

**School of Engineering and Natural Sciences / Computer Engineering (English)**

**2023 - 2024 Academic Year**

**CALCULUS I**

**Syllabus**

<b>Course Description</b>					
<b>Name</b>	<b>Code</b>	<b>Semester</b>	<b>T+A Hour</b>	<b>Credit</b>	<b>ECTS</b>
CALCULUS I	COE1210745	Spring Semester	4+0	4	6
<b>Prerequisites Courses</b>					
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Assist.Prof. Özge BİÇER ÖDEMİŞ				
<b>Name of Lecturer(s)</b>	Lect. Seçil TUNALI ÇIRAK				
<b>Assistant(s)</b>					
<b>Aim</b>	To teach fundamental math contents, methods and techniques, and its applications for the study of engineering. To provide supports on studies and researches in the area of engineering.				
<b>Course Content</b>	This course contains; Functions,Functions,Limits and Continuity,Limits and Continuity,Derivatives,Derivatives,Applications of Derivatives,Applications of Derivatives,Integration,Integration,Applications of Definite Integrals,Applications of Definite Integrals,Transcendental Functions,Improper Integrals.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. Interpret a function of one variable and its graph to solve the limit graphically, numerically and algebraically			12, 14, 6, 9	A, E	
2. Apply the notions of continuity and differentiability to algebraic and transcendental functions.			12, 14, 6, 9	A, E	
3. Compute derivatives of functions by using rules and carry out them in applications such as computing rates of change, finding extreme values, concavity and graphing.			12, 14, 6, 9	A, E	
4. Apply Fundamental Theorem of Calculus and integration techniques to compute proper integrals.			12, 14, 6, 9	A, E	
5. Use integration to compute area between curves and volume of a solid.			12, 14, 6, 9	A, E	
6. Calculate and compare the concept of proper and improper integrals.			12, 14, 6, 9	A, E	
<b>Teaching Methods</b>	12: Problem Solving Method, 14: Self Study Method, 6: Experiential Learning, 9: Lecture Method				
<b>Assessment Methods</b>	A: Traditional Written Exam, E: Homework				
<b>Lecture Schedule</b>					
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Functions	Book chapter 1.1, 1.2, 1.4, 1.5			
2	Functions	Book chapter 1.3, 1.6, 11.1,11.2			
3	Limits and Continuity	Book chapter 2.1, 2.2, 2.3, 2.4			
4	Limits and Continuity	Book chapter 2.5, 2.6			
5	Derivatives	Book chapter 3.2, 3.3, 3.4			
6	Derivatives	Book chapter 3.5, 3.6, 3.7, 11.2			
7	Applications of Derivatives	Book chapter 4.1, 4.2, 4.3, 4.4			
8	Applications of Derivatives	Book chapter 3.11, 4.4, 4.5			
9	Integration	Book chapter 5.1, 5.2, 5.3, 5.4			
10	Integration	Book chapter 5.5, 8.1, 8.2, 8.3, 8.4, 8.5			
11	Applications of Definite Integrals	Book chapter 5.6, 6.1			
12	Applications of Definite Integrals	Book chapter 6.2, 6.3			
13	Transcendental Functions	Book chapter 7.1, 7.2			
14	Improper Integrals	Book chapter 8.8			
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		30			
General Exam		70			

<b>Resources</b>
Thomas' Calculus, 12th ed., G. B. Thomas, Jr. and M. D. Weir and J. Hass, Addison-Wesley