ALGEBRAIC NUMBER THEORY I										
1	Course Title:	ALGEBRAIC NUMBER THEORY I								
2	Course Code:	MAT5207								
3	Type of Course:	Optional								
4	Level of Course:	Second Cycle								
5	Year of Study:	1								
6	Semester:	1								
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. İSMAİL NACİ CANGÜL								
15	Course Lecturers:	Prof. Dr. Osman BİZİM								
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi, Fen-Edebiyat Fakültesi Matematik Bölümü, Görükle Bursa-TÜRKİYE 0 224 294 17 57 / obizim@uludag.edu.tr								
17	Website:									
18	Objective of the Course:	The aim of this lecture is to illustrate how basic notions from the theory of algebraic numbers may be used to solve problems in number theory. The main focus is to extend properties of the integer numbers to more general number structures: algebraic number fields and their rings of algebraic integers. So students can So students have the ability conduct original research and independent publication.								
19	Contribution of the Course to Professional Development:									
20	Learning Outcomes:									
		1	Learns the concepts, integral domains, irreducibles and primes in an integral domain.							
		2	Learns Euclidean domains, examples of Euclidean domains, Noetherian domains, çarpanlara ayırma bölgeleri, unique factorization domains.							
		3	Learns algebraic extensions of a field, conjugate elements, algebraic integers in a quadratic field, simple extensions.							
		4	Learns algebraic number fields, conjugate fields of an algebraic number field, prime ideals in rings of integers.							
			Learns class groups and and some class number calculations.							
			Learns ideal class group and Minkowski theorem.							
		7	Uses algebraic number theory to solve some Diophantine equations.							
		8								
		9								
		10								
21	Course Content:									
	Course Content:									

Week	Theoretical		Practice				
1	Integral domains, irreducibles and pri an integral domain.	mes in					
2	Ideals, principal ideal domains, maxir prime ideals, sums and products of ideals.						
3	Euclidean domains, examples of Euc domains, almost Euclidean domain.	lidean					
4	Noetherian domains, çarpanlara ayır bölgeleri, unique factorization domair modules, Noetherian modules.						
5	Algebraic numbers, algebraic integer closure.	S,					
6	Algebraic extensions of a field, conju- elements, algebraic integers in a qua field, simple extensions.						
7	Algebraic number fields, conjugate fie an algebraic number field, prime idea rings of integers.						
8	Dedekind domains, ideals in Dedekin domains and generator of an ideal.	d					
9	Norm of an ideal, norm and trace of a element, norm of a product of ideals	an					
10	Norm of a prime ideal, factoring in qu number fields, factoring in cyclotomic						
11	Units in quadratic fields, the fundame calculating the fundamental unit.	ental unit,					
12	Class groups and and some class nu calculations.	mber					
13	The ideal class group and Minkowski theorem.						
14	Applications to Diophantine equations some examples.	s and					
22	Textbooks, References and/or Other Materials:		[1]Algebraic Number Theory and Fermat's Last Theorem, Ian Stewart, David Tall. [2] Algebraic Number Theory, J. Neukirch. [3]Introductory Algebraic Number Theory, Ş. Alaca, K.S. Williams. [4]Algebraic Numbers, Paulo Ribenboim.				
23	Assesment						
	EARNING ACTIVITIES	NUMBE R	WEIGHT				
Midtern	n Exam	0	0.00				
Quiz		0	0.00				
	vork-project	0	0.00				
Final E	xam	1	100.00				
Total		1	100.00				
Contribution of Term (Year) Learning Activities to Success Grade			0.00				
Contrib	ution of Final Exam to Success Grade)	100.00				
Total			100.00				
Measur Course	rement and Evaluation Techniques Us	sed in the					
24	ECTS / WORK LOAD TABLE	_					

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	5.00	70.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	14	5.00	70.00
Final Exams	1	43.00	43.00
Total Work Load			225.00
Total work load/ 30 hr			7.50
ECTS Credit of the Course			6.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK2	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK3	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK4	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK6	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK7	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contrib ution Level:	ion			2	2 low	3 Med			um	4 High			5 Very High			