TOROS ÜNİVERSİTESİ

Faculty Of Engıneerıng
Electrıcal And Electronıcs Engıneerıng (Englısh)

Course Information

CALCULUS I					
Code	**Semester**	**Theoretical**	**Practice**	**National Credit**	**ECTS Credit**
		Hour / Week			
MAT101	Fall	4	2	5	6

Prerequisites and co-requisites	
Language of instruction	English
Type	Required
Level of Course	Bachelor's
Lecturer	Asst. Prof. Ali Kemal HAVARE
Mode of Delivery	Face to Face
Suggested Subject	
Professional practise (internship)	None
Objectives of the Course	To teach the student the topics of limit, derivative and integral, which are the main topics of engineering mathematics, in a functional integrity.
Contents of the Course	Limit, precise definiton of limit, limit at infinity. Derivative concept, derivative definition, differentiation rules, implicit differentiation, related rates. Maxima and minima, concavity, curve sketching, optimization. Area problem, definite integral, fuındamental theorem of Calculus, subsitution rule. Transcendental functions, their derivatives and integrals, indeterminate limits and L´Hospital rule. Integration by parts and other iintegration techniques.

Learning Outcomes of Course

#	Learning Outcomes
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Introduction to functions	Lecture
2	Limit concept, limit definition	Lecture
3	Limit at infinity, infinity as a limit, continuity	Lecture
4	Tangent problem, derivative definition	Lecture
5	Area problem, definite integral and its properties	Lecture

6	Chain rule, higher order derivatives, implicit differentiation	Lecture
7	Curve sketching, applied optimization problems	Lecture
8	Review, midterm exam	
9	Area problem, definite integral and its properties	Lecture
10	Fundamental Theorem of Calculus, indefinite integral, substitution rule	Lecture
11	Exponential and logarithmic functions	Lecture
12	Inverse trigonometric functions, indeterminate limits and L´Hospital rule	Lecture
13	Integration by parts, trigonometric integrals, trigonometric substitution	Lecture
14	Integration of rational functions, rationalizing substitutions	Lecture
15		
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	Kalkülüs:Kavram ve Kapsam - J. Stewart		
2	Calculus - G. Thomas		
3	Calculus - G. Strang		
4	Internet resources		
5			

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.	1,2	1
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.	1,3	1
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)	3	1
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.	1,2,8	2
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.	4,8	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	6	84
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	4	56

3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	0	0	0
8	Midterm Exam	1	1	1
9	Quiz	0	0	0
10	Homework	1	6	6
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	0	0	0
16	Final Exam	1	1	1
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