

Course Description	
Course Code	MAT 201
Course Name	CALCULUS - III
Prerequisite Courses	
Language of the Course	
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	The purpose of this course is to provide applications of vector-valued functions, multivariable functions, maximum and minimum problems and multiple integrals at a certain level. The main goal of this course is to cover practical mathematical methods important to engineering applications.
Course Content	This course includes vector-valued functions, multivariable functions, maximum and minimum problems, multiple integrals and their applications.

Weekly Course Content	
Week 1	Three-Dimensional Coordinate Systems, Vectors, The Dot Product, The Cross Product
Week 2	Equations of Lines and Planes, Cylinders and Quadric Surfaces,
Week 3	Vector Functions and Space Curves, Derivatives and Integrals of Vector Functions, Arc Length and Curvature, Motion in Space: Velocity and Acceleration
Week 4	Functions of Several Variables, Limits and Continuity
Week 5	Partial Derivatives, Tangent Planes and Linear Approximations,
Week 6	The Chain Rule, Directional Derivatives and the Gradient Vector
Week 7	Maximum and Minimum Values, Lagrange Multipliers
Week 8	Midterm exam.
Week 9	Double Integrals, Double Integrals over General Regions, Double Integrals in Polar Coordinates, Applications of Double Integrals
Week 10	Triple Integrals, Triple Integrals in Cylindrical Coordinates, Triple Integrals in Spherical Coordinates
Week 11	Line Integrals, The Fundamental Theorem for Line Integrals
Week 12	Green's Theorem, Curl and Divergence
Week 13	Surface Integrals
Week 14	Stokes' Theorem, The Divergence Theorem
Week 15	Final exam.

Course Learning Outcomes	
1	To identify vector quantities and their properties in three-dimensional space.
2	To be able to recognize the equations of lines and planes in space and be able to apply them to real problems.
3	Being able to create movement in space and its mathematical model and analyze the motion of a moving object.
4	To recognize the concept of multivariate functions, to interpret quadratic surfaces and their aspects with the help of multivariable functions.
5	To use maximum and minimum concepts and their applications.
6	Learning about multiple integrals and their applications.
7	To recognize curvilinear and surface integrals and to apply them.

Contribution of the Course to Program Qualifications		Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.	5
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.	2
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.	4
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.	4
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.	2
06	The student will have the ability to work between disciplines and teamwork.	5
07	The student will have the ability to work in international environments and adapt to different cultures.	2
08	The student will have verbal and written communication skills in Turkish and English.	2
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.	3
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.	3
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).	4
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.	2
13	The student will have the ability to find unusual ways and produce projects.	2
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.	2
15	It is sensitive about the problems of the age and looks after the national interests.	3

ECTS WORKLOAD			
	Number	Duration (hours)	Number*Duration
Face to face education	14	4	56
Out-of-class study time (pre-study, reinforcement)	14	4	56
Homeworks	0	0	0
Presentation / Seminar preparation	0	0	0
Quizzes	0	0	0
Preparation for midterm exams	4	8	32
midterm exams	1	2	2
Project (Semester assignment)	0	0	0
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	4	10	40
Semester final exam	1	2	2
Research	0	0	0
TOTAL WORKLOAD			188
ECTS			6

Evaluation		
SEMESTER EVALUATION	Number	Contribution Percentage
Midterm	1	100
Quiz	0	0
Homework	0	0
SEMESTER TOTAL		40
Contribution rate of mid-term evaluations to success		40

Contribution rate of the final exam to success		60
GRAND TOTAL		100

RESOURCES	
Textbook	1. Advanced Engineering mathematics, Kreyszig,Erwin, John Wiley. 2. Calculus, D.G. Zill and W. S. Wright (Çeviri: İ.N. Cangül), Nobel, 2013. 3. Genel Matematik II, Mustafa Balcı, Sürat,2013.
Helpful Resources	1. Advanced Engineering mathematics, Kreyszig,Erwin, John Wiley. 2. Calculus, D.G. Zill and W. S. Wright (Çeviri: İ.N. Cangül), Nobel, 2013. 3. Genel Matematik II, Mustafa Balcı, Sürat,2013.