AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Partial Differential Equations								
Course Code	MTK538		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 structures of Partial Differential Equations first order and second order equations. Students will be familiar with classification of equations, linear first order equations, Cauchy problem for quasilinear first order equations, higher order Partial Differential Equations, wave and heat equations.								
Course Content	Introduction to classification of equations, linear first order equations, method of langrange, Cauchy problem for quasilinear first order equations, linear second order equations, hyperbolic, parabolic and elliptic 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	Rene Denemeyer (1968) Introduction to Partial Differential Equations and Boundary Value problems, McGraw-Hill
2	V.S. Vladımırov (1971) Equations of Mathematical Physics, Marcel Dekker, inc, Newyork

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction, Classification of partial differential equations,
2	Theoretical	Linear first order equations,
3	Theoretical	Linear and Quasilinear equations Method of Langrange
4	Theoretical	Cauchy problem for first order equations
5	Theoretical	Types of nonlinear first order equations, Method of Charpit,
6	Theoretical	Linear second order equations and generalization of linear second order equations, Non-homogeneous equations
7	Theoretical	Linear second order equations and generalization of linear second order equations, Non-homogeneous equations
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Hyperbolic, Parabolic, and Elliptic equations,
10	Theoretical	Introduction to wave equations,
11	Theoretical	One-dimensional wave equation; Initial-value problem,
12	Theoretical	Two-dimensional wave equation. Initial-value problem,
13	Theoretical	Three-dimensional wave equation. Initial-value problem.
14	Theoretical	One-dimensional heat equation. Initial-value problem.
15	Theoretical	One-dimensional heat equation. Initial-value problem
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 fundamental structures of Partial Differential Equations and classification of equations
2	To be able to find a general solution classification of equations, linear first order equations, Cauchy problem for quasilinear first order equations
3	To be able to classify second order linear Partial Differantial equations
4	To be able to define and solve wave equations
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	3	4	2	3	3
P3	4		4	4	4
P4	2	2	2	3	4
P5	3	4	5	4	4
P6	4	4	4	4	4
P7	4	4	2	4	
P8	2	3	2	2	
P9	3	4	4	4	
P10	4	4	4	4	
P11	2	3	4	4	
P12	2	4	3	3	
P13	2	3	3	4	
P14	3	3	4	4	