every announcement made in class or on SUCourse. Not attending the class 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. You can purchase it following the instructions found on the course page, in SUCourse.

For online homeworks, students must have a personal account on Pearson MyLab. Detailed instructions, including how to create/link such an account, will be shared on SUCourse, during the second week of classes.

Condensed guideline of the present syllabus

- Read this syllabus from top to bottom.
- Follow the announcements on SUCourse.
- Attend the lectures regularly and never shy away from asking questions.
- Review the lecture notes, provided on SUCourse, before the recitations.
- Do the MyLab homeworks, if you purchased the book. The account on MyLab must be created with your sabanciuniv.edu address. If you previously used a code, you do not need a new one.
- Attend the recitations, both hours, and work on the problems presented in the weekly worksheet. When there is a quiz at the end, take it. Remember to sign the attendance sheet in each hour.
- Prepare for the midterms and final exams, without waiting for the last day.
- Take advantage of the Office Hours, to ask your questions to the instructors or to the assistants, and check out the Suggested problems, published on SUCourse.

All the details, of what is mentioned above and more, are in the next pages.
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.

Learning Outcomes: On completion of this course a 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.

Lectures and Recitations: Lectures are given in class as detailed above. Recitations are given in class as detailed in your course schedule. Attendance is checked in both occasions.

Each recitation will consist of the following activities.

Problem solving: Assistants will discuss solutions of various exercises.

Group-study: Students are given a worksheet to work on, in groups, with the support of the Assistants.

Quiz: In about half the recitations, students who attended the second hour are given few questions as a quiz, similar to the problems already seen. Extra Suggested problems, useful to review and practice outside the recitations, are listed on SUCourse. Each week, during the lectures, we will announce if there will be a quiz on that week.

Attendance: Attendance is checked throughout the course.

In lectures, there will be attendance checks in the form of pop-up quizzes. There will be 7 to 8 such quizzes. In order to be valid, each quiz must bear name, surname, student ID number, signature, and some effort to solve the given quiz. You are required to attend your registered lecture section, otherwise your attendance record will be lost.

In recitations, attendance will be taken by signature, in both hours. You must actively attend both full hours in order to be counted as present. Latecomers will not be allowed to sign the attendance sheet and a signature for the second hour is necessary to take the quiz. You are required to attend your registered recitation section, otherwise your attendance record will be lost.

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. If you have a medical report for an extended period of time (about a month or so), you must contact Matteo Paganin, without any delay.

Attendance is used to compute the Participation grades, see the next page.

NA Policy: Students missing 2 exams or more will receive NA if they also miss the make-up.

In general, if there will be serious issues preventing you from regularly following the course, you are required to contact the Matteo Paganin. Please see also Class Discipline below.
**Grading:** Your grade exclusively depends on the following listed items. Each item is discussed after the table. There will be no other extra-credit opportunities.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm 1</td>
<td>22%</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>22%</td>
</tr>
<tr>
<td>Final</td>
<td>30%</td>
</tr>
<tr>
<td>Lecture Participation Grade</td>
<td>5%</td>
</tr>
<tr>
<td>Recitation Participation Grade</td>
<td>5%</td>
</tr>
<tr>
<td>Recitation Quizzes</td>
<td>16%</td>
</tr>
<tr>
<td>Online homeworks (requires MyLab account)</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Midterms and Final:** The midterms will be on the date and time listed below. More detailed information will be available in the due course. The university will later announce the final exam date. The final may be given on any day between 6/1/2024 and 19/1/2024. Student Resources schedules it, so do not plan to leave Istanbul before 20/1/2024 (or later, if you need to take the Make-up, check below).

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
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<tbody>
<tr>
<td>Midterm 1</td>
<td>TBA</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>TBA</td>
</tr>
<tr>
<td>Final</td>
<td>Scheduled and announced by SR</td>
</tr>
</tbody>
</table>

**Lecture Participation:** The lecture participation is computed from the Lecture attendance (see the previous page). There will be no make-up for any of those pop-up quizzes. Students found having a behaviour in contrast with Academic Integrity, will receive 0 from the Lecture Participation grade component.

