GENERAL ANALYTIC FUNCTIONS

1	Course Title:	GENERAL ANALYTIC FUNCTIONS	
2	Course Code:	MAT6407	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. SEZAYİ HIZLIYEL	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	hizliyel@uludag.edu.tr 0(224)29 41765	
17	Website:		
18	Objective of the Course:	Elliptic partial differential equations provide the necessary infrastructure to do advanced research	
19	Contribution of the Course to Professional Development:	Gaining analytical thinking ability and providing the necessary infrastructure	
20	Learning Outcomes:		
		1	know Singularities functions, the fundamental solution and represent formulas
		2	knows Green's function .
		3	Knows the properties of maximum, minimum, and mean value
		4	Dirichlet problem and knows the existence and uniqueness theorem
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Preliminaries (classification of two-variable equations (elliptic, parabolic and hyperbolic types), harmonic functions of two variables, the fundamental solution and representations obtained with the help of the fundamental solution, the mean value, maximum, minimum principle), the Dirichlet problem for a circle	

2	Classification of second order equations with n independent variables and the necessity of classification	
3	n-dimensional Laplace equation and Green's identities	
4	Singularities functions, fundamental solution, formulas representing	
5	Dirichlet problem in hypersphere , existence and uniqueness theorem	
6	Green function, Poisson's formula and the results	
7	mean value, and Maximum, minimum properties	
8	the mean value properties for equation ?_3 u +k^2 u=f	
9	Dirichlet problem for the more generally the regions and the existence and uniqueness theorem	
10	Conformal transformation method	
11	Integral equation method	
12	Finite difference method	
13	Dirichlet principle	
14	Sub-harmonic functions	

22	Textbooks, References and/or Other	A Course of Modern Analysis,E.T. Whittaker and G.N.

Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	R	14	3.00	42.00
Practicals/Labs		0	0.00	0.00
Self study and preperation		14	7.00	98.00
Homeworks		4	5.00	20.00
Projects		0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm exams		0	0.00	0.00
Others		0	0.00	0.00
Final Exams		1	20.00	20.00
Total Work Load				180.00
Total work load/ 30 hr				6.00
ECTS Credit of the Course				6.00

Measurement and Evaluation Techniques Used in the Course	Success is evaluated with 1 YYSS in accordance with the content of the course

24 ECTS / WORK LOAD TABLE

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	4	0	0	3	0	0	4	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**