AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Mathematical Methods of Physics II								
Course Code	MTK582		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 give the fundamental concepts of generalized functions.								
Course Content	Canonical functions, Taylor's and Laurent Series of generalized functions , Convolutions of generalized functions, Elementary solutions of differential equations with constant coefficients, Fourier transforms of test functions, Fourier transforms of generalized functions, Several Variable, Fourier transforms and differential equations.								
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	I. M. Gelfand and Shilov, Generalized Functions, Vol. I, Academic Press, 1964.
2	R. Hoskins and J.S. Pinto, Ellis Horward, Chichester, Distributions, Ultradistributions and Other Generalized Functions, 1994.

Week	Weekly Detailed Course Contents	
1	Theoretical	Canonical functions
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
2	Theoretical	Taylor's and Laurent Series for x^?
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
3	Theoretical	Taylor's series for (x+i0)^?, (x-i0)^?
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
4	Theoretical	Convolutions of generalized functions
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
5	Theoretical	Convolutions of generalized functions
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
6	Theoretical	Elementary solutions of differential equations with constant coefficents
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
7	Theoretical	Fourier transforms of test functions
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
8	Theoretical	Fourier transforms of test functions
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
9	Preparation Work	All subjects covered
	Intermediate Exam	MIDTERM EXAM
10	Theoretical	Fourier transforms of generalized functions (A single Variable)
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
11	Theoretical	Fourier transforms of generalized functions (A single Variable)
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
12	Theoretical	Fourier transforms of generalized functions (Several Variable)
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
13	Theoretical	Fourier transforms of generalized functions (Several Variable)
	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
14	Theoretical	Fourier transforms and differential equations

14	Preparation Work	Related section in the handbook of Mathematical Methods of Physics I should be read
15	Theoretical	Fourier transforms and differential equations
16	Preparation Work	All subjects covered
	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 acquire Taylor and Laurent series of generalized functions
2	To be able to define Fourier transforms of test functions and generalized functions
3	To be able to define some mathematical concepts which are essential in his/her field
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	4	4	4	4	4
P2	4	4	4	4	4
P3	3	3	3	3	3
P5	4	3	3	3	3
P8	3	2	2	2	2
P12	4	4	4	4	4