FAU
FLORIDA ATLANTIC UNIVERSITY

MAS 4306 / 5312: INTRO TO ABSTRACT ALGEBRA 2

Department of Mathematical Sciences
Fall 2023
Credit Hours: 3

CRN: 11091 / 10775
Lecture Times: MWF 2:00 PM – 3:20 PM
Location: Science (SE-43) 215

Prerequisites: MAS 4304 / 5311 (Intro to Abstract Algebra 1)

CONTACT INFORMATION

Instructor: Dr. Zvi Rosen
Office Location: SE 224
Office Hours: Wednesday 11:00 AM – 12:00 PM, Thursday (Zoom) 11:00 AM – 12:00 PM
Email: rosenz@fau.edu

Graduate Teaching Assistant: Matthew Trang
Email: ttrang2019@fau.edu

COURSE DESCRIPTION

Groups, rings and fields are abstract classes of increasing specificity: Groups – sets with one well-behaved operation – are most general. Then, rings bring two operations, an addition constrained to be commutative and a multiplication constrained to distribute over addition. Finally, fields require that the multiplication is commutative and invertible. However, group, ring and field theory are constantly in dialogue with one another, culminating in the landmark work of Galois. In this two-semester course, we will delve into the properties of these objects and explore the interplay among them that has motivated so much mathematical research. The second semester focuses on rings, modules, fields, and the Galois correspondence.

From the FAU Catalog: (MAS 4306) A continuation of Introductory Abstract Algebra 1. Course covers basic structures of abstract and linear algebra, such as groups, rings and ideals, polynomials and factorization, vector spaces and modules, linear transformations, and the classical Galois theory of fields.
(MAS 5311) Continuation of MAS 5311. Groups, subgroups, and homomorphisms, the Sylow theorems, the structure theorem for finite abelian groups, elementary theory of fields and polynomial rings, the fundamental theorem of Galois theory.

COURSE OBJECTIVES

Upon successful completion of this course, students will be able to:

1. Communicate mathematical arguments about rings, fields, and Galois theory.
2. Present examples and counter-examples to demonstrate properties of algebraic objects.
3. State and explain fundamental theorems from ring and Galois theory.
4. Critically read and analyze mathematical writing.

COURSE DELIVERY MODE

This is an **in-person** course taught in the "flipped classroom" model. Readings and video lectures will be assigned on Canvas prior to each class. Class will begin with an approximately 15-minute lecture, followed by group work, guided by the instructor, on homework problems related to the readings.

TIME COMMITMENT PER CREDIT HOUR

This course has three (3) credit hours. For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour.

REQUIRED TEXT

In this course, you will need the textbook *Abstract Algebra* by David S. Dummit and Richard M. Foote. We will aim to cover Chapters 7-11 and 13-14, with some omissions.

COURSE ASSESSMENTS, ASSIGNMENTS & GRADING POLICY

GRADING CRITERIA

CLASS PREPARATION (TOTAL 15%, EACH CLASS)

Before every class, a reading and/or video lecture will be posted to allow you to prepare. Along with these materials, you will be given questions to consider while reading. You should be prepared to discuss these questions when called upon in class.

PROBLEM SETS (TOTAL 35%, ASSIGNED EVERY TWO WEEKS)

During every class session, there will be time to work on problems in groups. You will work through these problems in collaboration with your peers, but writing will be done on your own. If you don't finish some problem, that will be left for you to work on after class. Every second Friday at the beginning of class, you will submit your work on the previous two weeks' problems (ending on the previous Friday). Not all problems will be graded. The rubric for the problems that are graded includes both mathematical correctness and clarity of exposition.

MASTERY TOPICS (TOTAL 50%, EIGHT TESTING OPPORTUNITIES)

There will be eight mastery exams over the course of the semester. Each question will be aimed at demonstrating mastery of a skill on the list of "Mastery Topics." For each question, you will receive a grade of **M**, mastered, **P**, progressing, or **X** not assessable. More details about the grading system will be given in a separate document. Your exam grade will be the percentage of Mastery Topics that you have mastered by the end of the semester.

Assessment	Percentage (%)
Class Preparation	15%
Problem Sets	35%
Mastery Topics	50%
TOTAL:	**100%**

GRADE SCALE

Grade	Percentage (%)		Grade	Percentage (%)
A	90 – 100%		C+	70 – 76%
A-	87 – 89%		C	64 – 69%
B+	84 – 86%		C-	60 – 63%
B	80 – 83%		D	50 – 59%
B-	77 – 79%		F	0 – 49%

LATE ASSIGNMENTS POLICY

If you expect to be late on an assignment for an excusable reason, please notify the instructor well in advance, and he may afford an opportunity for partial credit.

INCOMPLETE GRADE POLICY

The University policy states that a student who is passing a course but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete ("I"). The assignment of the "I" grade is at the discretion of the instructor but is allowed only if the student is passing the course.

TENTATIVE COURSE PACING SCHEDULE

The section numbers below refer to *Abstract Algebra* by Dummit & Foote.

