MTH 458 - Spring 2023
Abstract Algebra II
Course Syllabus

Course information

Room: BH 328

Time: MWF 11:20 am - 12:10 pm

Credits: 3.0

Prerequisites: A grade of C or better in MTH 358 or departmental approval.

Description: This course will serve as an introduction to ring and field theory. Topics will include rings, integral domains, fields, homomorphisms, ideals, Euclidean domains, principal ideal domains, factorization, vector spaces, field extensions, and the Galois correspondence. Additionally, some topics in group theory will be considered, such as simple and solvable groups, group actions, and Sylow theory. Applications will include geometric constructions by straightedge and compass, and solvability by radicals.

Learning outcomes: Successful MTH 458 students will be able to:

- recognize ring structures and discuss their basic properties;
- work with specific families of rings, such as Euclidean domains and principal ideal domains;
- understand the role of field extensions in the solvability of polynomial equations;
- effectively communicate mathematical ideas and arguments, especially in the context of modern algebra.

Online resources: Visit Blackboard for up-to-date information about this course.

Instructor

Name: Federico Galetto (he/him/his)

E-mail: f.galetto@csuohio.edu

Office: Rhodes Tower 1528

Campus drop-in hours: MW 9 - 10 am, F 12:30 - 1:30 pm

Online appointments: Schedule at https://math.galetto.org/appt

Materials

Notes and other materials will be distributed online. All course materials are copyrighted and cannot be distributed without the permission of the authors.

The following are the main references for the course material. **The first one is required and can be downloaded for free.** Alternatively, a print copy can be purchased from the CSU bookstore or online for a low price.

- Thomas W. Judson, *Abstract Algebra, Theory and Applications*, 2022 edition, Orthogonal Publishing, 9781944325169 (paperback) http://abstract.ups.edu
- David S. Dummit, Richard M. Foote, *Abstract Algebra*, 3rd edition, Wiley Publishing, 978-0-471-43334-7

Grading

Grade calculation: All grades will be posted on Blackboard. Your percentage grade will be computed according to the following breakdown and converted to a letter grade as indicated below.

30%	Homework	A	93%-100%	C+	76%-79%
70%	Tests (x2)	A-	90%-92%	C	70%-75%
100%	Total	B+	87%-89%	D	60%-69%
		B	83%-86%	F	0%-59%
		B-	80%-82%		

Homework:
- Homework will be assigned weekly.
- All assignments must be submitted online by the due date.
- You are expected to work independently on all assignments.
- The following criteria will be considered in the evaluation of your work.
  - Completeness (answers are provided for all problems, reasoning behind answers is fully justified).
  - Correctness (provided answers are correct, reasonings are sound).
  - Quality of writing (writing is legible and clearly organized, has proper grammar and correct spelling, contains full sentences, uses mathematical notation correctly).
  - Originality (answers and writing are not a mere copy or rewriting of other's work but show additional independent insight).
- The lowest assignment will be dropped.

Tests: There will be two tests held in class on the following (tentative) dates:
- Monday, March 6, 2023
- Monday, May 1, 2023

Topics will be announced in class. You are required to bring identification.

Final exam: An optional final exam will be held on Wednesday, May 10, 2023, 10:15 am - 12:15 pm. You will be required to show identification. During this final exam, you may choose to be tested again on the material of up to two of the in-class tests. The final score(s) will only replace the corresponding test(s) if doing so increases your total score.

Participation: Active participation is encouraged and can contribute positively to your grade. Such participation includes asking good questions during class, answering questions in class, contributing to class discussions and activities, etc.

Grade appeal: You are responsible for checking feedback on your work, and for ensuring evaluations are reported correctly on Blackboard. Any appeal request must be submitted within one week after a grade is posted.

Policies

Communication: All communication, outside of class meetings, will be conducted via email. You can usually expect an answer within 24 hours Monday through Friday, or within 48 hours during the weekends.

Attendance: You are expected to attend all classes. If you are unable to attend a class, it is your responsibility to notify your instructor in advance and to inquire about any topics covered and announcements made during that class.

Electronic devices: The use of electronic devices such as (but not limited to) phones, smartwatches, computers, tablets, and headphones is prohibited during class, unless otherwise required (e.g. to connect to an online meeting) or indicated by the instructor.

Excused absences: You may only be excused from class and class related activities in case of university sanctioned activities (such as conferences, competitions, etc.) or in case of medical conditions. With the exception of unforeseen medical emergencies, you must notify your instructor of your absence and present sufficient documentation in advance. Sufficient documentation includes an invitation to attend an event or a doctor's note indicating you cannot attend on the scheduled date.

Extra credit and makeups: There is no extra credit in this class. There are no makeups in this class other than for excused absences. Insofar as circumstances allow, all makeups have to be arranged in advance.

Academic integrity: Cheating and/or plagiarism will not be tolerated. Cheating includes copying or receiving help from another student on quizzes, tests or exams, as well as allowing another student to copy from your work. Receiving help from someone else by using an electronic device such as a mobile phone or a smartwatch constitutes cheating. Copying another student's homework, or allowing someone else to do your homework for you, is also considered cheating. If cheating occurs in a quiz or test, the student will receive a grade of 0 for that component of the course. If a student cheats a second time during the course, the student will receive an F for the course. If cheating occurs on the final exam, the student will receive a grade of F in the course. Any cheating activity may be reported for further action. Information regarding the official CSU Policy on Academic Misconduct can be found at https://www.csuohio.edu/sites/default/files/3344-21-02_0.pdf.

Safe space: By participating in this class, we commit to making our encounters (in class, during office hours, in person, and online) feel safe for everyone involved. All participants are expected to conduct themselves in a respectful manner towards other participants and their ideas. Behaviors that are disrespectful or discriminatory towards other individuals or groups of individuals will not be tolerated.

Accommodations: Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. Students who feel they may need an accommodation based on the impact of a disability should contact the Office of Disability Services at 216-687-2015. The Office is located in BH 147. Accommodations need to be requested in advance and will not be granted retroactively.

Withdrawals: The last day to withdraw is Friday, March 31, 2023. Withdrawing from the course may put a student in violation of the federally mandated standards for academic progress (SAP) that a student must maintain to be eligible for financial aid. Please visit https://www.csuohio.edu/financial-aid/standards-academic-progress-sap for more information.

Course modifications: The instructor retains the right to modify the contents of the course, including grading criteria and course policies. Reasonable notice will be given for all time sensitive matters. Course changes will be communicated in class and on Blackboard.