

Math 583 F
Class Field Theory
Spring 2008

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Class Times: Mon., Weds., and Fri. 2:30–3:20 PM in PAR 310.

Course Homepage: <http://www.math.washington.edu/~tsarnold/583/>

Texts: The following references may be useful:

- Cassels, J.W.S., and Fröhlich, A., eds., *Algebraic Number Theory*. A classic and rightfully so. If you can find this book for a reasonable price, buy it.
- Milne, J.S., *Class Field Theory* (notes, available from Milne's webpage). A thorough and very readable treatment of the local and global theories.
- Neukirch, J., *Algebraic Number Theory*. This is an excellent reference for all the basic facts about its title, but I don't recommend you learn class field theory from it (as I did...), since it has a somewhat unusual treatment.
- Serre, J-P., *Local Fields*. A good reference for the local theory.

Work: There will be homework assigned weekly. You are encouraged to work together on homework, and may turn it in jointly with another student. Degree candidates are exempt from homework if they so desire. In addition, there is a required project on a topic of your choice. A draft is due 2 weeks before the end of the quarter, the final version at the end of the quarter.

Grading: If you're keeping up with the homework and project, you'll get a 4.0. Otherwise, your grade may be as low as 3.0.

Content: I hope to cover at least the following topics:

- Galois cohomology (with all proofs strictly belonging to homological algebra omitted)
- Local class field theory (statements and sketch of proof)
- Adèle class groups and ideal class groups
- Global class field theory (statements and sketch of proof)

If there's time I'll also do some sort of special topic; depending on people's interests, this topic could be elliptic curves and complex multiplication, Iwasawa theory, Hecke L -functions, or something else.