

Math 602.001: Algebra

Mondays and Fridays, 1:30 pm – 2:50 pm

Status: Remote, with synchronous sessions

Course website: www.math.upenn.edu/~chai/602-3f20/math602f20.html

This is the first half of year-long graduate course, covering the basics of algebra and prepares students for research in mathematics. The topics include groups, rings, modules, commutative algebra, representation of finite groups.

More information, including (a) a collection of problems by Gallier and Shatz, (b) their lecture notes, (c) two old exams are available from the course website above (which is *not* on Canvas).

Schedule for a typical week:

- Monday–Friday: Work out assigned problems.
(This is the most important part of the course. Reading related materials may help. Some problems may take days to solve, so don't be discouraged if you don't see a proof in a few minutes.)
- Attend synchronous Zoom sessions during scheduled class time (Monday and Friday).
- Read a “textbook treatment” of topics discussed during the week, from one of the sources below.

Homework assignments and notes will be posted on the course website. Students will be assessed according to the completed assignments (60%) and take-home exams (40%).

References.

- Jean Gallier and Stephen Shatz, *Algebra*.
- Serge Lang, *Algebra*.
- Nathan Jacobson, *Algebra I, II*.
- Michael Artin, *Algebra*.
- Dummit and Foote, *Abstract Algebra*.
- van der Waerden, *Algebra I, II*.
- Bourbaki, *Algèbre*.
- M. F. Atiyah and I. G. MacDonald, *Commutative Algebra*.
- Ernst Kunz, *Introduction to Commutative Algebra and Algebraic Geometry*.
- Jean-Pierre Serre, *Linear Representations of Finite Groups*.
- I.-N. Herstein, *Noncommutative Rings*.