School of Engineering and Natural Sciences / Industrial Engineering (English)

2023 - 2024 Academic Year

CALCULUS I

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
CALCULUS I	IND1110745	Fall Semester	4+0	4	6

Prerequisites Courses	
Recommended Elective Courses	
Language of Instruction	English
Course Level	First Cycle (Bachelor's Degree)
Course Type	Required
Course Coordinator	Assist.Prof. Özge BİÇER ÖDEMİŞ
Name of Lecturer(s)	Assist.Prof. Özge BİÇER ÖDEMİŞ
Assistant(s)	
Aim	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.
Course Content	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.

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
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

Teaching Methods	12: Problem Solving Method, 14: Self Study Method, 6: Experiential Learning, 9: Lecture Method
Assessment Methods	A: Traditional Written Exam, E: Homework

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
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

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

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