

MATH 461 – Abstract Algebra I
Dr. Boersma
Fall 2012

<http://www.cwu.edu/~boersmas/Math461/>

Goals: This course is an introduction to abstract algebra – a mathematical look at “structure”. We are all familiar with the structure of the real numbers (how to add, multiply, and solve equations) and some of us may be familiar with the structure of complex numbers, vectors spaces, and modular arithmetic. This course will provide an axiomatic approach to the study of additional algebraic structures and an investigation into their properties and symmetries. The first quarter of this year-long sequence will begin with the study of groups and group homomorphisms.

It is important to understand that this is a senior-level, abstract mathematics course. Unlike many of your previous mathematics classes, like calculus and differential equations, there is not much focus on computation and “getting the right answer”. Instead we care more about the detailed study of certain examples and the ability to abstract those properties which appear fundamental to the overall structure into well-worded definitions. From these definitions we will be able to build up our knowledge base in the form of theorems. Reading, understanding, and creating proofs of theorems is essential to an understanding of abstract algebra. The ability to communicate mathematics and mathematical truths will be the most essential skill needed for success in this course. Pay attention to detail – when reading the textbook and when turning in your own work.

Office: Bouillon 108D, phone: 963-1395, email boersmas@cwu.edu. Office hours are tentatively scheduled for 10:00 – 10:50 M, W, F. There will also be a special “office” hour on Thursdays at 11:00 am in our regular classroom. You may of course drop by anytime. If I’m not busy I’ll be glad to talk with you.

Required

Text *A First Course in Abstract Algebra*, seventh edition, by John B. Fraleigh. We will cover chapters I, II, and part of III.

Your Grade: Your final grade in this course will depend on one two exams (40%), collected homework (40%), and reading assignments (20%).

Exams The exams are scheduled for October 26 and December 6 (8:00 a.m.). Note that the second exam is held during our scheduled final exam period. Make-up exams will only be given in extreme cases. If you anticipate a conflict, please see me at least one week **before** the date of the exam.

Reading

Assignments It will be your responsibility to read the textbook, think about the definitions, work through the examples, and examine the theorems and proofs. Class time will be spent answering questions from the reading and working on problems from the textbook. Thus, most days will require that you complete a reading assignment **BEFORE** coming to class. As part of the reading assignment you will send me an email at least two-hours before class begins with answers to a series of questions. The course webpage provides additional information.

Collected

Homework I will periodically collect written assignments to grade. When you hand in a homework assignment, I will be looking for neat, clear, and concise solutions containing complete and eloquent explanations. You should think of these turn-in homework sets as an opportunity for you to really show me your understanding of the material. Homework turned in late **WILL NOT** receive full credit and may not be graded at all.

Other

Homework Aside from graded problems, many other homework problems will be assigned. Working on these problems will give you a chance to work with the new definitions, concepts, and theorems which will form the basis for the content in this course. If you find yourself having difficulty with any of these problems, you should let me know so we can discuss them either in class or in my office.

Attendance This is a 400-level mathematics course. Thus, I will expect every student to make an effort to be in class (on time!) every day. I expect that many questions you might have will be addressed in class and I do not plan on repeating these explanations outside of class. Please let me know if a health problem forces you to miss too many classes.

Students who have special needs or disabilities that may affect their ability to access information or material presented in this course are encouraged to contact me or Robert A. Campbell, Director, Disability Support Services, on campus at 509-963-2171 for additional disability-related educational accommodations.