



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

Course Title: Topics in Algebraic Number Theory

Course #: 87000

Time and Location: Thursdays 2PM-4PM, Graduate Center of CUNY

Instructor Name: Victor Kolyvagin

Contact Information: VKolyvagin@gc.cuny.edu

Pre-Requisites: _____

Office Hours: Thursdays 1PM-2PM

Description:

The accent in the course will be on arithmetic of elliptic curves and curves of genus one over number fields. Main topics will include:

Congruent numbers, elliptic curves, Mordell-Weil theorem;

L-function of an elliptic curve, modular parametrization, Berch-Swinnerton-Dyer conjecture - rank part;

Problem of existence of a rational point on a curve of genus one, the case of a local field, the case of a global field, Hasse principle;

Main homogeneous spaces over an elliptic curve, the Shafarevich-Tate group of an elliptic curve;

The full Birch-Swinnerton-Dyer conjecture, the method of Euler systems (Introduction).