



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Fall

MATH 1001 Calculus I

**COURSE DESCRIPTION FORM**

<b>Offering Department</b>	Department of Computer Engineering		Undergraduate must course (1st semester)					
<b>Course Code</b>	MATH1001							
<b>Course Name</b>	Calculus I							
<b>Language of Instruction</b>	English							
<b>ECTS</b>	6							
<b>Contact Hours</b>	Theoretical (T): 4		Practice (U): 0		Laboratory(L): 0			
<b>Pre-requisites</b>								
<b>Instructor</b>	<b>Name</b>	Taylan Şengül						
	<b>E-mail</b>	taylansengul@gmail.com						
<b>Course Materials</b>	<b>Mandatory</b>	Course Book: Thomas' Calculus Early Transcendentals, 13th Edition						
	<b>Recommended</b>							
<b>Course Objectives</b>	Gain the necessary skills for mathematical analysis and concepts in engineering.							
<b>Course Content</b>	Single variable functions and graphs, limit and continuity, derivative and applications, integral and applications.							
<b>Learning Outcomes</b>	<b>LO1</b>	Draw the graphs of functions by using properties such as asymptotes, extremes, decrease / increase, concavity.						
	<b>LO2</b>	Use the concepts of limit and continuity in single variable functions.						
	<b>LO3</b>	Calculate derivatives of single variable functions by applying derivative rules.						
	<b>LO4</b>	Calculate first degree definite and indefinite integrals by applying different integration techniques.						
	<b>LO5</b>	Calculate the area of a region on the plane. Calculate the volume formed by turning a region on the plane around an axis. Calculate the length of a curve on the plane.						
	<b>LO6</b>	Apply the calculation techniques of single variable differential functions and integral to specific problems of engineering.						
<b>Program Outcomes</b>		<b>LO1</b>	<b>LO2</b>	<b>LO3</b>	<b>LO4</b>	<b>LO5</b>	<b>LO6</b>	
<b>PO1</b>	Sufficient knowledge of mathematics, science (a) and computer engineering (b) (1); ability to use theoretical and practical knowledge in these areas in complex engineering problems (2).		1a	1a	1a	1a	1a	1a
<b>PO12</b>	Information on advanced mathematics, including differential equations, integral calculus (a), linear algebra (b), statistics and probability (c), and discrete mathematics (d).				a	a	a	a
<b>Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods</b>	<b>No</b>	<b>Week</b>	<b>Subjects</b>					
	<b>K1</b>	1	Introduction. Functions and graphics. Trigonometric functions					
	<b>K2</b>	2	Limits of functions. The precise definition of the limit. One-sided limits					
	<b>K3</b>	3	Limits containing infinity. Asymptotes of graphics. Continuity					
	<b>K4</b>	4	Tangent, slope and derivative.					
	<b>K5</b>	5	Rules of derivative. Chain Rule.					
	<b>K6</b>	6	Closed derivative. Linearization and differentials. Rolle's Theorem.					
	<b>K7</b>	7-8	Inverse derivative, uncertain & indefinite integral					
	<b>K8</b>	9	Basic Theorems of Mathematics					
	<b>K9</b>	10	Applications of the definite integral to calculate volume and length					
	<b>K10</b>	11	Inverse functions and derivatives. Natural logarithms					
	<b>K11</b>	12	Inverse trigonometric functions. Hyperbolic functions. Indefinite forms.					
<b>K12</b>	13-14	Partial integral, Trigonometric integrals. Trigonometric substitution						
<b>Assessment Methods and Weights</b>	<b>No</b>	<b>Type</b>	<b>Weight</b>	<b>Implementation Rule</b>		<b>Make-up Rule</b>		
	<b>MF</b>	Midterm-Final	88%	There will be two midterms and a final exam. Exams will be closed books and notes. Calculators are allowed.		When a medical report or letter of appointment in accordance with the university procedure is submitted, a make-up exam is given for a maximum of one midterm exam. The make-up exam for the final exam is given in the make-up exam week.		
	<b>Q</b>	Quiz	12%					
	<b>H</b>	Homeworks						

	<b>P</b>	Projects	-	-		
	<b>R</b>	Reports				
	<b>S</b>	Presentation				
	<b>P</b>	Participation / Interaction				
	<b>L</b>	Class/ Laboratory/ Field Work				
	<b>O</b>	Others				
	<b>TOTAL</b>		100%			
<b>Determining Letter Grades</b>	<ul style="list-style-type: none"> <li>The letter grades will be determined based on a quiz, two midterm exams and a final exam.</li> <li>In order to pass the course, the final score and the total average score of the student must be at least 50.</li> </ul>					
	Assessment	Quiz	Midterm 1	Midterm 2	Final	TOTAL
	Weight	12	24	24	40	100
<b>Teaching Method, Student Work Load</b>	<b>Time Applied by the Instructor</b>					
	<b>No</b>	<b>Method</b>	<b>Explanation</b>			<b>Hours</b>
	1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.			14*3=42
	2	Problem Session/ Practice	Problems related to the course topics are solved on the board.			
	3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.			
	4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)			
	5	Field Work	Students attend activities outside the campus.			
	6	Midterm	Midterm exam is given during the midterm week.			2
	7	Final	Final exam is given during the final exam week.			2
	<b>Estimated Time to be Allocated by a Student</b>					
	8	Projects	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.			
	9	Homeworks	The students solve the problems given as homework.			
	10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.			14*5=70
11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.				
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.			14*2=28	
<b>TOTAL</b>					<b>144</b>	
<b>Academic Honesty</b>	Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.					
	In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.					