Week of	Monday	Wednesday	Friday
January 7	Review 7.1 – 7.5	7.6	8.1
January 14	*MLK JR Day*	8.2	8.3
January 21	9.1	9.2	9.3
January 28	9.4	9.5	ME 1
February 4	10.1	10.2	10.3
February 11	10.4	(cont'd)	ME 2
February 18	11.1–11.2	11.3–11.4	12.1
February 25	13.1	13.2	ME 3
March 3	*Spring Break*		
March 10	13.3	13.4	13.5
March 17	13.6	14.1	ME 4
March 24	14.2	(cont'd)	14.3
March 31	14.4	14.5	ME 5
April 7	14.6	14.7	14.8
April 14	(cont'd)	ME 6	Review
April 21	Reading Days and Finals		
April 28	Final Mastery Exam (Mon Apr 29, 1:15–3:45 PM)		

COURSE POLICIES

CODE OF ACADEMIC INTEGRITY POLICY STATEMENT

Students at Florida Atlantic University should endeavor to maintain the highest ethical standards. Academic dishonesty is a serious breach of these ethical standards because it interferes with the University mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive to the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

PLAGIARISM

[Plagiarism](#) is unacceptable in the University community. Academic work must be an original work of your own thought, research, or self-expression. When students borrow ideas, wording, or organization from another source, they must acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass off such work as one's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. This includes all discussion board posts, journal entries, wikis, and other written and oral presentation assignments. If in doubt, cite your source.

CLASSROOM ETIQUETTE/DISRUPTIVE BEHAVIOR POLICY STATEMENT

Disruptive behavior is defined in the FAU Student Code of Conduct as "... activities which interfere with the educational mission within classroom." Students who disrupt the educational experiences of other students and/or the instructor's course objectives in a face-to-face or online course are subject to disciplinary action. Such behavior impedes students' ability to learn or an instructor's ability to teach. Disruptive behavior may include but is not limited to non-approved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor's expectations for classroom conduct.

For more information, please see the [FAU Office of Student Conduct](#).

COMMUNICATION POLICY

EXPECTATIONS FOR STUDENTS

Announcements

You are responsible for reading all announcements posted by the instructor. Check the course announcements each time you log in.

Email/Video Conferencing

You are responsible for reading all your course email and responding in a timely manner.

Course-Related Questions

Post course-related questions to the FAQ discussion board. This allows other participants with the same question to benefit from the responses. Also, make sure you review this forum prior to posting a question. Someone may have already asked and answered the question in previous posts.

INSTRUCTOR'S PLAN FOR CLASSROOM RESPONSE TIME & FEEDBACK

Email/Video Conferencing Policy

Except for weekends and holidays, the instructor will typically respond to email (Canvas inbox or FAU email) within 48 hours. You should ask course-related questions in the FAQ discussion board. If you have questions of a personal nature, you should email the instructor.

Assignment Feedback Policy

The instructor will provide feedback on submitted assignments within one week of the submission date. Some assignments may require a longer review period, which the instructor will communicate to you.

Course-Related Questions Policy

Except weekends and holidays, the instructor will generally answer questions within 48 hours.

Electronic Communication Policy

In addition to the University's policy, please consider the following:
- Privacy, confidentiality, and security in all electronic communications.
- All electronic communication resources must be used for the course and in alignment with to the University mission.
- Prohibited use of false identity, false identity pseudonyms, or anonymous (sender's name or electronic identification is hidden).
- Access without consent.
- Disruption of services including introducing computer contaminants (viruses).
- Harassment of any kind.

Please see the Office of Information Technology's policies on Cyber Security Awareness.

SUPPORT SERVICES & ONLINE RESOURCES

- Center for eLearning and Student Success
- Counseling and Psychological Service (CAPS)
- FAU Libraries
- Freshmen Academic Advising Services
- Math Learning Center
- Office of Information Technology Helpdesk
- Office of International Programs and Study Abroad
- Office of Undergraduate Research and Inquiry
- Student Accessibility Services
- University Center for Excellence in Writing

CAPS STATEMENT

Life as a university student can be challenging mentally, emotionally, and physically. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services to help improve and maintain well-being. For CAPS services, students need to be currently enrolled, have paid the health fee, be physically located in Florida when services are provided, have phone or videoconferencing capabilities, and have access to a safe/private location for sessions. For those outside of Florida, CAPS will assist students in getting connected to services/providers in your area for ongoing support. For more information, go to http://www.fau.edu/counseling/ or call 561-297-3540.

FACULTY RIGHTS & RESPONSIBILITIES

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise.

To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the *Student Code of Conduct*.

SELECTED UNIVERSITY & COLLEGE POLICIES

ACCESSIBILITY POLICY STATEMENT

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations to properly execute coursework due to a disability, must register with Student Accessibility Services (SAS) located in the Boca Raton, Davie, and Jupiter campuses and follow all SAS procedures.For additional information, please consult Student Accessibility Services.

Contact

- **Boca Raton:** (561) 297-3880
  Fax: (561) 297-2184, TTY: 711

- **Davie:** (954) 236-1222
  Fax: (954) 236-1123, TTY: 711

- **Jupiter:** (561) 799-8721
  Fax: (561) 799-8721, TTY: 711

GRADE APPEAL PROCESS

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

Chapter 4 of the University Regulations contains information on the grade appeals process.

RELIGIOUS ACCOMMODATION POLICY STATEMENT

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. For further information, please see Academic Policies and Regulations.

UNIVERSITY APPROVED ABSENCE POLICY STATEMENT

In accordance with rules of the Florida Atlantic University, students have the right to reasonable accommodations to participate in University approved activities, including athletic or scholastics teams, musical and theatrical performances and debate activities. It is your responsibility to notify the instructor at least one week prior to missing any course assignment.

DROPS/WITHDRAWALS

You are responsible for completing the process of dropping or withdrawing from a course. Please click on the following link for more information on dropping and/or withdrawing from a course. Please consult the FAU Registrar Office for more information.

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The instructor reserves the right to adjust this syllabus as necessary.