

BALIKESİR UNIVERSITY
NECATİBEY FACULTY OF EDUCATION
UNIVERSITY ELECTIVE COURSE PROPOSAL FORM

Department / Program	Department of Mathematics and Science Education / Mathematics Education					
Course Title	Number Theory I					
Semester	Fall	X		Spring	X	
Language	Turkish	X		English		
Credits	Theory	2		Application	0	
ECTS	3					
Type of Program	Formal Education			Face to face		
Course Objectives	Knowing the basic concepts and theorems related to number theory and being able to solve simple problems.					
Course Content	Divisibility, Properties of divisibility, Division and Euclidean algorithm, Greatest common divisor and Least common multiple, Linear Diophantine equations, Fundamental theorem of arithmetic, Euler's phi-function, Systems of complete remainders, Linear congruences, Quadratic remainders, Systems of reduced remainders, Fermat's little theorem, Wilson's theorem, Primitive roots.					
Course Prerequisites	There are no prerequisites for this course.					
Instructor	Prof. Dr. Nazlı YILDIZ İKİKARDEŞ			mail: nyildiz@balikesir.edu.tr		
Course Assistants	-			mail: -		
Course Internship Status	The course has no internship.					
Course Resources	- An Introduction to the Theory of Numbers, G.H. Hardy, E.M. Wright, Oxford University Press, 2008 - Elementary Number Theory , David M. Burton, McGraw-Hill, 2010 - A Friendly Introduction to Number Theory , Joseph H. Silverman, Pearson, 2012 - Sayılar Teorisi Problemleri, İsmail Naci Cangül & Basri Çelik, 2005					
Course Category	Numbers					
Planned Learning Activities and Methods	Anlatım, Alıştırma ve Uygulama					
Course Evaluation Criteria			Course ECTS Calculation Content			
Semester Studies	Quantity	Contribution (%)	Activity	Quantity	Duration	Total Work Load (Hour)
Mid-terms	1	40	Course Duration	14	2	28
Short Exam			Out of Class Work Duration	14	1	14
Homework			Midterm Exams	1	20	20
Attendance			Final Exam	1	20	20
Practice			Total Work Load: 82			
Project			ECTS Credits : 3			
Final Exam	1	60				
Learning Outcomes	Knows the difference between prime and composite numbers. Understand the concept of divisibility in integers and related concepts. Know the real-world applications of Diophantine equations. Know the real-world applications of congruences. Understand the origins and historical development of these concepts.					
Course Topics						

Week	Topic	Pre-Study	Materials
1	Divisibility	Preliminary research of the relevant subject	Course resources and presentations
2	Euclid's algorithm	Preliminary research of the relevant subject	Course resources and presentations
3	Linear Diophantine equations	Preliminary research of the relevant subject	Course resources and presentations
4	Linear Diophantine equations	Preliminary research of the relevant subject	Course resources and presentations
5	Fundamental theorem of arithmetic	Preliminary research of the relevant subject	Course resources and presentations
6	Euler's phi-function	Preliminary research of the relevant subject	Course resources and presentations
7	Systems of complete remainders	Preliminary research of the relevant subject	Course resources and presentations
8	Midterm Exam	Preliminary research of the relevant subject	Course resources and presentations
9	Linear congruences	Preliminary research of the relevant subject	Course resources and presentations
10	Linear congruences	Preliminary research of the relevant subject	Course resources and presentations
11	Quadratic remainders	Preliminary research of the relevant subject	Course resources and presentations
12	Fermat's little theorem	Preliminary research of the relevant subject	Course resources and presentations
13	Wilson's theorem	Preliminary research of the relevant subject	Course resources and presentations
14	Primitive roots	Preliminary research of the relevant subject	Course resources and presentations
15	Evaluation	Preliminary research of the relevant subject	Course resources and presentations

Contribution of Learning Outcomes to Program Outcomes

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