

MATH 201 Algebra II

Instructor: Jesse Leo Kass

Spring 2024

Official Course Description

Vector spaces, linear transformations, eigenvalues and eigenvectors, the Jordan canonical form, bilinear forms, quadratic forms, real symmetric forms and real symmetric matrices, orthogonal transformations and orthogonal matrices, Euclidean space, Hermitian forms and Hermitian matrices, Hermitian spaces, unitary transformations and unitary matrices, skew symmetric forms, tensor products of vector spaces, tensor algebras, symmetric algebras, exterior algebras, Clifford algebras and spin groups.

What we'll cover

I hope to cover modules over a ring, vector spaces over a field, modules of a PID, and canonical forms, and multilinear algebra.

Textbooks

We will use David S. Dummit, Richard M. Foote, *Abstract Algebra*.

Homework

Homework will be assigned on a regular basis. Homework is collected in-class on Wednesdays and graded largely on completion. The lowest homework grade will be dropped when computing final grades.

Exams

The Registrar's has scheduled the final exam for March 18 from 4:00 to 7:00 p.m. There will also be a midterm.

Grading

This is a graduate class, so there students are expected to be independent learners, and there will be less focus on assessment than in an undergraduate course. The goal

of the course is to help the graduate students pass the algebra part of their qualifying exam.

Grades will be computed with the following weights Homework (40%), Midterm (25%), Final (35%)

Meeting times

Class meets 3:20–4:55 pm Monday, Wednesday in McHenry 1270. Office hours are Monday, Wednesday 1:05 - 2:05 pm in McHenry 4174. I have a large undergraduate class shortly before office hours, so if you are coming early, please let me know as sometimes I stay in the classroom to meet with students.

Policy on electronic devices in the classroom

What happens in the classroom, stays in the classroom. Please do not record.

Course requirements and grading

We will discuss the specifics of homework and presentations during the first week of class. Think about whether you'd like in-person presentations of homework solutions?

Update: Because inclement weather has been so disrupted, I am going to

Collaboration Policy

With each week's homework, you must turn in a one paragraph description of all the resources you used on that homework. You must mention any person you talked to about the problems, any book you looked at, any online resource (Wikipedia, Chegg,...) that you used. A sample paragraph is

On this week's homework, I worked on the problem set collaboratively with Gauss and Grothendieck. We found an Alex Jones video (<http://youtube.blah.com>) that gave a really clear explanation of excellent rings. We compared our solutions against a solution key that we found on the /commutativealgebra/ board of 4chan (<http://blah.blah.edu>). We also got really stuck on Problem 5, and so we went to Chegg.com and paid an online tutor ("Zariski") \$50 to solve the problem for us.

This paragraph is required even if you work entirely on your own and only reference the course textbook. You could just write something like: "This week I did not work with any other students and relied entirely on course notes, Atiyah and MacDonald's book, and Dummit and Foote's book."

It is acceptable to use any and all resources that you would like (including Alex Jones videos and Chegg), but failure to include this paragraph may result in a reduced grade and may raise honor code concerns.

Academic integrity

Cheating will not be tolerated. Honor code violations will be addressed according to university guidelines.

Accessibility

If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by email, preferably within the first two weeks of the quarter. You can contact the DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.