



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Calculus II							
Course Code		MAT154		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	6	Workload	150 (<i>Hours</i>)	Theory	4	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to introduce the definite integral and to teach some applications of integral such as finding area and volume. To teach sequences and series and their convergence and divergence. To teach limit, continuity and partial derivatives of functions of several variables.							
Course Content		Definite Integrals, Fundamental Theorem of Calculus, Improper Integrals. Integration Applications; Area, Volume, Length, Average Value of Function, other Applications. Infinite Sequences and Series; Convergence Tests, Express the Functions as Power Series. Taylor and Maclaurin Series. Functions of Several Variables; Limit and Continuity, Partial Derivative, Chain Rule, Directional Derivative, Maximum and Minimum Values and Lagrange Multipliers.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Case Study, Problem Solving					
Name of Lecturer(s)		Ins. Nihal GÜNEL, Lec. Ahmet GENÇ, Lec. Muhammet Ali OKUR, Lec. Seçkin GÜNSEN							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

Recommended or Required Reading

1	Kenneth A. Ross, Elementary Analysis: The Theory of Calculus, Springer-Verlag(1980)
2	Çoker ., Özer O., Taş K. " Genel Matematik", Cilt 1 (1996)
3	Thomas, G.B. and Finney, R.L., "Calculus and Analytic Geometry", 9th ed., Addison Wesley, (1998)
4	Prof.Dr.Mustafa Balcı "Genel Matematik I" Balcı Yayınları
5	Doç.Dr.Cevdet Cerit, "Yüksek Matematik I"

Week	Weekly Detailed Course Contents	
1	Theoretical	The Definite Integral, The Fundamental Theorem of Calculus
2	Theoretical	Area Between Curves, Volume Using Cross-Sections
3	Theoretical	Volume Using Cylindrical Shells, Arc Length
4	Theoretical	Areas of Surfaces of Revolution, Improper Integrals
5	Theoretical	Sequences, Infinite Series
6	Theoretical	Integral Test, Comparison Tests, Ratio and Root Test
7	Theoretical	Alternating Series, Absolute and Conditional Convergence, Power Series
8	Intermediate Exam	Midterm
9	Theoretical	Taylor ve Maclaurin Series
10	Theoretical	Convergence of Taylor Series, The Binomial Series and Applications of Taylor Series
11	Theoretical	Parametric Equations and polar Coordinates, Vectors
12	Theoretical	Functions of Several Variables, Limits and Continuity in Higher Dimensions
13	Theoretical	Partial Derivatives, Chain Rule
14	Theoretical	Directional Derivatives and Gradient Vectors, Tangent Planes and Differentials
15	Theoretical	Extreme Values and Saddle Points, Lagrange Multipliers
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	4	112
Midterm Examination	1	13	2	15



Final Examination	1	21	2	23
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = ECTS				6
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To be able to comprehend the basic output principle of the definite integral concept
2	To be able to understand the cause and effect relationship between definite and indefinite integrals
3	To be able to apply the integral to real-life usage areas
4	To be able to detect numerical series and convergence tests
5	To be able to calculate partial derivatives of functions of several variables

Programme Outcomes (Physics)

1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies
18	To be able to tell the relations between symmetry and conservation laws in laws of physics

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4
P1	3	2	3	2
P2	4	4	4	4
P3	5	3	5	5
P4	3	4	4	4
P5	2	2	4	5
P6	2	3	4	4
P7	1	3	2	3
P8	3	4	4	3
P9	4	2	4	4
P10	2	3	4	4
P11	4	2	5	5
P12	3	2	4	4
P13	1	1	1	1
P14	3	3	3	4
P15	1	1	1	1



P16	2	3	3	5
P17	1	1	2	4
P18	3	3	4	4

