Math 335: Abstract Algebra I
Fall 2019
General Course Information

Professor: Noah Aydin **Office:** RBH 319 **E-mail**: aydinn@kenyon.edu **Class Meetings**: MWF 10:10-11 in RBH 203
Course web page: http://www2.kenyon.edu/depts/math/aydin/teach/335
Office Hours: MWF: 11:10-12; TR: 3:10-4, or by appointment. See my weekly schedule on course web page.
Textbook: A first course in Abstract Algebra, J. B. Fraleigh, 7th ed, Addison Wesley. ISBN 0-201-76390-7

Course Description and Learning Objectives: Abstract Algebra is the study of general properties of algebraic structures. The abstraction refers to the perspective taken in the subject, which is very different from that of high school algebra courses. Rather than looking for the solutions to a particular problem, we will be interested in such questions as: When does a solution exist? If a solution does exist, is it unique? What general properties does a solution possess? What general properties are common between different algebraic structures? Our exploration will go beyond such algebraic structures as the integers and the real numbers, and our approach will be axiomatic. Indeed, working from a fairly small set of axioms one can describe the properties of a wide range of algebraic structures concisely and elegantly. Focusing on group theory, our study will be motivated by the desire to describe algebraic structures in a rigorous, concise, and elegant way. Rigorously proving theorems and writing formal proofs in the context of axiomatic algebraic systems is a major goal of this course as well as communicating proofs and solutions to problems orally. Group theory also allows us to quantify various types of symmetries so prevalent in the world around us. In fact, abstract algebra turns out to have a surprisingly wide range of applications some of which will be briefly discussed. We will cover most of the topics in Chapters 1-3 and some of Chapter 7 in the textbook. These chapters include the following topics: Binary operations, groups, subgroups, cyclic groups, permutation groups, group isomorphisms, cosets and the theorem of Lagrange, finitely generated Abelian groups, homomorphisms, factor groups, groups actions, isomorphism theorems, Sylow theory. Prerequisite: Math 222 or equivalent.

Grading and Evaluation Criteria:
Final grades will be determined based on the performance in the following components.

Component	Percentage
Homework	20
Presentation/Participation/Attendance	25
Midterm Exams	30
Final Exam	25

Class Format and Daily Reading: *Actively reading* the textbook before each lesson is a necessity. Come to class prepared to present the material, ask questions and participate in discussions. The class will mostly be presentations and discussions. There will not be enough time to cover all aspects of each topic during class. You will still be held responsible for the material. To make sure that you do the readings before class, there will be short, *random pop quizzes*. Your performance on these quizzes will be part of the participation grade. Much of the learning in this course will take place outside the classroom. I am here to help, so come see me as often as you need. Make sure you utilize my office hours or make appointments to get help that you may need in a timely fashion.

Presentations: Every week a number of problems will be assigned to be presented in class (usually on Fridays). You should work on these problems in groups of size 2 or 3. I will pick problems from the assigned sets of problems and ask for volunteers. A significant part of your participation grade will be based on your performance on these presentations throughout the semester. Here are the rules and expectations on presentation problems.

- You work in groups but present your solutions individually.
- You must have a written solution at hand when you volunteer to present a solution.
- You must talk to and explain the solution to your classmates, not just your professor.
- The audience must examine the solutions carefully, and ask clarifying questions.
- Asking questions to the presenter is part of participation.
- Friendly and constructive criticism is expected and appreciated from the audience.
- If a presenter gets stuck or another student offers a significantly different way of solving the problem, alternative solutions may be presented by another student.

Written Homework: In addition to presentation problems, you will have weekly written homework (usually due on Mondays). You must work on these homework problems alone. Any help you get from others on written homework must follow Math Department's guidelines on healthy collaboration (link available on course web site as well)

Attendance and Tardiness Policy: Regular attendance is an essential part of this course and is expected. After one unexcused absence, each unexcused absence will lower your overall course grade by (n-1)*0.5% where n is the number of unexcused absence. A total of 9 absences (whether excused or not) will result in expulsion from the course. Tardiness and walking out of the classroom are really distracting for everyone. Unless there is a real emergency, please do not leave the classroom before the class is over. Two tardiness or leaving the room during the class will count as an unexcused absence. See Math Dept's Class Attendance Policy.

Late Policy: No make-up exams will be given without justified and documented excuses. *No work will be accepted late except for a legitimate excuse approved by the professor*.

Exams: All exams will have a take home part and an in-class part.
The dates of the midterm exams are indicated on course calendar page (Oct 7 and Nov 18).
The final exam will be on Monday, December 16 at 6:30 pm, and it will be 3 hours long.

Academic Honesty: The rules set forth in the 2019-2020 Course Catalog apply to all aspects of this course.
http://www.kenyon.edu/directories/offices-services/registrar/course-catalog-2/administrative-matters/academic-integrity-and-questions-of-plagiarism/
In general, any work submitted for credit must result directly from your own understanding, thoughts, and ideas. Presenting the work of others as your own is strictly prohibited. You must follow the guidelines given in this document in general and mathematics department's guidelines for written homework in particular. If you are have any questions, please ask your professor for clarification.

Disabilities: If you have a disability which requires an accommodations in this class, please feel free to discuss your concern with me, but you should also consult Ms. Erin Salva, the coordinator of student access and support services (salvae@kenyon.edu, x5453). It is Ms. Salva who has the authority and expertise to decide on the accommodations that are proper for your disability. Though I am happy to help you in any way I can, I cannot grant any accommodations without a notification from Ms. Salva.

Statement on Title IX

Kenyon College seeks to provide an environment that is free of bias, discrimination, and harassment. If you have experienced any form of harassment/misconduct/assault, interpersonal violence, or stalking we encourage you to report it. If you report the incident to a faculty member, they must to notify Kenyon College's Civil Rights and Title IX coordinator of any information about the incident you provide. More information can be found at https://www.kenyon.edu/directories/offices-services/ocr/discrimination/

How to Study for this Class

- Read the textbook before the class. You may not understand everything in the first reading but that's OK. Do your best. Take notes to ask questions in class.
- Come to the class, and actively participate in class discussions and activities. Do not hesitate to ask questions.
- Work on presentation and homework problems as soon as possible. Do not wait until the last minute.
- Establish regular study hours with your partner(s). Studying regularly is key to success.
- If you are stuck go to the office hours to get help.