

SYLLABUS – MATH 6320 – SPRING 2024

MODERN ALGEBRA

Description: This is a course on (mostly finite) groups and (mostly finite) extensions of fields, and the interplay between them via Galois Theory and Representation Theory. Although I may reference the 6310 “first semester” course from time to time, this course is really independent and you should not be at a disadvantage if you have not taken it. On the other hand, you should have a working knowledge of what groups and fields are, as we will move rather quickly through material that you would have seen in an undergraduate course (e.g. our Math 5320). We will cover the lecture notes I wrote when I taught the course last year (included on this webpage) which I intend to revise this semester, and in addition I have included a classic supplementary text below in case you want a look at the material from another much more long-winded perspective.

- **Time:** Tuesday, Thursday 12:25–1:45pm in JWB 308. (It’s a “comfy” room with no windows)
- **Instructor:** Aaron Bertram
- **Contact information:**
 - email: bertram@math.utah.edu
 - office: JWB 302
 - course website: <http://www.math.utah.edu/~bertram/math6320v2>
- **Office hours:** We can hash out regular office hours in class, and I will always be available after class and at the department tea and by appointment.
- **Supplemental Text:** “Abstract Algebra”, *Davis S. Dummit and Richard M. Foote*

Grade: (Nearly) weekly homework, one midterm and one final, both in class, with:

- 25% Homework, due in class one week after posting the assignment (I like seeing your work on paper)
- 25% Midterm, in class.
- 50% Final, at the registrar-assigned time and day.

as the relative contributions to your final grade, which will be generously curved. My expectation is that the students in this class are capable of all getting A’s in it if they do the homework faithfully and work out the study problems (taken from past departmental qualifying exams) to prepare for the midterm and final.

Pass/Highpass: For the Ph.D. students in the course, an *A* in the course counts as a high pass on the Algebra II qualifying exam. A grade of *B+* or *A–* counts as a pass.

Assignments: If your homework will be late (or if you will miss an exam) you must contact me *prior* to missing the homework in order to receive credit. There will be no negative impact on the grade for late homework where an arrangement was made prior to the due-date. Students are allowed, and even encouraged to work together when solving homework problems, although each student is responsible for their own write-up. (Please don’t give me identical write-ups. That will ruin my day and yours).

Prerequisites: You should be familiar with groups, rings and fields at the undergraduate level.

Academic Integrity: All University of Utah policies regarding ethics and honorable behavior apply.

Pronouns: Please contact me if this is important to you. I want my classroom to be a place where we can think about mathematics together with mutual respect in a tension-free atmosphere. The mathematics is hard enough without there being anything extra to worry about. My default is not to ask for pronouns, but I am perfectly willing to adapt if that will make the classroom more inviting for everyone.

Official matters

The following have been provided by the Department and University.

The Americans with Disabilities Act: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

University Counseling Center: The UCC staff is committed to supporting the mental health needs of our campus community, while mitigating COVID-19 risks in our department. While the pandemic is ongoing, the UCC is providing all services as telephone and secure video conference appointments. Their phone number is 801-581-6826, Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000 . More information is at <https://counselingcenter.utah.edu/>

Office of the Dean of Students: The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. The Office of the Dean of Students is currently closed for in person meetings, but their staff are still available to help you. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/>

CoViD Matters

Students should visit the website:

<https://coronavirus.utah.edu/>

if they have been exposed. Follow the instructions at the website for your next steps.

Note: If you are unable to attend class in person due to a positive test, quarantine, etc., I will ensure that you are not penalized from the grade perspective and will do my best to make sure you don't fall behind.

Vaccination:

Get a COVID-19 vaccination if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.

Masks: We are mask-free, but you should definitely wear a mask if that makes you comfortable.