

# MATH 117 (Calculus I)

## Spring 2025

**Frequency:** Fall/Spring Terms

**METU Credit & ECTS Credit:** (4-2)5 & 7.5

**Catalog Description:** Functions. Limits and Continuity. Tangent lines and derivatives. Chain rule. Implicit differentiation. Inverse functions. Related rates. Linear approximations. Extreme values. Mean Value Theorem and its applications. Sketching graphs. Indeterminate forms and L'Hospital's rules. Definite integral. Fundamental Theorem of Calculus. Substitution. Areas between curves. Formal definition of natural logarithm function. Techniques of integration.

**Course Coordinator:** Prof. Dr. Canan Bozkaya (bcanan@metu.edu.tr)

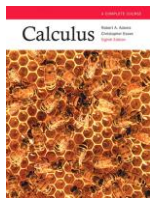
**Course Instructors:**

- Section 1: Canan Bozkaya ([bcanan@metu.edu.tr](mailto:bcanan@metu.edu.tr))
- Course assistant: Emine Ezgi Aladağlı ([aladagli@metu.edu.tr](mailto:aladagli@metu.edu.tr))

**Course Grading:**

- Midterm 1 : 30% ([April 11, 2026 at 16:30](#))
- Midterm 2 : 30% ([May 16, 2026 at 16:30](#))
- Final Exam : 40% ([June 11, 2026 at 13:30](#))
- Quiz (NOT BONUS): 10 pts (during recitations)
- Course Total: 110 pts

**Textbook:**



Robert A. Adams, Christopher Essex  
CALCULUS  
A Complete Course Calculus. Eight Edition. (or higher editions)  
ISBN 978 0-321-78107-9  
QA303.2.A33 2013

**Reference Books:**

Calculus, James Stewart, Eighth Edition

**Course Home Page:**

<https://ma117.math.metu.edu.tr/>

**Contact:**

wwwma117@metu.edu.tr

Only the e-mails sent to [wwwma117@metu.edu.tr](mailto:wwwma117@metu.edu.tr) will be answered. Mass e-mails will be ignored.

