

**Math 302-01, Abstract Algebra II, Fall 2015**  
MWF 8:15-9:20 am, OSS 214

**Instructor:** Amy DeCelles

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Office hours: *tentative MWF 11-12, Tu 2-3, Th 4-5*, and by appointment

**Course Prerequisites:** A grade of C- or above in MATH 301

**Credits and Workload Expectations:** 4 credits: 8-10 hours per week outside the classroom.

**Textbook:** *Abstract Algebra: Theory and Applications*, by Tom Judson. This is a classic text, which is now freely available online and updated annually. Download or order a print-on-demand copy of the 2015 version here: <http://abstract.ups.edu/index.html>.

**Overview:** We will focus on the theory of *groups*, abstract structures that are more general than rings, domains, and fields, which were studied in Abstract Algebra I. Because groups have fewer axioms than rings, they are more diverse and have applications to a broader range of topics. The first half of the semester will be devoted to group theory itself; afterwards we will briefly review the theory of *polynomial rings*, *vector spaces*, and *field extensions* so that we can study *Galois theory* which ties many of these ideas together. Finally we will study applications of abstract algebra to *coding theory* and/or classical questions of *constructibility* of geometric objects and *solvability* of polynomial equations by radicals.

**Course Objectives:**

- Gaining factual knowledge (terminology and methods of abstract algebra)
- Learning fundamental principles, generalizations, and theories (noticing patterns, working with abstract mathematical objects)
- Developing skill in expressing myself orally or in writing (clear written explanations of mathematical processes and results, formal mathematical arguments)

**Homework:** Homework will typically be assigned in a “rolling trio”: reading assignments, discussion problems, and written problems. For example, for Wed Sep 16, you are to write up the solution to a problem from Section 3.1 (which we will have discussed already, in class Mon Sep 14), work on discussion problems for Section 3.2 (which we will discuss in class on Wed Sep 16), and read and answer questions on Section 3.3 (which we will discuss in class Fri Sep 18).

**Late Work, Missed Exams:** Late work is not accepted. Extensions may be granted if requested before the due date. Assignments submitted after the due date must be submitted to the professor in person. Make-up midterm exams or quizzes may be given to students with legitimate excuses such as verified illness, University sponsored events, etc., as long as the make-up exam can be taken within a reasonable time frame. If it is not possible to schedule a

make-up exam within a reasonable time frame, the grade for the midterm may be prorated from the final exam. Written documentation may be required.

**Final Course Grade:** The overall score for this course will be computed as outlined below. Final letter grades will be assigned based on the overall score, with the two mastery components, written work and exams also being considered separately. In particular, the final letter grade will not be higher than one letter grade above the level of the work on written work or the work on exams. Exceptional performance on the final may also be taken into account.

- Homework, quizzes, and participation (45%): reading questions (5%), discussion problems (5%), quizzes (5%), written problems and oral presentations (30%)
- Midterm Exams (30%): tentatively scheduled for Oct 2, Oct 30, Nov 23
- Final Exam (20%): cumulative; 8:00 am - 10:00 am Thurs Dec 17
- Best Exam (5%): at the end of the semester, your best exam score will count an extra 5%

**Disability Accommodations:** Academic accommodations will be provided for qualified students with documented disabilities including but not limited to mental health diagnoses, learning disabilities, Attention Deficit Disorder, chronic medical conditions, visual, mobility, and hearing disabilities. Students are invited to contact the Disability Resources office about accommodations early in the semester. Appointments can be made by calling 651-962-6315 or in person in Murray Herrick, room 110. For further information, you can locate the Disability Resources office on the web at <http://www.stthomas.edu/enhancementprog/>.