

$$\mathbb{Q}(\alpha, \omega) \supset \mathbb{Q}$$

Abstract Algebra II

$$p\mathbb{D} = \prod_{p \in \mathbb{P}} \mathbb{P}^{e(p)}$$

POLICIES/SYLLABUS

Instructor

Eric Moorhouse, Ross Hall 6³ = 216.

web: <https://ericmoorhouse.org/>

email: moorhous@uwyo.edu



Class Meeting

MWF 11:00–11:50am in BU 24. I do intend to record pdf slides of lectures, and audio/video recordings, for your future reference. These will be posted through the course website (see below). Do not take this as an invitation to skip class without good reason. *Students who consistently attend class perform on average a full letter grade better than students who do not.* Classroom behavior is relaxed: use your laptops and devices as needed, as long as you are not disturbing me or others. If you arrive late or leave early, or need to excuse yourself during class, I will assume you have a good reason for doing so and this should not bother me. We will only revisit this policy if the need arises.

Office Hours

My office hours are currently scheduled at MWF 9:00–9:50am, TR 2:10–3:30pm (subject to change; my current schedule is posted at <https://ericmoorhouse.org/schedule.html>).

Textbook

I have been waiting for a print copy of *I. Martin Isaacs, Algebra: A Graduate Course*, since the middle of 2025; and I did select this officially as a recommended (not required) textbook for the course. The expected availability date is currently indicated as January 15, 2026. My selection was based on the recommendation of the Math 5550 (Abstract Algebra I) instructor, and the realization that some students would probably already own a copy; and regardless of what topics we ultimately cover, this book would likely be handy. I stand by my choice. I also feel confident that my existing lecture notes (see the course website) will serve you well, alongside any other algebra books you might already own.

Grading Scheme

On the right, I indicate the default grading scheme if you do not want to present any material in class. If you would like to present a topic as part of your course grade, please speak with me during the first half of the semester and we will try to agree on a suitable topic and resources for you as you prepare. I will assign grades at the end of the semester according to the scale: A=exceptional, B=very good, C=adequate, D=poor, F=fail, W=withdrawal. I always encourage students to consult me at any time during the semester with questions, including (but not restricted to) questions about your progress in the course. You may ask questions by email; but questions asked in person typically receive more prompt and complete answers.

10%	Participation
90%	Homework
negotiable	Presentation

Homework: Homework may be discussed with others, but must be written up individually. As mentioned above, students may elect to present a topic during the semester, for a portion of the grade; if this is of interest to you, please discuss this with me as soon as possible and we will arrange topic, dates, and how much of your grade to devote to the presentation. **Do not use Chegg, ChatGPT or other AI.**

MATH 5555 Website: Please bookmark the site <https://ericmoorhouse.org/courses/5555/> where I will try to post class recordings, and announcements relevant to our class, including reminders of homework assignments; etc. This is our official course website (as distinct from the WyoCourse site which will only be used when security is required, e.g. for posting grades on individual homework assignments or sharing files subject to copyright).

Content: Topics to be covered will depend largely on the range of students' backgrounds and interests. During our first class meeting, we will survey students' needs and interests, and I am hoping to try to accommodate your suggestions. It has however been my inclination to feature representation theory (starting with ordinary representation theory of finite groups) because in my experience, this is the single most worthwhile topic in algebra for students to be exposed to in a second graduate-level course in abstract algebra. For students who have already seen the basics of representation theory, I can say that we will not need to repeat all the proofs they have seen; and the examples and applications will be mostly new. These would include (but not be limited to)

- Structure of Frobenius groups;
- Aspects of group structure (including possible subgroups) revealed by the character table;
- Applications to graph theory, combinatorial designs and finite geometries; and
- Applications to physics and physical chemistry.

Students with Disabilities: If you have a physical, learning or psychological disability and require accommodations, please let me know as soon as possible. You will need to register with, and provide documentation of your disability, to the University Disability Support Services (UDSS) in SEO, Knight Hall.

Academic Freedom and Institutional Discrimination: UW Regulation 2-15 on Academic Freedom states, “Academic freedom in teaching protects the rights of Academic Personnel to teach according to their expertise. Academic Personnel are entitled to freedom in discussing their subject. Academic Personnel have a responsibility to ensure that their teaching is effective and consistent with the standards of the discipline, understanding that disciplines may have diverse points of view on any given subject. Teaching may involve controversial material; however, with academic freedom in the classroom, Academic Personnel also have the responsibility to respect others’ freedom to express disagreement and alternative opinions.” Additionally, “Academic freedom does not negate the rights of students and the public to disagree with Academic Personnel’s work, although students are expected to learn material with which they may disagree.” Also adopted by UW in its Academic Freedom policy, “Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.”

Green Dot Program at UW: Here at The University of Wyoming, we are committed to reducing and preventing power-based personal violence such as sexual assault, relationship violence, and stalking. Green Dot is a bystander intervention program to reduce these forms of violence with one thought: If everyone does one thing, no one will have to do everything. A Green Dot is your choice at any moment to make campus safer by promoting safety for everyone and letting others know that you will not tolerate violence. A Green Dot is any behavior, choice, word or attitude that sends a clear message that (1) Violence is not okay with you; and (2) Everyone is expected to do their part. Additional information on Green DOT training and resources are available at <https://www.uwyo.edu/greendot/>

Duty to Report: UW faculty are committed to supporting students and upholding the University’s non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a “Responsible Employee” of the University, the faculty member MUST report information you share about the incident to the university’s Title IX Coordinator (you may choose whether you or anyone involved is

identified by name). If you would like to speak with someone who may be able to offer privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at <https://www.uwyo.edu/reportit>

Academic Honesty: Academic dishonesty will not be tolerated in this class. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an “F” on an exam, an “F” on the class component exercise, and/or an “F” in the entire course. Academic dishonesty means anything that represents someone else’s ideas as your own without attribution. It is intellectual theft (stealing) and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person’s writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person’s academic dishonesty is also considered academic dishonesty and will be treated identically.

Syllabus Changes: This syllabus is subject to change. Updates to this syllabus will appear electronically on the course website, and you will be alerted by email.