AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Complex Variables and Applications						
Course Code	MTK570		Couse Level	Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	This course aims to acquaint students with the fundamental notions of Complex Variables and Applications including Complex numbers, functions, limits, continuity, complex differentiation, Cauchy-Riemann equations, complex integration, Cauchy's theorem, Cauchy's integral formulas, infinite series, Taylor's and Laurent series, Residue theorem, conformal mapping, physical applications of conformal mapping.						
Course Content	Complex numbers, functions, limits, continuity, complex differentiation, Cauchy- Riemann equations, complex integration, Cauchy's theorem, Cauchy's integral formulas, infinite series, Taylor's and Laurent series, Residue theorem, conformal mapping, physical applications of conformal mapping.						
Work Placement	N/A						
Planned Learning Activities and Teaching Methods		Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)	Assoc. Prof. Emrah YILDIRIM						

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading

1	Complex Variables with an introduction to conformal mapping and its applications, M. R. Spiegel, 1991.
2	Complex Variables and applications, R. V. Churchill

Week	Weekly Detailed Course Contents	
1	Theoretical	Complex numbers
	Preparation Work	Relevant part of course book should be read
2	Theoretical	Functions
	Preparation Work	Relevant part of course book should be read
3	Theoretical	Limits
	Preparation Work	Relevant part of course book should be read
4	Theoretical	Continuity
	Preparation Work	Relevant part of course book should be read
5	Theoretical	Complex differentiation
	Preparation Work	Relevant part of course book should be read
6	Theoretical	Cauchy- Riemann equations
	Preparation Work	Relevant part of course book should be read
7	Theoretical	Complex integration
	Preparation Work	Relevant part of course book should be read
8	Theoretical	Cauchy's theorem
	Preparation Work	Relevant part of course book should be read
9	Theoretical	Cauchy's integral formulas
	Preparation Work	Relevant part of course book should be read
10	Intermediate Exam	Midterm
11	Theoretical	Infinite series
	Preparation Work	Relevant part of course book should be read
12	Theoretical	Taylor's and Laurent series
	Preparation Work	Relevant part of course book should be read
13	Theoretical	Residue theorem
	Preparation Work	Relevant part of course book should be read

14	Theoretical	Applications of residue
	Preparation Work	Relevant part of course book should be read
15	Theoretical	Conformal mapping and physical applications of conformal mapping
	Preparation Work	Relevant part of course book should be read
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	20	2	22
Midterm Examination	1	40	2	42
Final Examination	1	50	2	52
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to comprehend the basic concept of theory of complex functions
2	To be able to develop mathematical sense
3	To be able to develop the capacity of posing and solving problems
4	To be able to gain the skill of interpreting some interrelations among these concepts
5	To be able to use mathematical concepts in solving certain types of problems

Programme Outcomes (Mathematics Master)

1	To be able to have an adequate theoretical and practical domain knowledge.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use theoretical and practical domain knowledge gained in the field of Mathematics.
4	To be able to interpret knowledge from different disciplines integrating knowledge in the field of mathematics and produce new information.
5	To be able to define, analyse, model and to solve the problems by scientific methods in Mathematics.
6	To be able to conduct a math related specialistic study independently.
7	To be able to develop new strategic approaches to solve problems occurred in unforeseen and complex math-related applications by taking responsibility.
8	To be able to lead in situations that require solving problems related to the mathematics.
9	To be able to criticize his/her knowledge and skills acquired in the field mathematics.
10	To be able to transfer his/her ideas and suggestions for solutions to problems by supporting quantitative or qualitative data verbally and in writing.
11	To be able to communicate both orally and written in a foreign language.
12	To be able to use computer hardware and information technologies with software required by Mathematics.
13	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and being able to support the development of social, scientific, cultural and ethical values.
14	To be able to develop mathematics-related strategies, policies and operational plans, and to evaluate the results obtained within the framework of quality processes.
15	To be able to use his/her knowledge in the field of mathematics and practical problem-solving skills in interdisciplinary 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
P1	5	5	5	5	5
P3	4	4	4	4	4
P5			4	4	4
P7	4	4		4	4
P13		2	2	2	2