Study Program: Mathematics

Type and level of studies: Bachelor studies, VII semester

Course name: **Number theory**

Lecturer: Miloje D. Rajović

Status: Elective

ECTS: 7

Attendance Prerequisites: none

Course aims

Introducing students to the basic concepts of number theory and its role and significance in system of mathematical disciplines.

Course outcome

Grasping the basic principles of number theory and developing the ability to solve simpler arithmetic problems.

Course content

Theoretical part

Divisibility, prime numbers, basic theorem of arithmetic. Euclidean algorithm. Congruences, systems of linear congruences, Chinese remainder theorem. Fermat's little theorem, **Euler's and Wilson's** theorem. Square remains. Mersenne prime. Primary number testing, Carmichael numbers. Representations of numbers by sums of squares. Primitive root. The law of quadratic reciprocity. Bertrand's postulate. Chain fractions. Diophantine equations and Diophantine approximations. Pele's equations.

Practical classes: Exercises, Other forms of teaching, Study research work

Basic properties of prime numbers and divisibility. Linear congruences. Applications of the Chinese remainder theorem. Applying Fermat's little theorem, **Euler and Wilson** theorems. Square residues and square reciprocity. Diophantine equations.

Literature

1. В. Мићић, З. Каделберг, Д. Ђукић, *Увод у теорију бројева*, друштво математичара Србије, Београд 2004
2. Р. Тошић, В. Вукосављевић, *Елементи теорије бројева*, алеф, Нови Сад 1995
3. М. Станић, Н. Икодиновић, *Теорија бројева-збирка задатака*, Завод за уџбенике и наставна средства, Београд 2004

Number of active classes	Lectures**:** **2**	Practical classes**:** **2**

Teaching methods

Frontal, group, interactive.

Assessment (maximum 100 points)

Course assignments	**points**	Final exam	**points**
activity during lectures	**10**	written exam	**20**
practical classes	-		30
term test(s)	**40**		
seminar(s)			
Total	**50**		50