Abstract Algebra (MATH 332) Spring 2016

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Scheduled Lectures: T Th 1:30 – 2:50, HEG 308
Office Hours: T 3:00 – 4:30, W 1:00 – 2:30, Th 11:30 – 1:00; other times, by appointment.

Free Online Textbooks:

- Vector Spaces: Abstract Algebra Notes, by Ethan Bloch

Course Description: An introduction to modern abstract algebraic systems. The structures of groups, rings, and fields are studied together with the homomorphisms of these objects. Topics include equivalence relations, finite groups, group actions, integral domains, polynomial rings, and finite fields.

Prerequisites: MATH 261, and MATH 213 or MATH 242, or permission of the instructor. or permission of instructor.

Expectations: Students are expected to actively participate in their learning process. This requires them to:

1. Attend lectures and participate in classroom discussions. (Note that during class electronic devices, including cellphones, tablets, and laptop computers, may not be used unless for taking notes. Cellphones, particularly, should be silenced and put aside during lectures.)

2. Read the textbook. For classroom discussions, you are expected to have read the relevant sections of the textbook beforehand.

3. Complete the assignments in a timely manner. Generally late assignments will not be accepted. However, under unexpected circumstances such as a well-documented illness or a family emergency an extension might be granted. Please notify the instructor immediately if such circumstances arise.

Assignments: Every week a number of problems will be assigned and their solutions will be collected the following week. You are strongly encourage to work on assignments with your classmates. However, you need to write up your work individually and in your own words, and explain your reasoning in every step of your proof. Copying proofs from outside sources (books, articles, websites, etc.) is absolutely unacceptable and constitutes plagiarism. You also need to acknowledge in writing anyone with whom you worked or from whom you received any assistance. Failure to do so will also be construed as plagiarism. Finally, you are required to type your homework in \LaTeX. If you need help with \LaTeX, please let the instructor know. A very good reference is Prof. Bloch’s \LaTeX for Bard Students.

Exams: There will be a mid-semester exam and final exam, each having an in-class and take-home component. The tentative date for the in-class component of the mid-semester exam is Thursday,
March 17. The exact date will be announced at least a week in advance. The due date for the take-home component of the mid-semester exam is some time in the week before the Spring Recess. The in-class component of the final exam is on Tuesday, May 24. The due date for the take-home component of the final exam is some time during the Completion Week.

**Exam Policies:** Obtaining information from outside sources (classmates, tutors, friends, books, articles, websites, etc.) during an exam, whether in-class or take-home, is strictly prohibited, with the exception of consulting the instructor. Giving information to or discussing exam problems with your classmates while the exam, whether in-class or take-home, is in progress is also strictly prohibited. For take-home exams, in addition to consulting the instructor, you may use your class notes and the course textbooks, but no other resources (classmates, tutors, friends, books, articles, websites, etc.). Note that no extensions will be given without medical or college-approved documentation.

**Evaluation:** At the end of the semester, I will use the following distribution to compute your total numeric grade (out of 100): Assignments: 40%; mid-semester exam: 30%; final: 30%. In order to assign letter grades, I will use the following rubric:

- A: 93 - 100, A−: 90 - 92, B+: 87 - 89, B: 83 - 86, B−: 80 - 82,
- C+: 77 - 79, C: 73 - 76, C−: 70 - 72, D: 60 - 69, F: below 60.

Note that no extra credit assignments will be given under any circumstances, especially after the final exam.

**Communications:** All the assignments and announcements will be posted on the course website. Also, urgent announcements may be sent out via campus email. Some of the course material, including updates to this document, will be posted on Moodle. It is your responsibility to regularly check the course website, your campus email, and Moodle for updates.

**Accommodations:** Students with documented physical, learning, psychological, and/or other disabilities are entitled to receive reasonable accommodations. If you need classroom or testing accommodations, please contact the Bard Learning Commons. Also, please privately discuss this matter with the instructor as close to the beginning of the semester as possible.

**Religious Observances:** Students who wish to observe religious holidays that conflict with the course schedule or requirements should meet with the instructor as close to the beginning of the semester as possible.

**Important Academic Dates:**

- The last day to elect the pass/fail grading option is Wednesday, February 17, the end of the add/drop period.
- Moderation papers are due on Friday, March 18.
- Spring Recess: Saturday, March 19 – Sunday, March 27
- No classes on Advising Days, Monday, May 2 and Tuesday, May 3.
- The last day to withdraw from a course is Tuesday, May 3.
- Senior project are due on Wednesday, May 4 at 5:00 pm.
- The last day of classes is Tuesday, May 24.

**Academic Integrity:** Consult Academic Dishonesty and Plagiarism or the Bard College Student Handbook regarding this matter.
Writing Proofs According to Prof. Bloch

Everyone makes honest mathematical mistakes, but there is no reason to get in your own way by writing your proofs with incomplete sentences and other grammatical mistakes, by using undefined symbols for variables, or by engaging in other forms of sloppy writing. Mathematics must be written carefully, and with proper grammar, no differently from any other writing.

This course will offer many opportunities to practice the careful writing of mathematical proofs. Properly written proofs require the writer to observe the following basic points.

- Justify each step in a proof, citing the appropriate results from the text as needed.
- Use definitions precisely as stated.
- Use correct grammar, including full sentences and proper punctuation.
- Be very careful with quantifiers.
- Strategize the outline of a proof before working out the details; the outline of a proof is always determined by what is being proved, not by what is known.
- Distinguish between scratch work and the actual proof; scratch work can be in any order, but the actual proof always starts with what is known and deduces the desired result.
- Proofs should stand on their own; check your proofs by reading them as if they were written by someone else