**Recitation Participation:** The recitation participation is computed from the Recitation attendance (see the previous page). Each attended recitation is worth 1 point. The best 8 grades will determine the recitation participation grade. Students found having a behaviour in contrast with Academic Integrity, will receive 0 from the Recitation Participation grade component.

**Recitation Quizzes:** There will be 7 short quizzes in total. During the lecture, we will inform you if a quiz will be given on that week. Note that you must have attended the second hour of that recitation for your quiz to be counted. During the entire duration of each quiz, students are proctored and expected to follow the Academic Integrity rules. More details are announced on SUCourse.

There will be no make-up for missed quizzes. At the end of the semester, the worst 3 grades will be dropped.

**Online homework:** During the second week, detailed instruction on how to create an account, use your code, and access the MyLab resources, will be shared with you on SUCourse. The homeworks are posted on each weekend and are due on Thursday at 23:45. For questions related to MyLab, you should contact Gamze Kuruk.

There will be no make-up for the homeworks. At the end of the semester, we will drop the worst 30% scores.

**Exams Make-up Policy:** If you miss an exam and wish to make it up, you must contact Gamze Kuruk by mail, and explain your excuse as soon as possible. If it is a health problem you need to bring a medical report, that must be given or checked by SU Health Center within 3 days of the date of the report. The make-up will be at the end of the semester (after the finals period and before 25/1/2024). The make-up exam will contain all topics. Only students that had contacted the coordinator(s) with a valid excuse will be informed about the time and place. We do not take responsibility if you contact us too late.

**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](http://www.sabanciuniv.edu/en/academic-integrity-statement)).

In general, to ensure Academic Integrity, any student might be asked to validate any activity contributing to their grade in an interview (recorded, with audio and video). A student failing to explain the submitted work, or refusing/missing the interview, will receive zero from that work.

In particular, no form of cheating is welcome in the exams, quizzes or any assignment, 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 assignment 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 online activities is unacceptable. Repeated violations of the above rules may cause a student to be counted as absent for a lecture or a recitation.
General Suggestions:

- Feel free to ask us 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. Make sure you attend your own (registered) recitation section.
- 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.

Below is a tentative breakdown of topics.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topic (Sections from the textbook)</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Oct 02-03</td>
<td>8.1-8.3 Sequences, infinite series</td>
</tr>
<tr>
<td>Week 2</td>
<td>Oct 09-10</td>
<td>8.4 The divergence and integral tests</td>
</tr>
<tr>
<td>Week 3</td>
<td>Oct 16-17</td>
<td>8.5-8.6 The ratio, comparison, and alternating series tests</td>
</tr>
<tr>
<td>Week 4</td>
<td>Oct 23-24</td>
<td>9.1-9.4 Power series, Taylor series</td>
</tr>
<tr>
<td>Week 5</td>
<td>Oct 30-31</td>
<td>9.4 Taylor series / 11.1-11.3 Vectors, dot product</td>
</tr>
<tr>
<td>Week 6</td>
<td>Nov 06-07</td>
<td>11.4 Cross product / 12.1 Planes and surfaces</td>
</tr>
<tr>
<td>Week 7</td>
<td>Nov 13-14</td>
<td>12.1-12.2 Planes and surfaces, level curves</td>
</tr>
<tr>
<td>Week 8</td>
<td>Nov 20-21</td>
<td>12.4, 12.5 Partial derivatives, chain rule</td>
</tr>
<tr>
<td>Week 9</td>
<td>Nov 27-28</td>
<td>12.6, 12.7 Directional derivatives, gradient, tangent planes</td>
</tr>
<tr>
<td>Week 10</td>
<td>Dec 04-05</td>
<td>12.8 Maximum/minimum problems</td>
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<tr>
<td>Week 11</td>
<td>Dec 11-12</td>
<td>12.8 Maximum/minimum problems / 13.1 Introduction to double integrals</td>
</tr>
<tr>
<td>Week 12</td>
<td>Dec 18-19</td>
<td>13.1-13.2 Double integrals over rectangular regions and general regions</td>
</tr>
<tr>
<td>Week 13</td>
<td>Dec 25-26</td>
<td>13.3-13.4 Double integrals in polar coordinates and Triple integrals</td>
</tr>
<tr>
<td>Week 14</td>
<td>Jan 02</td>
<td>Review (integration)</td>
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