Course Description

Module*	Language*
Mathematics II – 0107	English
Academic Year	**Semester:**
2024-2025	Spring
ECTS:	**Prerequisite:**
5	-

Course Outcome

1. At the end of the semester, students would be able to understand how engineers solve problems step by step and properly.
2. Be aware of the weak points and the errors that they expect during the mathematical solutions before starting their program.
3. Be familiar with the major rules, geometries, equations, functions, & graphs.
4. How to differentiate a function of one or more variables using, for example, the chain rule, the product rule, and the change of variables;
5. integration by parts;
6. Understand the role of mathematics and how the development of technology has been related to the development of mathematics.

Course Content: *

Graphing, Integration (Definite Integrals, and Indefinite Integrals), Integrals containing forms $(ax^2 + bx + c)$, Trigonometric Integrations, Integrations by Trigonometric Substitution, Integrals Involving Inverse Trigonometric Functions, Transcendental Functions, The Substitution $t = \tan x$, The Substitution $t = \tan(x/2)$, Integration Methods Integration by Parts, Techniques of Integrations, Integration Applications: Arc Length, (Volumes of Revolutions) The Disk Method, The Washer Method, and The Shell Method, Revolution About a Line That is Not a Coordinate Axis, Techniques of Integration: Partial fractions Decomposition, Polar Coordinate System and Functions, Converting Between The Two Coordinate Systems, Graphing Equations in Polar Coordinates, Circles, Distance measurement in Polar Coordinates, Polar Equation of Circles, Area in Polar Coordinates, Arc Length of a Polar Curve....

References: *

- Thomas Calculus   11th edition   2005
- Thomas Calculus by   "George Thomas"   12th edition   2010

Type of Teaching: *

3 hours /Theoretical
An hour /Tutorial

Requirements For Credit Points: *
Modules Course Requirements:

1.   Students' Attendance in class is important.
   2.   Discussion in class is required
   3.   Midterm exam
   4.   Report
   5.   Quiz and Pop-quiz
   6.   Solving problems on the whiteboard in class

Grade Distribution: *
The Grade Requirements %40 Student Efforts 60% Final Exam

Weekly Plan

Module*	
Mathematics II – 0107	
Academic Year	**Semester:**
2024-2025	Spring
ECTS:	**Prerequisite:**
5	-
Detail	

Week	Detail
1	Graphing, Integration (Indefinite Integrals)
2	Definite Integrals, and Integrals containing forms $(ax^2 + bx + c)$
3	Trigonometric Integrations, Integrations
4	Integrations by Trigonometric Substitution
5	Integrals Involving Inverse Trigonometric Functions
6	Transcendental Functions
7	The Substitution $t = \tan x$, The Substitution $t = \tan(x/2)$
8	Integration Methods Integration by Parts
9	Mid-Term Exam
10	Techniques of Integrations, Partial Fraction Decomposition
11	Integration Applications: Arc Length, (Volumes of Revolutions) The Disk Method

12	The Washer Method, and The Shell Method, Revolution About a Line That is Not a Coordinate Axis
13	Polar Coordinate System and Functions, Converting Between the Two Coordinate Systems, Graphing Equations in Polar Coordinates
14	Circles, Distance Measurement in Polar Coordinates, Polar Equation of Circles, Area in Polar Coordinates, Arc Length of a Polar Curve….

Workload

			Module*
			Mathematics II
	Academic Year		**Semester:**
	2024-2025		Spring
	ECTS:		**Total number of credit hours**
	5		5*27 = **135**
			Prerequisite:
			-
			Detail
Type	**Number**	**Time Factor**	**Total**
Attendance	14	4hr	14 *4 = 56
Report	1	4hr	1*4 = 4
Mid Term Exam	1	3hr	1*3 = 3
Worksheet	2	8hr	2*8=16
Seminar	2	4hr	2*4 = 8
Classwork (Tutorial)	8	4hr	8*4 = 32
Discussion	4	2hr	4*2 = 8
Quiz	4	2hr	4*2 = 8
			135 hr.