NUMBER THEORY

1	Course Title:	NUMBER THEORY	
2	Course Code:	MAT3020	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	3	
6	Semester:	6	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	2.00	
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:	Yrd. Doç. Dr. Musa DEMİRCİ, Yrd. Doç. Dr. Hacer ÖZDEN	
16	Contact information of the Course Coordinator:	cangul@uludag.edu.tr, 0224 2941756, Fen-Edebiyat Fakültesi, Matematik Bölümü, 16059, Görükle / Bursa	
17	Website:	http://www.ismailnacicangul.com/	
18	Objective of the Course:	To give definitions and detailed properties of algebraic structures; especially groups, rings and fields, types of groups, transtormations between groups, quotient group together with the origins of the notions.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Knows algebraic structures and their properties.
		2	Can use the transformations between algebraic structures.
		3	Has an idea about at least one of the computer programmes in group theory.
		4	Can realise applications of algebraic structures.
		5	Knows geometric properties of groups.
		6	Knows the corresponding English meanings of the main notions.
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction, groups	Examples of groups
2	Group examples and basic properties	Examples of binary operations
3	Subgroups	Examples of subgroups
4	Normal subgroups	Examples of normal subgroups

5	Center of a group and commutator subgroups	Calculation of the center of a group and commutator subgroups
6	Permutation groups	Symmetric group on 3 elements
7	Group transformations	Examples of isomorphism and homomorphism, calculation of kernel
8	Cosets and Lagrange theorem	Examples of cosets
9	Midterm exam, Quotient group and its properties	Examples of quotient groups
10	Cyclic groups, their properties and subgroups	Calculation of the subgroups of some cyclic groups and subgroup tables
11	Dihedral group, isomorphism theorems, direct product of groups	Examples of Dihedral groups and direct products
12	Rings, basic properties	Examples of rings
13	Character of a ring, zero divisors, subrings and ideals	Calculation of characteristics and zero divisors
14	Quotient ring, fields, structure of finite fields	Examples of finite fields

22	Textbooks, References and/or Other Materials:	Lecture Notes, İsmail Naci CANGÜL
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
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	1	20.00	20.00
Others	0	0.00	0.00
Final Exams	1	28.00	28.00
Total Work Load			194.00
Total work load/ 30 hr			5.80
ECTS Credit of the Course			5.00

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	5	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
ÖK2	0	3	0	0	3	0	0	4	0	0	0	0	0	0	0	0
ÖK3	0	0	5	0	0	0	4	0	0	2	0	0	0	0	0	0
ÖK4	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
ÖK5	0	3	0	0	3	0	2	3	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	5	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**						