AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Basic Concepts in Mathematics								
Course Code	MTE523		Couse Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To improve the ability to use basic mathematical concepts effectively.								
Course Content	Proof techniques. Set of natural numbers, set of integers, set of rational numbers, set of real numbers and their properties. Cartesian product and relations. Function concept and its inverse functions, graphs of functions. Limit and continuity of functions. Sum and product symbol properties, basic concepts about series and series. Complex numbers and properties.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)	Lec. Serhan ULUSAN								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70

Recommended or Required Reading	
1	Stewart, J. Calculus. California: A Division of Publishing Company. 1991.
2	Joel R. Hass, George B. Thomas, Maurice D. Weir, Thomas Calculus I-II, Çeviri Editörü Mustafa Bayram, Pearson Yayıclık, 2010.
3	Prof. Dr. Ahmet A. KARADENİZ, Yüksek Matematik, Cilt 1, 2. 4. Baskı, 1985.
4	Prof. Dr. Mustafa BAYRAKTAR, Analize giriş I, II. 2. Baskı, 2008.

Week	Weekly Detailed Course Contents	
1	Theoretical	Mathematical proof techniques.
2	Theoretical	Set concept: finite, infinite, countable sets.
3	Theoretical	Set of natural numbers, set of integers.
4	Theoretical	Set of rational numbers, set of real numbers.
5	Theoretical	Cartesian product and relation concept: relation properties, partial order, order relations.
6	Theoretical	Function concept and types.
7	Theoretical	Operations on functions and graphs of functions.
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Limit of functions.
10	Theoretical	Continuity of functions.
11	Theoretical	Summation notation.
12	Theoretical	Product notation.
13	Theoretical	Sequence concept.
14	Theoretical	Series concept.
15	Theoretical	Complex numbers.
16	Final Exam	FINAL EXAM

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	3	112
Midterm Examination	1	38	2	40
Final Examination	1	46	2	48
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes	
1	Explain the techniques of proof and the concept of set.
2	Interprets number sets and properties.
3	Describe the concepts of cartesian product and relations.
4	Solves problems about function concept, types and graphics.
5	Express limit and continuity of functions.
6	Interpret the properties of the sum and product symbol.
7	Define basic concepts about sequence and series.
8	Describe complex numbers and properties.

Programme Outcomes *(Mathematics Education Master)*	
1	Learns sufficient theoretical knowledge in the field of mathematics education
2	Uses theoretical knowledge in educational settings
3	Integrates mathematics education knowledge with the other disciplines and products functional knowledge
4	Uses information and communication technologies efficiently in conceptual learning
5	Finds scientific solutions to the problems in the field of mathematics education
6	Evaluates the knowledge critically in the field
7	Participates team projects in the mathematics education field
8	Shares national and international data in the field of mathematics education
9	Comprehends and evaluates science-technology-society and mathematics interactions
10	Comprehends mathematics under the ethical values and takes account of ethical considerations
11	Follows the current development in the mathematics education field
12	Develops strategical plans and evaluates them in the context of quality processes
13	Adopts lifelong learning strategies to his/her studies

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

	L1	L2	L3	L4	L5	L6	L7	L8
P1	3	3	3	4	4	2	2	2
P2	3	2	3	3	2	2	2	2
P3	4	4	4	4	3	3	3	3
P5	3	3	3	3	3	3	3	3
P6	4	4	4	4	4	4	4	4
P8	1	1	1	2	1	2	1	2
P9	1	1	1	2	1	2	1	2
P11	2	2	2	2	2	3	3	3
P12	3	3	3	2	2	3	3	2
P13	2	2	2	2	2	2	2	2