# Algebra I Preps

Selick's 2007 website is at http://www.math.toronto.edu/mat1100/ (and in my folder).
See also ~/eprints/Dummit (or symlink from classes/1100-AlgebraI).

Course description, as in graduate handbook:

**MAT 1100HF, ALGEBRA I, S. Arkhipov**
**Topics:**
- **Basic notions of linear algebra:** brief recollection. The language of Hom spaces and the corresponding canonical isomorphisms. Tensor product of vector spaces.
- **Group Theory:** Isomorphism theorems, group actions, Jordan-Hölder theorem, Sylow theorems, direct and semidirect products, finitely generated abelian groups, simple groups, symmetric groups, linear groups, nilpotent and solvable groups, generators and relations.
- **Ring Theory:** Rings, ideals, Euclidean domains, principal ideal domains, and unique factorization domains.
- **Modules:** Modules and algebras over a ring, tensor products, modules over a principal ideal domain

**Textbooks:**
- Dummit and Foote: Abstract Algebra, 2nd Edition
- Lang: Algebra, 3rd Edition.

**Other References:**
- Jacobson: Basic Algebra, Volumes I and II.
- Cohn: Basic Algebra
- M. Artin: Algebra.

**MAT 1101HS, ALGEBRA II, S. Arkhipov**
**Topics:**
- **Fields:** Algebraic and transcendental extensions, normal and separable extensions, fundamental theorem of Galois theory, solution of equations by radicals.
- **Commutative Rings:** Noetherian rings, Hilbert basis theorem, invariant theory, Hilbert Nullstellensatz, primary decomposition, affine algebraic varieties. structure of semisimple algebras, application to representation theory of finite groups.

**Textbooks:**
- Dummit and Foote: *Abstract Algebra,* 2nd Edition
- Lang: *Algebra,* 3rd Edition.

**Other References:**
- Jacobson: *Basic Algebra, Volumes I and II.*
- Cohn: *Basic Algebra*
- M. Artin: *Algebra*.

Pasted from <http://www.math.toronto.edu/cms/courses/>

Course timetable: http://www.math.utoronto.ca/cms/tentative-2010-2011-graduate-course-schedule/