ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222201 - 151242201 **COURSE TITLE:** Calculus II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	4	0	4	5	Compulsory (x) Elective ( )	Turkish ( ) English (X)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
4	0	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	4	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			50			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Polar coordinates. Curvilinear coordinate systems. Vectors. Partial derivatives. Vector differential operators. Multiple integrals. Integration in vector fields.
Objectives of the course	Main objective of this course is to teach students basic concepts, theorems of calculus and provide them the ability to solve mathematical problems.
Contribution of the course towards professional education	By taking this course, the students gain necessary mathematical background for engineering courses and their professional lives.
Outcomes of the course	1. Defining coordinate systems and vectors. 2. Solving problems with partial derivatives. 3. Defining vector differential operators. 4. Solving problems with multiple integrals. 5. Defining integral theorems related to vector fields. 6. Solving problems with line and surface integrals.
Textbook of the course	George B. Thomas Jr., Thomas' Calculus, 12th edition, Pearson Publications, 2009.
Other reference books	- Abdülkadir Özdeğer ve Nursun Özdeğer, Çözümlü Yüksek Matematik Problemleri Cilt I, İTÜ Fen Fakültesi Yayınları, 1994. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 2, 9. Baskı, Çağlayan Kitabevi, 2007. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 3, 8. Baskı, Çağlayan Kitabevi, 2004.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Parametric curves.
2	Polar coordinates. Graphing in polar coordinates.
3	Vectors. Dot product. Cross product. Curvilinear coordinate systems.
4	Functions of several variables. Limits and continuity. Partial derivatives.
5	Partial derivative. Chain rule. Directional derivatives.
6	Extreme values and saddle points. Lagrange multipliers.
7	Gradient, divergence and curl operators.
8	Midterm
9	Midterm
10	Double integrals and their applications.
11	Triple integrals and their applications.
12	Line and surface integrals.
13	Line and surface integrals.
14	Green's theorem in the plane. Gauss' and Stokes' theorems.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Asst. Prof. Dr. Özge YANAZ ÇINAR

Signature(s):

Date: