MATHEMATICS DOCTORATE PROGRAM INFORMATION

General Information	The PhD Program in Mathematics at TOBB ETU has been accepting students since 2008. Teaching language is Turkish. The program is located in the Institute of Sciences as a department of mathematics. The PhD program is given expertise in the fields of Analysis and Functions, Theory of Algebra and Numbers, and Applied Mathematics.
Program Purpose	The aim of the PhD program in Mathematics is to train young, qualified and research scientists into the academic world. The Department of Mathematics aims to raise students, who have graduated from undergraduate and graduate programs, in such a way that they have a potential to work with interdisciplinary background at selected universities and institutions.
Degree Earned	Students who complete the department are entitled to receive a doctorate degree in Mathematics.
Level of Degree Earned	Doctorate degree (NQF- HETR 8. Level)
Requirements and Rules of the Degree Earned	To get a PhD degree in Mathematics, it is required to complete at least 21 credits, 126 ECTS, to have given a seminar course, to be successful in the qualifying exam and to defense the PhD thesis. See the TOBB ETU Regulations on Graduate Education and Examination: https://www.etu.edu.tr/tr/sayfa/mevzuat for details.
Registration Admission Requirements	To be admitted to a mathematics scholarship PhD program, the average of the undergraduate grade must be 2.5 / 4, the average of the MSc program grade be 3.2/4, the ALES score be 85, and the foreign language score be 75 (YDS, E-YDS, TOEFL, IBT, TUBE ETU). For the paid PhD program, the average of the MSc program grade must be 3.0/4, the ALES score must be 55 and the foreign language score must be 50. For TOBB ETU Regulations on Graduate Education, Training and Examination Regulations, visit the web address: https://www.etu.edu.tr/en/page/mevzuat
Recognition of Prior Learning	For course exemptions see the TOBB ETU Regulations on Graduate Education, Training and Examination: https://www.etu.edu.tr/en/page/mevzuat
Examinations, Assessment and Grading	Examinations are graded on 100 points. The grade weights of homework, midterms and the final exam may vary according to the structure of the course. Evaluation of exams and letter grades are done according to TOBB ETU Regulations on Graduate Education, Training and Examination: https://www.etu.edu.tr/tr/sayfa/mevzuat
Teaching Style	The PhD program consists of 12 semesters (4 years). In the program, there are 7 courses, 1 seminar course, 1 scientific research and publishing ethic course and 1 PhD thesis study. Total course credits are 21 and ECTS credits are 126.
Graduation Requirements	To get a PhD degree in Mathematics, it is required to complete at least 21 credits, 126 ECTS, to have given a seminar course, to be successful in the qualifying exam and to defense the PhD thesis. See the TOBB ETU Regulations on Graduate Education and Examination: https://www.etu.edu.tr/tr/sayfa/mevzuat for details.
Occupational Profiles of Graduated-Employment Opportunities	Students who have successfully completed undergraduate and graduate programs will have work skills as teaching staff at distinguished universities in the country and abroad. In addition, our graduated enjoy extensive work opportunities in the public and private sectors. They can work as a teacher in MEB; a software development specialist in the information technology; a stockbroker, broker and account specialist in banking and finance sectors; or a specialist and expert assistant staff in the appropriate public sectors.
Transition to a Upper Degree	

NQF-HETR PROGRAM QUALIFICATION MATRIX				PROGRAM QUALIFICATIONS														
Program : Mathematics																		
Related NQF-HETR Core Field: Mathematics and Statistics(Academic) - Doctorate				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TEMEL ALAN YETERLİLİKLERİ	INFORMATION	Corporate - Factual	Based on master's qualifications, the graduate develops and deepens his / her current and advanced knowledge in the level of expertise with original thought and / or research and reaches original definitions that bring innovation to the field.	X	X	X							X	X			X	X
			Understands the interdisciplinary interaction that the field is related to; reaches original results by using knowledge that requires expertise in analyzing, synthesizing, and evaluating new and complex ideas.				X	X									X	
	SKILLS	Cognitive - Applied	Evaluates, uses and transfers new information in a systematic manner.			X		X			X			X				X
			Develops a new idea, method, design and / or practice that brings innovation to his / her field, or researches, adapts, designs, adapts and applies a specific idea that applies a known idea, method, design and / or practice to a different field.		X	X					X			X		X		
			Makes critical analysis, synthesis and evaluation of new and complex ideas.		X	X							X			X		
			Gains top-level skills in using research methods in field studies.			X		X									X	
	COMPETENCE	Ability to work independently and to take responsibility	Contributes to the progress of his / her field by bringing innovation to his / her field, developing a new idea, method, design and / or practice, or independently performing an original work that applies a known idea, method, design and / or application to a different field.				X				X					X		X
			Broadens the boundaries of knowledge in the field by publishing at least one scientific article related to his / her field in national and / or internationally respected journals and / or by producing or interpreting a unique work.															X
			Leads in environments that require the resolution of original and interdisciplinary issues.				X									X		
		Learning Competence	Develops new ideas and methods related to the field by using high level mental processes such as creative and critical thinking, problem solving and decision making.		X	X												X
			Has access to the most up-to-date information in an area and has a high level of competence in the methods and skills necessary to comprehend them.							X						X		
			Undertakes a comprehensive study that brings innovation to knowledge or technology, develops a new scientific method or technological product / process, or applies a known method to a new field.								X							X
			Contributes to the science and technology literature by publishing the outputs of his academic studies in a prestigious academic setting.									X						
		Communication and Social Competence	Examines, develops and manages actions to change social relationships and norms that guide those relationships from a critical point of view.						X									
			The graduate defends his / her original opinions in discussing the subjects with his / her expert and establishes an effective communication showing his / her competence in the field.								X				X			
			The graduate will communicate and discuss advanced written, oral and visual communication using a foreign language at least at European Language Portfolio C1 General Level.							X								
			Graduates effectively use the computer software at the level required by the field in researches to solve problems by following developments in information and communication technologies.										X					
			Graduates conduct scientific research in national and international scientific research groups.							X								
		Field Specific Competence	By introducing scientific, technological, social or cultural advances in his/her field, the graduate contributes to the process of being an information society and sustaining it.															
			Establishes functional interactions by using strategic decision-making processes to solve problems related to their field.															
			Contributes to the solution of the social, scientific, cultural and ethical problems encountered in the field and supports the development of these values.															

Mathematics Doctorate Program Qualifications

1	Develops, evaluates, analyzes and applies knowledge in the master degree of mathematics.
2	Has an expert knowledge in his/her field, concentrates on a subject; conducts independent research, produces original ideas.
3	Gains the ability to think independently and original and develops theoretical concepts.
4	Be aware of new and developing inter-disciplinary applications related to his/her area, investigates and grasps them when it is necessary.
5	Be able to research the literature in his/her field and knows how to reach printed and online sources.
6	Uses mathematical software programs at advanced level to support results on his/her research topics.
7	Be aware of the professional responsibility and ethical values and obeys these values, and knows the importance of lifelong learning, has a sense of social, cultural and environmental responsibilities.
8	Discusses the current developments in his / her field and his / her own studies with experts, presents original ideas in written, verbal and visual manner.
9	Communicates verbally and in writing using a foreign language at least at the European Language Portfolio C1 General Level.
10	Develops continually the skills of creativity, decision making and problem solving.
11	Makes modeling problems with reasoning, tries to solve them with skills of analyzing, finds approximate solutions with numerical methods in case of the absence of exact solutions, and develops new methods.
12	Makes academic research about theoretical and applied mathematics in national and international research groups.
13	Prepares original projects and leads in solving the problems related to the field.
14	Uses the skills of reasoning, modeling, association and generalization as an expert.
15	Broadens the boundaries of knowledge in the field by publishing at least one scientific article related to his / her field in national and / or internationally respected journals.

