

Name: Charles Daly

Math 1540 Spring 2023

When & Where: MWF 1:00 PM (EST) - 1:50 PM (EST)

Barus & Holley 163

Canvas Site: <https://canvas.brown.edu/courses/1091278>

Email: [charles\\_daly@brown.edu](mailto:charles_daly@brown.edu)

Office Hours: TBD (For now, 2:00 PM - 3:00 PM Mon Wed at 309 Kassar House)

TBD Alex

**Course Description:** The first half of this course is concerned with Galois Theory. Drawing from the course textbook, *Rotman's Galois Theory*, the subject is an interplay between polynomials, fields, and groups. The course will assume a decent exposure to group theory, linear algebra, and ring theory. The first meeting of the course, January 25th, will begin with *Classical Formulas* section of the text and serve as a motivator for the subject. Ambitiously, we intend to get to the *Applications* section of the text, and in the process cover the standard material about field extensions, splitting fields, the Galois group, etc. The second half of the course will be a survey of some material in Module Theory. I haven't assigned a text for this half, but will likely draw from *Dummit and Foote's Algebra*.

**Grading:** Your grade will be determined by homework, and two exams: the midterm and final. The homework, midterm, and final are worth 35%, 30%, and 35% of your grade respectively.

**Homework:** There will be approximately ten homework assignments that will be assigned every week or so. Specific problems will be posted on our Canvas site. Late assignments are allowed, up to five days from the due date, but will be deducted points depending on how late the assignment is submitted. You are allowed to form study groups and discuss the homework together, in fact I encourage this, but only after you attempt the homework yourself. You should engage with the problems on your own before discussing them with others.

**Exams:** The midterm is yet to be determined, but will ideally take place around Week 7, **Mar 6th - Mar 10th**. We will likely hold the midterm in the evening, in-class, to allow a generous amount of time. The exam itself will not be lengthier. The extended time period will be provided to remove the stress surrounding the time constraint. The final will be an in-class three hour cumulative exam on **May 12th at 9:00 AM (EST)**. If you need to miss either the midterm or final due to a university recognized excuse, with documentation, we will figure out a suitable make-up assignment.

**Textbook:** The textbook is Rotman's *Galois Theory* which is available through Springer via your Brown login. You are encouraged to check out other texts if you like. I have heard good things about Herstein's *Topics in Algebra* for example.

**Recordings and Covid-19 Policies:** Given the Covid-19 pandemic, I am going to try and ensure all lectures are recorded. I have been told our classroom is equipped with a camera and speaker to adequately record lectures. This is done to ensure people who need to isolate, or miss class for another reason, may still access our content. **Masks will be required during our lectures.** In addition, please ensure you are following Brown University guidelines regarding the Covid-19 pandemic. More information can be found here.

**Accommodations:** If you have an exam accommodation approved by the Student Accessibility Accommodations, you must let me know at least two weeks before the exam. Please contact me directly through email or Canvas.

**Academic Integrity:** The instructors of this course take Brown's Academic Code, and academic integrity in general, very seriously. Submitting dishonest work, whether on homework or exams, makes it more difficult to effectively help you and your fellow students learn, and it dilutes the meaning of a Brown degree.

It is your responsibility to understand what actions are allowed in this course, and what actions are violations of the Academic Code. Further information is available [here](#). Any incidents that appear to violate course rules will be presented to, and adjudicated by, the university's Academic Code committee.

**Inclusivity and Equity:** This course strives to be accessible and inclusive to all students, regardless of age, race, nationality, gender identity, sexual orientation, religion, economic background, or any other difference that contributes to the vibrant and diverse Brown community. We are committed to conducting all interactions with students with a sense of respect and equity. We ask that students interact with other students and instructors in this same spirit. If something happens to make you feel unwelcome or discriminated against, please bring it to our attention so that we can try to make the situation right.

In addition, Brown is committed to providing support for students with learning differences, physical impairments, and other disabilities. If you think you may need accommodations due to one of these conditions, contact Student Accessibility Services for more information.

## Tentative Schedule:

Week 1: Jan 25th - Jan 27th	Classical Formulas
Week 2: Jan 30th - Feb 3rd	Splitting Fields
Week 3: Feb 6th - Feb 10th	The Galois Group
Week 4: Feb 13th - Feb 17th	Roots of Unity
Week 5: Feb 20st - Feb 24th	Solvability by Radicals
Week 6: Feb 27th - Mar 3rd	Independence of Characters
Week 7: Mar 6th - Mar 10th	Galois Extensions
Week 8: Mar 13th - Mar 17th	The Fundamental Theorem of Galois Theory
Week 9: Mar 20th - Mar 24th	Applications
Week 10: Mar 27th - Mar 31st	Spring Recess :)
Week 11: Apr 3rd - Apr 7th	Introduction to Modules
Week 12: Apr 10th - Apr 14th	Direct Products, Sums, Quotients
Week 13: Apr 17th - Apr 21st	Tensor Products
Week 14: Apr 24th & Apr 28th	Modules over PIDs
Final Exam - May 19th 9:00 AM (EST)	