University of Montana Course Syllabi   Open Educational Resources (OER)

Fall 9-1-2021

M 521.01: Advanced Algebra I

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Syllabus for M 521: Advanced Algebra I (Fall 2021)

The main goal of this course is to give you an introduction to:

- Basic results from group theory usually not covered in an undergraduate course, like group actions, the Sylow Theorems, and solvable groups
- Field extensions and Galois Theory

Instructor Information

Instructor: Nikolaus Vonessen
Office: Math 207
Email: nikolaus.vonessen@umontana.edu
Phone: (406) 243-6222
Office hours: Posted on my webpage, which is linked from the Math Department's People page.
                If the posted times don't work for you, I'll be happy to make an appointment for a different time.

Good times to see me are after class, and during office hours.

COVID-19 Issues

- Mask use is required within the classroom.
- If you feel sick and/or are exhibiting COVID-19 symptoms, please don't come to class and contact the Curry Health Center at (406) 243-4330.
- UM recommends students get the COVID-19 vaccine. Please direct your questions or concerns about vaccines to Curry Health Center.
- Class attendance and seating will be recorded to support contact tracing efforts.
- Drinking liquids and eating food is discouraged within the classroom.

Required Textbook

Abstract Algebra, third edition, by John A. Beachy and William D. Blair, Waveland Press, 2006, ISBN 1-57766-443-4. (Please note that we will use the **third edition** of this textbook; older or newer editions will not work.) There are some additional materials posted at the authors' web site (http://www.math.niu.edu/~beachy/abstract_algebra/) (follow the link to the third edition). We will cover most of Chapters 6–8. I expect you to spend considerable time reading and comprehending our text book—there isn't enough time to cover everything in detail in class.

Prerequisites:

This course assumes some familiarity with vector spaces, groups, rings and fields. The more advanced topics from an undergraduate abstract algebra course (like M 432, which is the official prerequisite) will be shortly reviewed as needed.

Learning Goals and Assessment:

The main goal for this course is that you learn the topics described above; doing the weekly homework assignments will help you to achieve this. Your grade for the course will be based on the homework and one or two presentations. There will be no other tests, and no final exam.

Grading Scale

Cutoff Percentage:	93%	90%	87%	83%	80%	75%	70%	65%	62%	58%	55%
Grade:	A	A-	B+	B	B-	C+	C	C-	D+	D	D-

Homework

Working on problems seems to be the most important part of learning mathematics – please take the homework seriously. I will drop the lowest homework score. I will only be able to partially grade each homework set. **Homework has to be turned in by 4 pm on the due date.** If you cannot hand a homework set in on time for a "good reason", contact me, and I will usually give you an extension. (If I should receive too many extension requests, I might have to change my policy and only grant extensions in cases of documented illness or other exceptional circumstances beyond your control.)

1. Please hand in a paper copy of your homework.
2. If you use LaTeX to write up your homework, please additionally submit on Moodle the corresponding pdf file (with filename "firstname-lastname-HWnn.pdf"). While I grade the paper submissions, having the pdf files makes it quite a bit easier for me to prepare the solutions.

Collaboration on Homework Problems

I encourage collaboration (i.e., **working together** to solve problems, not simply copying the work of others). I require, however, the following:

1. You always have to write up the solutions in your own words (again, no copying!).
2. You must indicate with whom you worked to solve the problem.
3. It is not permitted to use the Web (Internet) to aid in solving homework problems.

On the other hand, it is also very important to learn to solve problems on one's own. On each homework set, there will be some **"do-on-your-own" problems** marked by a **star (*)**. As the name implies, you have to solve these problems completely on your own – you can consult books but no other materials, and nobody else (with one exception: you can ask me for hints in class or during my office hours).

Resubmission of Homework Problems

To help you improve your proof writing skills, I may at times, for an individual student, require a rewrite of a homework problem. In such a case I will determine a maximum resubmission score for the problem that can be earned with a correct resubmission (which is usually no larger than the lowest score earned by any other student on this problem). Since I cannot give everyone the opportunity to resubmit, fairness requires that resubmitting a problem cannot result in more points than the maximum resubmission score. Please note that the original homework must be attached to the resubmission. If I do not receive the resubmission by the deadline, the score for the problem will be zero.

Presentations

Working in pairs, students will give presentations on a topic in group theory around the middle of October. More details will be announced about three weeks earlier. I may add a second round of presentations by students at the end of the semester. Each presentation will count like a homework set.

Some Important Dates

Date	Event
September 6 (Monday)	Labor Day
September 20 (Monday)	Last day to drop without a W on the transcript; also last day to change the grading option to audit
November 1 (Monday)	Last day to drop without a petition (and without a WP or WF on the transcript)
November 24-28	Thanksgiving Break
December 10 (Friday)	Last day of classes, last day for petitions to drop, and last day to change the grading option from traditional to CR/NCR grading

Date	Event
December 14 (Tuesday)	Final Exam Period (8:00 – 10:00 am) *If we do not want to meet at this time, we have to schedule two extra lectures during the semester.*

Classroom and Course-related Behavior

University policy requires that all of us in the classroom treat each other with respect, and refrain from behavior that will disrupt the educational process. Please refrain from using any electronics during class that are not directly related to what we are doing. If you would prefer to be called by a **different name, or gender pronoun**, than listed on the course roster, please let me know.

Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Statement on Digital Access

Digital devices (like laptops and cell phones) are becoming increasingly important to success in college. I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students. Given those challenges, I encourage students to contact me if they experience a technology-related problem that interferes with their work in this course. This will enable me to assist students in accessing support.

Academic Honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

Student Conduct Code

All students need to be familiar with the Student Conduct Code. You can find it in the "A to Z" index on the UM home page. In particular, discrimination and harassment are not tolerated at the University of Montana. If you feel that you have been subjected to discriminatory or harassing behavior, please contact the Office of Equal Opportunity and Title IX at 243-5710 or read UM's Policy on Discrimination, Harassment, Sexual Misconduct, Stalking, and Retaliation for help in addressing the situation. You can also report the discrimination or harassment to me or to another faculty member or advisor you trust.