

SYLLABUS – MATH 538

COMMUTATIVE ALGEBRA

Description: This course will study commutative rings (including some study of fields) and modules. Core topics include prime ideals, primary factorization, ring extensions, localization, dimension theory, regular rings, and possibly some homological algebra. Connections with geometric objects will be emphasized.

- **Time:** Monday, Wednesday, Friday 10:10am – 11:00am
- **Location:** 106 McAllister
- **Instructor:** Karl Schwede
- **Contact information:**
 - email: schwede@math.psu.edu
 - office: McAllister, 318C
 - website: <http://www.math.psu.edu/schwede/math538> (coming soon)
- **Office hours:** To be held in my office, McAllister 318C. Times to be determined
- **Textbooks:**
 - “Commutative ring theory”, *Hideyuki Matsumura*
 - “Undergraduate commutative algebra”, *Miles Reid*
 - “Introduction to commutative algebra”, *M. F. Atiyah and I. G. MacDonald*

Grade: Your grade will be determined by the following formula.

70% Homework (due about once every one or two weeks). I will grade these or Andrew Bydlon will grade these.

30% (Friendly) oral exam.

Generally speaking, late homework will not be accepted. In unavoidable circumstances, you must speak with the instructor *prior* to missing the homework in order to receive credit. In such situations, the impact on the grade will be dealt with on a case by case basis.

Students are allowed, and even encouraged to work together when solving homework problems (although each student is responsible for their own write-up). LaTeX use is encouraged. I may also try to use Angel to have conversations on some mathematical topics.

Prerequisites: Students taking this course should be familiar with rings and fields. If you haven’t had much experience previously with modules, make sure you spend some extra time during the first week gaining the necessary background (do extra problems from the books, read about these notions online, etc).

Academic Integrity: All Penn State policies regarding ethics and honorable behavior apply to this course.

Disabilities: Penn State welcomes students with disabilities into the University’s educational programs. Every Penn State campus has an office for students with disabilities. The Office for Disability Services (ODS) Web site provides contact information for every Penn State campus: <http://equity.psu.edu/ods/dcl>. For further information, please visit the Office for Disability Services Web site: <http://equity.psu.edu/ods>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <http://equity.psu.edu/ods/doc-guidelines>. If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. You must follow this process for every semester that you request accommodations.