Department of Mathematics & Statistics
Concordia University

> ## MATH 494 (MAST 693/833), Sec. A
> Topics in Pure & Applied Math
> *Fall 2017*

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Office Hours: By appointment.

Objective: This course aims to cover the basic material in algebraic number theory and to give a taste of the applicability of the theory via some examples (both classical and recent).

References: There are many great textbooks on algebraic number fields, including: Cox's Primes of the Form x^2+ny^2; Fried-Jarden's Field Arithmetic; Janustz' Algebraic Number Fields; Lang's Algebraic Number Theory; Marcus' Number Fields; Neukircsh's Algebraic Number Theory.

Final Grade: "Take-home" exam: 100%

Content: Topics to be covered:
- Prerequisites in commutative algebra;
- Dedekind domains;
- Ideal class groups; ramification;
- Decomposition of primes;
- Decomposition and inertia groups; Chebotarev's theorem;
- Cyclotomic fields;
- Applications including (if time permits) Hilbert's irreducibility theorem, the twin prime conjecture in function fields, Dirichlet's unit theorem, and the finiteness of the class groups.

address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*