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 3:35pm – 04:25pm
- **Location:** 104 Osmond Lab
- **Instructor:** Karl Schwede
- **Contact information:**
    - email: schwede@math.psu.edu
    - office: McAllister, 318C
    - office phone: (814)865-8439
    - website: `http://www.math.psu.edu/schwede/math538`
- **Office hours:** To be held in my office, McAllister 318C.
    - Monday 1-2pm
    - Thursday 10-11pm
    - Friday 11-12pm
- **Textbooks:**
    - "Commutative ring theory", *Hideyuki Matsumura*
    - "Undergraduate commutative algebra", *Miles Reid*

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

65% Homework (due about once every one or two weeks). I will grade these.

35% (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.