

Course Title: Topics in Algebraic Number Theory

Course #: 87000

Time and Location: Thursdays 2.00 PM - 4.00 PM. Graduate Center of CUNY.

Instructor Name: Victor Kolyvagin

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Pre-Requisites: \_\_\_\_\_

Office Hours: Thursdays 1.00 PM - 2.00 PM

Description:

The course will study beginnings of the Euler Systems method for bounding Selmer-type groups. Main topics will include:

Modular parametrization of elliptic curves and their L-functions.. Elliptic curves and their Heegner points over ring class fields of imaginary quadratic fields. Norm relations and congruence relations between the Heegner points. Special cohomology classes coming from Heegner points. Study of the orthogonality of the cohomology classes via the reciprocity law and applications to bounding of Selmer groups of elliptic curves. Finitenes of Mordell-Weil and Shafarevich-Tate groups of certain elliptic curves. Gross-Zagier formula. Applications to the Birch-Swinnerton-Dyer conjecture.

There is no particular text book to be used.