Math 28b, Introduction to Rings and Fields Syllabus, Fall 2017

Instructor: An Huang  anhuang@brandeis.edu
Office: 315 Goldsmith
Office hours: Mon 11am-noon, Wed 2-3pm.
TA office hours to be announced.


Grading:
• Weekly homework 45%  2 lowest hw scores will be dropped.
• Class participation 10%
• Midterm 15% Wednesday, October 18 (tentative date)
• Final Exam 30% TBA

What is this course about?
Ever seriously wonder about the carrying rule when you add two integers? There is a reason why it works which no one cares about after elementary school. To understand why the carrying rule works as a grown-up, and to express it in a precise way, one needs some abstract notions of algebra. The main purpose for developing abstract concepts in algebra is to formulate ideas and write down mathematical arguments in the most economical way possible.

In this course, we shall study the notions of rings, fields, and vector spaces. Understanding why we need these notions is as important as understanding the notions themselves, if not more. In addition to these basic notions, main topics also include polynomial rings, integral domains, Euclidean domains, and field extensions. We shall touch on some applications, including some of the great problems of antiquity if time permits.

Expectations of students’ effort:
Most classes will include some group discussions and activities. Therefore, attendance is important. Repeated absences will result in a reduction in your grade. Struggling with a problem is the best way to improve your understanding of the material. Be sure to spend time thinking about the homework problems on your own before discussing them with other students. Once you have a solution, write it down in your own words without help from anyone. That is the only way to be sure that you understand it. You may not copy the written work of another student or from other sources such as the internet, or allow another student to copy your written work. What you submit should be written in your own words and reflect your own understanding of the solution.

Success in this 4 credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, homework, preparation for exams, etc.).

Disabilities:
If you are a student with a documented disability and wish to have a reasonable accommodation made for you in this class, please submit the appropriate paperwork to me as soon as possible.
Learning Goals:

(1) Rings, fields, vector spaces: their concepts and basic properties.
(2) Polynomial rings, integral domains, Euclidean domains, field extensions.
(3) Understanding why abstract notions are useful in algebra, and how they can be applied to solve concrete problems.