

Math 595. Introduction to Modular Forms. Fall 2006.

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This course is an introduction to some of the many roles which modular forms play in number theory. We will cover basic definitions and examples, and will describe connections to elliptic curves and modular curves. We will also describe applications of the general theory to problems from various areas of number theory. We will loosely follow the recent book of Diamond and Shurman (*A first course in modular forms*) and will supplement as needed with other material.

- **Text:** The official text is *A first course in modular forms* by Diamond and Shurman. We will borrow heavily from other sources. The following books, as well as the textbook, are on reserve in the library:

Apostol, *Modular functions and Dirichlet series in number theory*. A very explicit and careful introduction to certain topics.

Iwaniec, *Topics in classical automorphic forms*. Very nicely written, a different approach to various topics.

Koblitz, *Elliptic curves and modular forms*. Chapters 3-5 have long been a standard introduction.

Ono, *The web of modularity*. A quick overview of the basics and a good account of various connections to number theory.

Serre, *A course in number theory*. A great introduction to the basics. Beware differences in notation.

- **Class schedule:** Class meets MWF at 10 am in 343 Altgeld.
- **Office hours:** By appointment. I am usually around.
- **Grading:** The course grade will be based on periodic assignments, which may be written or perhaps oral. One of these assignments may be an extended project which involves reading outside of the syllabus and preparing a presentation.
- Please do not hesitate to contact me at any time if you have questions or problems relating to this course. Best wishes for an enjoyable and productive semester!