Week	Dates	MATH 117 Syllabus (Spring 2025)	
1	Feb.16--20	<b>Ch 0: Preliminaries</b> 0.1 Real Numbers and the Real 0.3 Graphs of Quadratic Equations 0.5 Combining Functions to Make 0.7 The Trigonometric Functions	0.2 Cartesian Coordinates in the Plane 0.4 Functions and Their Graphs 0.6 Polynomials and Rational Functions
2	Feb. 23—27 (Add-Drop and Advisor Approvals)	<b>Ch 1: Limits and Continuity</b> 1.2 Limits of Functions 1.3 Limits at Infinity and Infinite Limits	<b>1.2:</b> 2, 3, 4, 5, 6, 11, 13, 18, 22, 24, 32, 56, 58, 61, 62, 63, 64 <b>1.3:</b> 3, 6, 10, 14, 20, 25, 29, 33, 34, 50, 51
3	March 2—6	1.4 Continuity 1.5 The Formal Definition of Limit(optional)	<b>1.4:</b> 1, 2, 3, 4, 5, 6, 9, 13, 16, 18, 22, 30, 32
4	March 9—13	<b>Ch 2: Differentiation</b> 2.1 Tangent Lines and Their Slope 2.2 The Derivative 2.3 Differentiation Rules	<b>2.1:</b> 3, 5, 9, 13, 15, 17, 19, 21, 23 <b>2.2:</b> 1, 3, 11, 17, 23, 25, 27, 31, 35, 37, 41, 43, 45, 47, 49 <b>2.3:</b> 7, 9, 11, 13, 15, 17, 23, 25, 29, 33, 37, 39, 43, 49, 51, 53
5	March 16—20 (March 20-22 Religious holiday, March 19, Holiday Eve)	2.5 Derivatives of Trigonometric Functions 2.4 The Chain Rule 2.6 Higher-Order Derivatives	<b>2.4:</b> 3, 5, 11, 13, 15, 19, 23, 25, 31, 37, 45 <b>2.5:</b> 3, 5, 11, 17, 21, 27, 29, 35, 37, 41, 43, 45, 49, 53, 55, 57, 62 <b>2.6:</b> 1, 7, 11, 13, 21, 25, 26
6	March 23—27	2.8 The Mean-Value Theorem 2.9 Implicit Differentiation	<b>2.8:</b> 1, 3, 5, 7, 9, 11, 15 <b>2.9:</b> 3, 7, 9, 11, 13, 17, 21, 27
7	March 30—April 3	<b>Ch 3: Transcendental Functions</b> 3.1 Inverse Functions 3.5 The Inverse Trigonometric Functions	<b>3.1:</b> 3, 9, 12, 17, 19, 23, 26, 29, 34 <b>3.5:</b> 7, 9, 11, 15, 24, 31, 35, 39, 47
8	April 6—10	3.2 Exponential and Logarithmic Functions 3.3 The Natural Logarithm and Exponential <b>Midterm 1: April 11, 2026 at 16:30</b>	<b>3.2:</b> 7, 17, 26, 31, 32, 35 <b>3.3:</b> 5, 8, 13, 17, 33, 35, 41, 44, 48, 52, 57, 59, 63, 65
9	April 13—17	<b>Ch 4: More Applications of Differentiation</b> 4.1 Related Rates 4.3 Indeterminate Forms 4.4 Extreme Values	<b>4.1:</b> 1, 2, 3, 4, 5, 6, 7, 13, 14, 22, 26 <b>4.3:</b> 1, 3, 5, 7, 9, 13, 15, 17, 19, 24, 26, 28 <b>4.4:</b> 1, 3, 5, 7, 8, 11, 13, 17, 19, 21, 25, 29, 31, 35, 39
10	April 20—24 (April 23, National holiday)	4.4 Extreme Values 4.5 Concavity and Inflections 4.6 Sketching the Graph of a Function	<b>4.4:</b> 1, 3, 5, 7, 8, 11, 13, 17, 19, 21, 25, 29, 31, 35, 39 <b>4.5:</b> 1, 3, 5, 7, 9, 11, 13, 14, 16, 17, 19, 25, 27, 29, 31, 35, 39 <b>4.6:</b> 1, 2, 3, 4, 5, 6, 15, 16, 17, 18, 29, 31
11	April 27—May 1 (May 1, Labor and Solidarity Day)	4.8 Extreme-Value Problems 4.9 Linear Approximations	<b>4.8:</b> 1, 3, 7, 9, 11, 13, 17, 18, 21, 31, 32, 42 <b>4.9:</b> 1, 3, 5, 7, 9, 11, 15, 17, 21
12	May 4—7	<b>Ch 5: Integration</b> 5.1 Sums and Sigma Notation 5.2 Areas as Limits of Sums	<b>5.1:</b> 3, 5, 11, 13, 17, 21, 31, 33 <b>5.2:</b> 3, 7, 13, 17, 19
13	May 10—15	5.3 The Definite Integral 5.4 Properties of the Definite Integral <b>Midterm 2: May 16, 2026 at 16:30</b>	<b>5.3:</b> 2, 3, 5, 7, 11, 13, 15, 17 <b>5.4:</b> 1, 2, 7, 9, 11, 13, 15, 17, 19, 21, 25, 29, 31, 35, 36, 37, 39
14	May 18—22 (May 19, National Holiday)	5.5 The Fundamental Theorem of Calculus Anti-derivatives (from 2.10) 5.6 The Method of Substitution	<b>5.5:</b> 3, 7, 11, 13, 15, 17, 19, 23, 27, 29, 31, 33, 37, 39, 41, 43, 45, 46, 47, 49, 51, 52, 53, 54 <b>5.6:</b> 1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 40, 41, 43, 44, 45, 47, 48, 49, 50, 51
15	May 25—29	May 27-30, Religious Holiday, Holiday Eve, May 26	
16	June 1—5	5.6 The Method of Substitution (continued) 5.7 Areas of Plane Regions	<b>5.7:</b> 3, 5, 9, 11, 15, 17, 19, 21, 23, 29
<b>Final Exam: June 11, 2026 at 13:30</b>			

## MATH 117 Course Policies (Spring 2025)

This document contains all the information you need to know about the structure of the **MATH 117 (Calculus I)** course. More information will be announced on the course home page and the ODTUClass page. All students enrolled in this course are supposed to follow these websites regularly.

