



T.C.

ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ

FACULTY OF SCIENCES

MATHEMATICS AND COMPUTER SCIENCE DEPARTMENT



COURSE INFORMATION FORM

Course Name	Course Code
Number Theory	821614009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	3	0	-	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	Discrete Mathematics
Objectives of the Course	Getting basic information about number theory
Short Course Content	Sum and product notations, Divisibility of integers, Prime numbers, Division algorithm, Euclidean algorithm, Euler function, Arithmetic functions, Moebius inversion formula, Basic properties of congruences, Euler, Fermat and Wilson theorems, Linear congruences, Chinese remainder theorem, Non-linear congruences, Linear Diophantine equations, Two-variable congruences, Two-variable linear congruence systems with the same module, Congruence applications (divisibility tests), Primitive roots, Indices, Quadratic congruences, Jacobi, Legendre symbols, Gauss lemma

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Have sufficient knowledge of Number Theory topics	1, 2, 3, 4	1, 2, 5, 10, 11	A, D
2 Have the ability to define, model and solve mathematical problems in Number Theory and related fields.	3, 5, 6, 9, 11	1, 2, 5, 10, 11	A, D
3 Has different perspectives to solve the problems she/he encounters	3, 4, 7, 8, 9, 13	1, 2, 13	D
4 Have the ability to work individually, think analytically and make independent decisions	4, 7, 9	1, 2, 5, 10, 11	A, D
5			
6			
7			
8			

*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

**Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

Main Textbook	1) Sayılar Teorisi ve Uygulamaları (Prof. Dr. Hüseyin Altındış), 2) Elementary Number Theory and Its Application . (A.Wesley, K. Rosen)
Supporting References	Soyut Cebir ve Sayılar Teorisi (Doç. Dr. Mustafa Bayraktar)
Necessary Course Material	

Course Schedule	
1	Sum and product notations, Divisibility of integers
2	Prime numbers, Division algorithm, Euclidean algorithm
3	Euler function
4	Arithmetic functions, Moebius inversion formula
5	Basic properties of congruences
6	Euler, Fermat and Wilson theorems
7	Linear congruences, Chinese remainder theorem
8	Mid-Term Exam
9	Non-linear congruences
10	Linear Diophantine equations
11	Two-variable congruences, Two-variable linear congruence systems with the same module
12	Congruence applications (divisibility tests)
13	Primitive roots, Indices
14	Quadratic congruences
15	Jacobi, Legendre symbols, Gauss lemma
16,17	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)	14	3	42
Homework	7	3	21
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
Total workload			159
Total workload / 30			5,3
Course ECTS Credit			5

Evaluation	
Activity Type	%
Mid-term	40
Quiz	
Homework	
Bir öge seçin.	
Bir öge seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOME	Contribution
1	The ability to apply knowledges of Mathematics and Computer Sciences,	4
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	5
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	5
4	The skill to solve and design a problem process in accordance with a defined target,	5
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	3
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	3
7	The skill to make team work within the discipline and interdisciplinary,	3
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	2
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	5
10	The skill to have professional and ethical responsibility,	2
11	The skill to have consciousness for quality issues and scientific research,	2
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	1
13	Ability to solve problems in the working life faced to find an appropriate algorithms via mathematical modeling and to write computer programs,	3
14	The skill to developed design of software systems at different complex levels,	1
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Dr. Hatice GÜLSÜN AKAY			
Signature(s)				

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