AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Function Theory of One Complex Variable								
Course Code	MTK602		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	7.5	Workload	189 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To acquaint students with the fundamental notions of function theory of one complex variable including fundamental concepts, complex line integrals, applications of Cauchy integral, meromorphic functions and residues, the zeros of holomorphic function, holomorphic functions as geometric mappings, harmonic functions, infinite series and product, applications of infinite sums and products, analytic continuation, rational approximation theory, special classes of holomorphic functions, special functions.								
Course Content	Complex line integrals, applications of Cauchy integral, meromorphic functions and residues, the zeros of holomorphic function, holomorphic functions as geometric mappings, harmonic functions, infinite series and product, applications of infinite sums and products, analytic continuation, rational approximation theory, special classes of holomorphic functions, special functions.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading	
1	Function Theory of One Complex Variable, Robert E. Grene, Steven G. Krantz

Week	Weekly Detailed Course Contents	
1	Theoretical	Complex line integrals
	Preparation Work	Relevant part of course book should be read
2	Theoretical	Applications of Cauchy integral
	Preparation Work	Relevant part of course book should be read
3	Theoretical	Meromorphic functions and residues
	Preparation Work	Relevant part of course book should be read
4	Theoretical	The zeros of holomorphic function
	Preparation Work	Relevant part of course book should be read
5	Theoretical	Holomorphic functions as geometric mappings
	Preparation Work	Relevant part of course book should be read
6	Theoretical	Harmonic functions
	Preparation Work	Relevant part of course book should be read
7	Theoretical	Infinite series and product
	Preparation Work	Relevant part of course book should be read
8	Theoretical	Applications of infinite sums and products
	Preparation Work	Relevant part of course book should be read
9	Preparation Work	Relevant part of course book should be read
10	Theoretical	Rational approximation theory
	Preparation Work	Relevant part of course book should be read
11	Theoretical	Special classes of holomorphic functions
	Preparation Work	Relevant part of course book should be read
12	Theoretical	Special classes of holomorphic functions
	Preparation Work	Relevant part of course book should be read
13	Theoretical	Special functions
	Preparation Work	Relevant part of course book should be read

14	Theoretical	Special functions
	Preparation Work	Relevant part of course book should be read
15	Preparation Work	Relevant part of course book should be read
	Final Exam	FINAL EXAM

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	8	2	10
Reading	12	0	0.5	6
Midterm Examination	1	35	2	37
Final Examination	1	50	2	52
			Total Workload (Hours)	189
			[Total Workload (Hours) / 25*] = **ECTS**	7.5

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	Ability to improve the advance concept of theory of complex functions
2	Ability to improve mathematical sense
3	Ability to improve 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 Doctorate)*

1	To be able to develop the current and advanced knowledge of mathematics domain to expertise level by an original idea or research, based on the level of its knowledge at the graduate level, and to be able to reach original definitions that will bring innovation to Mathematics.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use and evaluate the new knowledge in the field of Mathematics with a systematic approach.
4	To be able to develop an idea, a method, a design or an application that will bring innovation to Mathematics, to use well known ideas, methods, designs or applications on a different research area, or to search, comprehend, design, adapt and apply an original subject matter.
5	To be able to criticize, analyze, synthesize and evaluate new and complex ideas.
6	To be able have high-level skills in research methods related to studies on Mathematics.
7	To be able to expand the frontiers knowledge in the field of Mathematics via generating or interpreting an original study, or publishing at least a scientific paper in national/international refereed journals.
8	To be capable of leadership in the positions that require the analyses of problems related to the field of Mathematics.
9	To be able to defend his/her original ideas among the experts in the discussion of math related issues, and to be able to communicate effectively to show his/her competence in the field of Mathematics.
10	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and to be able to support the development of social, scientific, cultural and ethical values.
11	To be able to have both oral and written communication using a foreign language.

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	4	4
P2				4	4
P3	4	4	4	4	4
P4				4	4
P5	4	4	4	4	4