

The Graduate Center of CUNY Ph.D. Program
in Mathematics

Course Description -Spring 2021

Course Title: Introduction to Algebraic Number Theory

Course #: 87000

Day & Time: Thursdays 2PM-4PM

Instructor Name: Victor Kolyvagin

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Pre-Requisites: _____

Office Hours: Thursdays, 1PM-2PM

Description:

The main purpose of the course is to study basics of Algebraic Number Theory. In particular, it would provide a ground for further more advanced study.

The central theme will be study of theory of divisibility in rings of algebraic integers (divisor theory) - far-reaching generalization of the main theorem of arithmetic about uniqueness of decomposition in primes of a natural number.

One of the goals of Algebraic Number Theory is getting applications to solving diophantine equations, it is one of its origins as well.

Historically, Kummer work on Fermat,s equation $x^{(power\ l)}+y^{(power\ l)}=z^{(power\ l)}$ over the cyclotomic field $K(l)$, genetated over the rational numbers by l -th roots of unity, was very important for development of the theory.

We will study arithmetic of cyclotomic fields and Fermat,s equations over them as a motivation for development of theory of algebraic numbers and as a nice example of how it works.

One year of algebra course is recommended for sudents to attend.

Book to be used- Borevich, Shafarevich "Number Theory".