Doctorate Program Qualifications Course Matrix of Mathematics		Program Qualifications														
Code	**Course Name**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
MAT 502	Introduction to Difference Equations II	3	3	3	2	4	3	4	2	4	2	2	2	2	2	2
MAT 504	Introduction to Optimal Control Theory II	3	3	3	3	4	3	4	2	4	2	2	2	1	2	1
MAT 506	Financial Mathematics II	5	3	4	3	3	3	4	2	4	3	2	3	2	3	3
MAT 510	Partial Differential Equations II	5	3	4	3	2	2	4	2	4	3	1	3	1	2	3
MAT 513	Linear Difference Equations and Stability Theory I	3	3	3	2	4	3	4	2	4	2	1	2	1	2	1
MAT 514	Linear Difference Equations and Stability Theory II	3	3	3	3	4	3	4	2	4	2	1	2	1	2	1
MAT 516	Cryptology II	4	3	3	4	4	4	4	3	4	3	2	3	4	3	4
MAT 518	Coding Theory II	4	3	3	4	4	4	4	3	4	3	2	3	4	3	4
MAT 520	Approximation Theory	5	3	4	2	4	5	4	4	4	3	4	4	3	4	5
MAT 524	Differential Equations II	5	3	4	3	4	5	4	4	4	3	4	4	2	3	3
MAT 526	Applied Mathematics II	3	3	4	4	4	4	4	2	4	3	4	4	3	3	3
MAT 528	Topology II	4	3	3	2	4	2	4	1	4	2	4	2	1	2	1
MAT 530	Functional Analysis II	5	3	4	2	4	2	4	2	4	2	4	2	1	3	3
MAT 534	Real Analysis II	5	3	4	3	4	2	4	2	4	2	4	2	1	3	3
MAT 536	Algebra II	5	3	4	2	4	2	4	2	4	2	4	3	1	3	3
MAT 538	Functions Theory II	5	3	4	3	4	4	4	2	4	3	4	3	2	3	3
MAT 543	Summability Theory	4	3	3	2	4	2	4	4	4	4	3	4	4	3	5
MAT 550	Introduction to Fuzzy Differential Equations	3	3	3	4	4	4	4	2	4	2	3	3	2	2	3
MAT 551	Mathematical Biology	5	4	4	3	4	3	4	2	4	3	4	3	2	3	5
MAT 554	Mathematical Analysis II	5	3	4	3	4	5	4	2	4	3	4	3	2	3	2
MAT 564	Dynamical Systems	5	4	4	3	4	3	4	2	4	3	4	3	2	3	5
MAT 566	Combinatorial Mathematics	4	3	4	3	4	4	4	4	4	3	3	4	3	3	5
MAT 568	Number Theory	4	3	3	3	4	3	4	2	4	2	3	3	2	3	3
MAT 572	Finite Fields	3	3	3	3	4	3	4	2	4	2	3	3	2	3	3
MAT 647	Special Topics in Analysis	5	3	3	3	4	5	4	3	4	2	4	4	2	4	4
MAT 660	Special Topics in Differential Equations	5	3	3	4	4	5	4	3	4	3	4	4	2	4	4
MAT 666	Special Topics in Applied Mathematics	5	3	3	4	4	5	4	3	4	3	4	4	2	4	4
MAT 682	Field Extensions and Galois Theory	3	5	3	3	4	4	4	3	4	4	4	3	3	5	4
MAT 688	Special Topics in Number Theory	5	3	3	3	4	4	4	3	4	3	4	4	2	4	4
MAT 689	Special Topics in Algebra	5	3	3	3	4	4	4	3	4	3	4	4	2	4	4
MAT 697	Phd Seminar Course	5	4	4	3	4	4	4	4	4	4	4	4	1	3	3
MAT 699	Phd Thesis Course	5	4	4	3	4	4	4	4	4	4	4	4	2	4	5
FBE 600	Scientific Research Techniques and Publication Ethics					3		5								4