GAU, Faculty of Engineering

Course Unit Title	Calculus 1
Course Unit Code	MT111
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	1st Year BSc
National Credits	4
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	2
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	1
Mode of Delivery	Face to Face, E-learning activities
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Basic background Pre-calucus.

Objectives of the Course:

- Conceptial overview of law and methods in engineering subjects
- To understand the major theoretical background of functions,limits,derivatives and their application in engineering problems.

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	Analyze functions and functions of graphs	1,2
2	Understand concept of limit and continuity	1,2
3	Analyze differenriability	1
4	Understand concept of differentiation	1,2
5	Understand concept of drawing graph of derivatives and limits	1,2

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	Ability to design and conduct experiments as well as to analyze and interpret	2
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	1
4	Ability to apply systems thinking in problem solving	5
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	2
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1		Introduction	
2		Pre-caculus	
3	Chapter 1	Limits	
4		Continuity	
5	Chapter 2	Dıfferentiation:Tangent Line and their slopes	
6		Derivative, Leibniz Notation	
7		Differentiation rules ,The chain rule, The derivative Of Trigonemetric Functions	
8			Midterm
9		Hıgher Order Derivative , Implicit Differentiation	
10	Chapter 3	Inverse Functions: Exponential and Logorithmic	
11		Inverse Functions: Trigonometric Function	
12	Chapter 4	Extream values concavity and Inflection	
13		Optimization Problems	
14		Sketching Graphs	
15			Final

Recommended Sources

Textbook: "Calculus a Complete Course", Robert A. Adams, Pearson 6th Edn 2006

Supplementary Material (s):
1)"Calculus Early Transcendental Functions", Robert T.Simith & Roland B. Minton 4th Edition,2012
2) "Calculus Early Transcendental" Briggs Cochran ,William Briggs, Lyle Cochran, Bernard Gıllett

Assessment

Attendance & Assignment & Quiz	20%
Midterm Exam (Written)	35%
Final Exam (Written)	45%
Total	100%

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	3	45
Tutorials	13	2	26
Assignments	5	2	10
Project/Presentation/Report Writing	-	-	-
E-learning Activities	-	-	-
Quizzes	1	6	6
Midterm Examination	1	20	20
Final Examination	1	30	30
Self Study	14	2	28
Total Workload			165
Total Workload/30 (h)			5.50
ECTS Credit of the Course			6