

COURSE SYLLABUS
MATH 772
FALL 2011

Welcome to Math 772 (Algebraic Number Theory), my name is Jim Coykendall, and I will be your instructor for this course. My office is 412K Minard Hall, and my office hours this semester will be on Mondays, Wednesdays, and Fridays from 5:30-8:00am, from 9:00am-10:00am, and additionally from 12:00pm-2:00pm. If my hours are inconvenient and you can't catch me, then email me (Jim.Coykendall@ndsu.edu or much better yet at jim.coykendall@gmail.com) or give me a call (231-8079). Another good resource for this course is my homepage, which can be found at

<https://www.ndsu.edu/pubweb/~coykenda/>

In general, you may consider my office an "open door", and I strongly recommend that you come and see me if you are having any trouble in class (or if you find that you are not being challenged enough). Come by...I enjoy seeing my students.

COURSE DESCRIPTION: This course will be a basic graduate course in (primarily) algebraic number theory. The course will begin by reviewing some central background in elementary number theory (including quadratic reciprocity). After this review, we will look at the structure of rings of algebraic integers: Dedekind domains, factorization of elements, unique factorization of ideals, the discriminant, ramification, units and ideal classes, distribution of primes, and orders. We will also delve into the p-adics with a look at their algebraic and topological structure and apply some p-adic techniques to general number theory. Other topics (such as elementary class field theory, analytic methods, and density theorems) may be covered if time permits.

GOALS: To impart an appreciation and working knowledge of this central (and very large) field of mathematics is the major goal of this course. This course will provide essential tools for students specializing in number theory/algebra as well as give a broad understanding to the non-specialist.

TEXTBOOK: No textbook will be required. Some good references are *Advanced Number Theory* by Cohn, *Algebraic Number Theory* by Lang, *A Course in Arithmetic* by Serre, and *Elementary and Analytic Theory of Algebraic Numbers* by Narkiewicz. This is certainly not an exhaustive list of good references.

HOMEWORK: Homework will be collected (approximately) every one to two weeks. Your homework average will be 100% of your grade.

EXAMS: The set of exams in this class is empty, comprising 0% of your grade.

GRADES: Here is a breakdown of the quizzes/exams/final:

Homework Average...100%

If you get the following scores (out of 100) you will receive:

90-100...A
80-89...B
70-79...C
60-69...D

SPECIAL NEEDS: Any students with disabilities or other special needs, who need special accommodations in the course, are invited to share these concerns or requests with the instructor as soon as possible.

ACADEMIC HONESTY: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct (<http://www.ndsu.nodak.edu/policy/335.htm>).

I wish you the best of luck in this course, please stop by and keep me posted on how you are doing.