*The MATH 117 coordination reserves the right to make necessary changes in this policy depending on situations which are out of our control. So it is your responsibility to follow the announcements in ODTUCLASS and on the webpage of the course regularly.*

### Lectures and Recitations

Lectures and recitations are delivered as scheduled in [View Program Course Details \(64\)](#). Keep in mind that this course is **6 (=4 (lectures)+2(recitation)) hours per week**.

### Class Attendance

Attendance during lectures and recitations will not be taken. However, you are strongly suggested to attend the lectures and recitations. You are required to attend the recitation section in which you are registered. There will be frequent pop-up quizzes **in recitation hours**.

### Make-Up for Exams and Assignments

You can take at most one make-up exam. In order to be able to take the make-up exam, you must present a reasonable excuse (such as a medical report or an academic leave).

**After the final exam**, there will be a form on ODTUClass and via that form, you will apply to take the make-up exam instead of one missed exam and you will send your reasonable excuse to **wwwma117@metu.edu.tr**.

### Final Exam Entrance Conditions and NA Grade

If your two midterm scores (each one out of 100 points) add up to less than 20 points (out of 200 points in total), then you cannot take the final exam and will receive an NA grade from the course.

If you do not take the final exam and if you do not have the right to take the make-up exam for the final, you will receive an NA grade.

### **Who gets NA grade?**

(A) Before the final exam, students will be categorized in the following way:

1)  $M1 + M2 \geq 20$

2)  $M1 + M2 < 20$ ,

for which M1 is the Midterm 1 score out of 100, and M2 is the Midterm 2 score out of 100.

- Students in group **1** will be able to take the final exam.
- Students in group **2** will **NOT** be able to take the final exam. They will get an automatic NA grade.

### **Examples:**

**a)** Student A attends to Midterm 1 and his score is 20. He/she does not take Midterm 2 being on leave for academic/medical reasons. Since  $M1+M2 = 20 \geq 20$ , He/she is eligible for the final exam. If he/she submits relevant documents, it is also possible to take make-up exam which is given after the final. *No problem at all.*

**b)** Student B does not attend to Midterm 1 because of their illness. He/she attends to Midterm 2 and get 18 points. Since  $M1+M2 = 18 < 20$ , he/she won't be able to take final exam and get NA grade. **It should be in mind that in this example, taking make-up for Midterm is not possible even if he/she has an appropriate official document (academic/medical report etc.)**

(B) According to the university's rules and regulations governing undergraduate studies (Article 24),

*"...The grade NA is designated due to one of the conditions below. The grade NA is processed as FF in the calculation of the Grade Point Average.*

*1) Not fulfilling the attendance requirements for the theoretical and practical course hours as indicated in the course schedule.*

*2) Not qualifying to take the final exam due to failure in fulfilling the provisions regarding course practices.*

*3) Having taken none of the mid-term and final examinations.*

*... "*

**Note that each instructor/the coordination of the course reserves the right to determine whether the attendance requirements indicated in the above policy (B-1) applies to the students of their section or not.**

### **Information for Students with Disabilities**

Students who experience difficulties due to their disabilities and wish to obtain academic adjustments and/or auxiliary aids must contact ODTU Disability Support Office and/or course instructor and the advisor of students with disabilities at academic departments (for the list, see <http://engelsiz.metu.edu.tr/en/advisor-students-disabilities>) as soon as possible. For detailed information, please visit the website of Disability Support Office: <https://engelsiz.metu.edu.tr/en/>

### **Academic Honesty**

The METU Honour Code is as follows: "Every member of METU community adopts the following honour code as one of the core principles of academic life and strives to develop an academic environment where continuous adherence to this code is promoted. The members of the METU community are reliable, responsible and honourable people who embrace only the success and recognition they deserve, and act with integrity in their use, evaluation and presentation of facts, data and documents."