

**OSTİM TECHNICAL UNIVERSITY
INSTITUTE OF SCIENCES
ELECTRICAL AND ELECTRONICS ENGINEERING**

**COURSE SCHEDULE FORM
2023-2024 FALL/SPRING**

Course CODE Course NAME							
Course Unit Name	Course Unit Code	Semester	Lecture Hr	Practice Hr	Lab Hr	Credit	ECTS
Engineering Mathematics II	Math 102	Spring	4	1	0	4	6

Course Details	
Language of Instruction	English
Level of Course Unit	Bachelor's Degree
Program	Aerospace Engineering Computer Engineering Electrical and Electronics Engineering Industrial Engineering Material Science and Engineering Mechanical Engineering Software Engineering
Mode of Delivery	Face to Face
Type of Course Unit	Compulsory
Objectives of the Course	To be able to learn the application of integral, to apply convergence tests for series, to define curves in a plane and review the geometric definitions and standard equations of conic sections, to calculate limits and derivatives of multivariable functions and to take double integrals.
Course Content	Inverse Trigonometric Functions and Hyperbolic Functions, Integration Techniques, Sequences and Series, Power series, Taylor series, Parametric Equations and Polar Coordinates, Partial Derivatives and Multiple Integrals
Course Method and Techniques	1. Primarily to give the basic idea of topics and help the students to see the big picture. 2. To support the issues with a variety of examples. 3. Reinforcing learning through regular homework research and team activities. 4. Holding midterm exam and final exam.
Prerequisites and Corequisites	Engineering Mathematics I
Course Coordinator	
Name of Lecturer(s)	
Assistants	
Work Placement(s)	

Recommended or Required Reading

Resources: 1- *G.B Thomas, J. Hass, M.D.Weir, C. Heil, Thomas' Calculus*, 14th Edition, Pearson
 2- R.A. Adams, *Calculus: A complete course* 8-th revised ed. , Prentice Hall, 2013.
 3- J. Stewart, *Calculus, Metric Version*, Eighth Edition, 2016, Cengage Learning

Course Category

Mathematics and Basic Sciences : %100	Education :
Engineering : %0	Science :
Engineering Design : %0	Health :
Social Sciences :	Profession :

Weekly Detailed Course Contents

Week No	Topics	Pre-study & Materials
1	Inverse Trigonometric Functions	
2	Hyperbolic Functions	
3	Techniques of Integration	
4	Techniques of Integration	
5	Infinite Sequences and Series	
6	Infinite Sequences and Series	
7	Midterm Exam	
8	Infinite Sequences and Series	
9	Parametric Equations and Polar Coordinates	
10	Parametric Equations and Polar Coordinates	
11	Partial Derivatives	
12	Partial Derivatives	
13	Multiple Integrals	
14	Multiple Integrals	
15	Multiple Integrals	
16	Final Exam	

Course Learning Outcomes

No	Learning Outcomes
C1	1. Evaluating integrals by using techniques of integration, such as substitution, inverse substitution, partial fractions and integration by parts.
C2	2. Determining convergence/divergence of improper integrals, and evaluating convergent improper integrals
C3	3. Estimating and comparing series and integrals to determine convergence.
C4	4. Graphing polar coordinate equations
C5	5. Sketching the graph of surfaces in the three-dimensional coordinate.
C6	6. Taking the derivative of functions with several variables.
C7	7. Evaluating double integrals over rectangles.
C8	8. Evaluating triple integrals over rectangles.

Programme Outcomes	
No	Outcomes
P01	Reaches the knowledge broadly and in depth by doing scientific research in the field, evaluates, interprets and applies the knowledge.
P02	Has comprehensive knowledge about current techniques and methods applied in engineering and their constraints.
P03	Complements and applies knowledge with scientific methods, using uncertain, limited or incomplete data; can use information from different disciplines together.
P04	He is aware of the new and developing applications of his profession, examines and learns them when needed.
P05	Defines and formulates problems related to the field, develops methods to solve and applies innovative methods in solutions.
P06	Develops new and/or original ideas and methods; designs complex systems or processes and develops innovative/alternative solutions in their designs.
P07	Designs and implements theoretical, experimental and modeling research; examines and solves complex problems encountered in this process.
P08	Can work effectively in disciplinary and multi-disciplinary teams, lead such teams and develop solutions in complex situations; can work independently and take responsibility.
P09	Communicates verbally and in writing by using a foreign language at least at the B2 General Level of the European Language Portfolio.
P10	He/she conveys results of his/her studies systematically and clearly in written or verbal form in national and international environments in that field or outside the field.
P11	Knows the social, environmental, health, safety, legal aspects of engineering applications, project management and business life applications and is aware of the constraints they impose on engineering applications.
P12	Observes social, scientific and ethical values in the stages of data collection, interpretation, announcement and in all professional activities.

Assessment Methods and Criteria		
In-term studies	Quantity	Percentage
Attendance		
Lab		
Practice		
Fieldwork		
Course-specific internship (if any)		
Quiz/Studio/Criticize	1	%10
Homework		
Presentation		
Project		
Report		
Seminar		
Midterm Exam	1	%30
Final Exam	1	%60
Total		%100
Contribution of Midterm Studies to Success Grade		
Contribution of End of Semester Studies to Success Grade		
Total		% 100

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration (Hr)	Total Work Load
Weekly Theoretical Course Hrs (Including the exam week: 16 x total course hours)	16	4	64
Lab			
Practice	16	1	16
Course-specific internship (if any)			
Fieldwork			
Out-of-class study time	16	2	32
Presentation/Seminar Preparation			
Project			
Report			
Homework			
Quiz/Studio/Criticize	1	5	5
Midterm Exam and Preparation for Midterm	1	15	15
Final Exam and Preparation for Final Exam	1	20	20
Total Workload			152
ECTS Credit	(152 / 25) =		6,08

Contribution of Course Learning Outcomes to Programme Outcomes									
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant									
	P01	P02	P03	P04	P05	P06
C1	4	4	3		4	4			
C2	4	4	3		4	4			
C3	4	4	3		4	4			
C4	4	4	3		4	4			
C5	4	4	3		4	4			
C6	4	4	3		4	4			
C7	4	4	3		4	4			