OSTIM TECHNICAL UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS FORM
2020-2021 FALL

<table>
<tr><td colspan="3">Offered by: Dr. Şehla Eminoğlu</td><td>Offered to: 1st year 1st semester of Mechanical Engineering, Computer Engineering and Electrical and Electronic Engineering</td></tr>
<tr><td colspan="3">Name of the Department: Engineering</td><td>Course Name:
Engineering Mathematics</td></tr>
<tr><td colspan="3">Course Level:</td><td>Course Code:
Math 101</td></tr>
<tr><td colspan="3">Form Submitting/Renewal Date:</td><td>Course Status: Compulsory</td></tr>
<tr><td colspan="3">Language of Instruction: English</td><td>Instructor/s: Dr. Şehla Eminoğlu</td></tr>
<tr><td colspan="3">Prerequisite: The prerequisites are high school algebra and trigonometry</td><td>Prerequisite to: -</td></tr>
<tr><td colspan="3">Weekly Course Hours: 4 hours</td><td>Course Coordinator: Dr. Şehla Eminoğlu</td></tr>
<tr><td>Theory</td><td>Application</td><td>Laboratory</td><td>National Credit:</td></tr>
<tr><td></td><td></td><td></td><td>ECTS Credit:</td></tr>
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Course Objective: The basic objective of Calculus is to relate small-scale (differential) quantities to large-scale (integrated) quantities. This is accomplished by means of the Fundamental Theorem of Calculus. Students should demonstrate an understanding of the integral as a cumulative sum, of the derivative as a rate of change, and of the inverse relationship between integration and differentiation.

Learning Outcomes:

1.Use both the definition of derivative as a limit and the rules of differentiation to differentiate functions.
2. Sketch the graph of a function using asymptotes, critical points, and the derivative test for increasing/decreasing and concavity properties.
3. Set up max/min problems and use differentiation to solve them.
4. Set up related rates problems and use differentiation to solve them.
5. Evaluate integrals by using the Fundamental Theorem of Calculus.
6. Apply integration to compute areas and volumes by slicing, volumes of revolution, arclength, and surface areas of revolution.

7. Evaluate integrals using techniques of integration, such as substitution, inverse substitution, partial fractions and integration by parts.
8. Set up and solve first order differential equations using separation of variables.
9. Use L'Hôpital's rule.
10. Determine convergence/divergence of improper integrals, and evaluate convergent improper integrals.
11. Estimate and compare series and integrals to determine convergence.

Learning and Teaching Strategies:

1. Primarily to give the basic idea of topics and help the students to see the big picture.
2. To support the issues with a variety of examples.
3. Through regular homework research and team activities.
4. Holding midterm exam and final exam.

Assessment Methods

Class attendance is a requirement of the course

	If used, check as (X).	Grading (%)
Semester Requirements		
Mid-term exam	X	25
Quizzes		
Homework Assignments/ Presentation	X	15
Final Exam	X	60
Active participation to the lecture		
TOTAL		100

Assessment Criteria

Grading will be made at the end of the exams and will be shared with students.

Textbook(s)/References/Materials:

Textbook(s): G.B Thomas, J. Hass, M.D.Weir, C. Heil, *Thomas' Calculus,* 14th Edition, (Pearson Global Edition)
R.A. Adams, *Calculus*: A complete course 8-th revised ed. , Prentice Hall, 2013.
J. Stewart, *Calculus*, Metric Version, Eighth Edition, 2016, Cengage Learning
References:
Materials:

Course Policies and Rules:
All students must be in class before the lecture starts. Every student is expected to respect the instructor's right to teach and other students' right to learn. All students are expected to demonstrate honesty in their academic pursuits. Students are expected to respect and uphold the standards of honesty in submitting written work to instructors. Though occurring in many forms, plagiarism in essence involves the presentation of another person's work as if it were the work of the presenter. Any cheating or plagiarism will result in disciplinary action to be determined by the instructor based on the severity and nature of the offense. It is the student's responsibility to review the University and YÖK policies on Academic Honesty. If you have any special needs or requirements pertaining to this course, please discuss them with the instructor early in the term.
Contact Details for the Instructor: Contact with the instructor through e-mail and keep in mind the necessary time of checking the e-mail for your urgent situations. The contact address is: sehla.eminoglu@ostimteknik.edu.tr
Office Hours:

Course Outline: Examination dates should be specified in the course content given below. The examination dates can be changed later.		
Week	**Topics:**	**Note:**
1.	Functions of a Single Variable	
2.	Limit and Continuity	
3.	Limit and Continuity	
4.	Derivatives	
5.	Derivatives	
6.	Derivatives and Applications	
7.	**Midterm Exam**	
8.	Derivatives and Applications	
9.	Integration	
10.	Integration	
11.	Integration and Applications	
12.	Integration and Applications	
13.	Transcendental Functions	

14.	Integration techniques	
15.	L'Hopital's Rule	
16.	**Final Exam**	