

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

- Instructor:** Dr. L. Bary-Soroker, Office: LB 901-20 (SGW), Phone: (514) 848-2424, Ext. 3248  
Email: barylior@post.tau.ac.il
- 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; Janusz' Algebraic Number Fields; Lang's Algebraic Number Theory; Marcus' Number Fields; Neukirchsh'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.

**Academic Integrity and the Academic Code of Conduct**

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following

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