Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
G111	Mathematics I	1	4	0	0	4	6

Prerequisites	
Admission Requirements	

Language of Instruction	Turkish
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	The course objective is to give to the studient the fundamental on differential and integral calculus, graphical representation of one real variable real functions and their optimization. The course also aims to give to the studient mathematical knowledge necessary for following up other courses as microeconomy or similars.
Content	Week 1 : 1) Sets, binary relations and functions (Reminder). 2) Real functions of one real variable – Operations, properties, graphs. Week 2 : 1) Limit of a function, operations with limits. 2) Limits of indeterminate forms. Week 3 : 1) Meaning of the derivative of a function. 2) Derivative rules for algebric functions. Week 4 : 1) Derivative rules for complex functions 2) Derivative of trigonometric and inverse trigonometric functions. Week 5 : 1) Derivative of exponential and logarithmic functions. 2) Derivative of parametric and implicite functions. Week 6 : 1) Applications of derivative and related theorems. 2) L'Hospital rule. Week 7 : 1) Mid-term 1. 2) n.th derivative of a function, n.th derivative of a product – Leibnitz rule. Week 8 : 1) Taylor and Mc-Laurin series. 2) Applications of series. Week 9 : 1) Graphs of a real function of one real variable. 2) Graphs of a real function of one real variable. Week 10 : 1) Indefinite and definite intagral of a function. 2) Techniques for finding the indefinite integral of a function – Integration by substitution. Week 11 : 1) Techniques for finding the indefinite integral of a function – Integration by parts. 2) Techniques for finding the indefinite integral of a function – Integration by partial fractions. Week 12 : 1) Mid-term 2. 2) Indefinite integrals of trigonometric functions. Week 13 : 1) Techniques for finding the indefinite integral of a function – Integration by trigonometric substitution. 2) Techniques for finding the indefinite integral of a function – Integration by trigonometric substitution. Week 14 : 1) Definite integral – Riemann integral. 2) Calculation of area under the graph of a function.
References	

Theory Topics

Week	Weekly Contents
1	Real functions of one real variable – Operations, properties, graphs.
2	Limit of a function, operations with limits. Limits of indeterminate forms.
3	Meaning of the derivative of a function. Derivative rules for algebric functions.
4	Derivative rules for complex functions. Derivative of trigonometric and inverse trigonometric functions.
5	Derivative of exponential and logarithmic functions. Derivative of parametric and implicite functions.
6	Applications of derivative and related theorems. L'Hospital rule.
7	Mid-term 1. n.th derivative of a function, n.th derivative of a product – Leibnitz rule.
8	Taylor and Mc-Laurin series and applications.

Week	Weekly Contents
9	Graphs of a real function of one real variable.
10	Indefinite and definite intagral of a function. Techniques for finding the indefinite integral of a function – Integration by substitution.
11	Techniques for finding the indefinite integral of a function – Integration by parts, integration by partial fractions.
12	Mid-term 2. Indefinite integrals of trigonometric functions.
13	Techniques for finding the indefinite integral of a function – Integration by trigonometric substitution.
14	Definite integral – Riemann integral. Calculation of area under the graph of a function.