

Math 613D: TOPICS IN NUMBER THEORY

INSTRUCTOR: Peter Schneider

Classroom: MATH 105

Timings: Tuesday and Thursday, 9:30 – 11 a.m.

Office hours: after class or by appointment

Office:

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Course Description

The first half of the course will be devoted to the introduction of local p -adic number fields and the study of finite extensions of such fields by means of the so called ramification theory. In other words, this will be an introduction to classical local number theory as covered, for example, in the first chapters of the book “Local Fields” by J-P Serre. In the second half we will learn about p -adic representations of the absolute Galois group of a p -adic field. The goal is to give a full account of the theory of the mathematician S. Sen who associated with such a representation a bunch of numbers called the weights of the representation. We will have to understand how much information about the representation these numbers encode. This is the first instance of one of the most important developments in modern number theory running under the name “ p -adic Hodge theory”.

As far as number theory is concerned the course will be completely self contained. On the other hand acquaintance with basic algebra and Galois theory will be assumed.

Assignments

There will be no exam but periodic assignments which will serve as a basis for assigning a final grade.