Math 3336 - Abstract Algebra I
Spring 2024
MWF 1:25 - 2:20 pm in RBN 4019

Instructor:	Dr. Maddie Dawsey
Office:	RBN 4048
Office Hours:	Mo 2:30 - 3:30 pm,
	Tu 9:00 - 10:00 am,
	Fr 9:00 - 10:00 am
Email:	mdawsey@uttyler.edu
Website:	All course materials will be posted on Canvas

Required Textbook
A First Course in Abstract Algebra, 7th edition, by John B. Fraleigh, ISBN #978-0-201-76390-7.

Course Description
A study of algebraic structures with emphasis given to groups, rings, and fields.
The prerequisite for the course is Math 3425 Foundations of Mathematics.

Student Learning Outcomes
Upon completion of this course, students should be able to do the following:

- Apply the basic ideas of abstract algebra in computations and proofs

- Communicate complex mathematical ideas both verbally and in writing

- Demonstrate the ability to do direct proofs, proofs by contradiction, contrapositive proofs, and proof by induction, within an algebraic context

Important Dates

January 15th	Martin Luther King, Jr. Holiday
January 29th	Census Date
March 11th - 15th	Spring Break
March 25th	Withdrawal Deadline
April 29th - May 3rd	Final Exams

Grading Scheme
Your final letter grade will be determined according to the following grading scheme:

Homework/Quizzes	**10%**	A	90 - 100
Proof Portfolio	**10%**	B	80 - 89.99
Projects	**10%**	C	70 - 79.99
Midterm Exams	**20% each**	D	60 - 69.99
Final Exam	**30%**	F	0 - 59.99

Attendance
Students are expected to attend every lecture in person and are responsible for any announcements made during lecture.

Homework/Quizzes (10%)

Homework will be assigned and posted on Canvas after each class. Each week's homework problems will be submitted on Canvas by the beginning of class the following Wednesday, unless otherwise stated by the professor. Late homework will not be graded and will receive a score of zero. Your lowest homework score will be dropped at the end of the semester.

There may be occasional quizzes. Quizzes will generally be announced in advance.

Proof Portfolio (10%)

One proof problem from each week's assigned homework will be selected to be included in your Proof Portfolio (P^2). This problem will be graded simply as credit or no credit and will *not* be designated as a P^2 problem in advance. Students will have the opportunity to re-submit, as many times as needed, P^2 problems for which they do not receive credit. At the end of the semester, the student's grade for this category will be determined based on the total number of P^2 problems for which they ultimately received credit. Students will not be penalized for repeat submissions of P^2 problems. All submitted drafts of P^2 problems are to be kept in the student's Proof Portfolio folder/binder.

Projects (10%)

There will be 2-3 projects assigned throughout the semester. These projects will involve applications of what we've learned to interesting topics that will not be covered in class. Students are required to submit at least one project. Project(s) will be due at the time of the final exam. Projects that are turned in late or not at all will receive a score of zero.

Midterm Exams (40%)

There will be two midterm exams. Each midterm exam will be worth 20% of the final course grade. The tentative exam schedule is:

Exam 1	**Friday, February 23rd**
Exam 2	**Friday, April 12th**

Make-up exams for documented absences that are required as part of a UT Tyler obligation (e.g. collegiate athletes participating in an event, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification and documentation are required. Other make-ups will be granted only in extreme cases and at the sole discretion of the professor.

Final Exam (30%)

The final exam will be Monday, April 29th at 12:30 - 2:30 pm in our usual classroom. The final exam will be cumulative.

Technology

Students will be required to have a device capable of internet access and access to Canvas. The use of calculators and other electronic devices, including cell phones, is not permitted during exams.

University Policies

For university policies concerning Students' Rights and Responsibilities, Grade Replacement/Forgiveness, State-Mandated Course Drop Policy, Disability Services, Student Absence due to Religious Observance, Student Absence for University-Sponsored Events and Activities, Campus Carry, Social Security and FERPA Statement, please see the University Information module on the course Canvas page.

Tentative Schedule

WEEK	DAY	PLANNED MATERIAL
Week 1 1/15–1/19	Monday	Martin Luther King, Jr. Holiday
	Wednesday	Section 0: Sets and Relations
	Friday	Finish Section 0 and Worksheet: Symmetries of a Square
Week 2 1/22–1/26	Monday	Section 2: Binary Operations
	Wednesday	Section 3: Isomorphic Binary Structures
	Friday	Finish Section 3
Week 3 1/29–2/2	Monday	Section 4: Groups
	Wednesday	Finish Section 4 and Worksheet: Groups of Order 4
	Friday	Section 5: Subgroups
Week 4 2/5–2/9	Monday	More Section 5
	Wednesday	More Section 5
	Friday	Finish Section 5
Week 5 2/12–2/16	Monday	Section 6: Cyclic Groups
	Wednesday	More Section 6
	Friday	Finish Section 6
Week 6 2/19–2/23	Monday	Section 8: Groups of Permutations
	Wednesday	More Section 8
	Friday	**Exam 1 (Sections 0 and 2-6)**
Week 7 2/26–3/1	Monday	Finish Section 8
	Wednesday	Section 9: Orbits, Cycles, and the Alternating Groups
	Friday	More Section 9
Week 8 3/4–3/8	Monday	More Section 9
	Wednesday	Finish Section 9
	Friday	Section 10: Cosets and the Theorem of Lagrange
Week 9 3/11–3/15	Monday	*Spring Break*
	Wednesday	*Spring Break*
	Friday	*Spring Break*
Week 10 3/18–3/22	Monday	More Section 10
	Wednesday	Finish Section 10
	Friday	Section 7: Generating Sets and Cayley Digraphs and Assign Project 1
Week 11 3/25–3/29	Monday	Section 11: Direct Products and Finitely Generated Abelian Groups
	Wednesday	Finish Section 11
	Friday	Section 13: Homomorphisms
Week 12 4/1–4/5	Monday	More Section 13
	Wednesday	Finish Section 13 and Assign Project 2
	Friday	Section 14: Factor Groups
Week 13 4/8–4/12	Monday	More Section 14
	Wednesday	More Section 14
	Friday	**Exam 2 (Sections 7-11 and 13)**
Week 14 4/15–4/19	Monday	More Section 14
	Wednesday	Finish Section 14
	Friday	Section 16: Group Action on a Set
Week 15 4/22–4/26	Monday	Section 17: Applications of G-Sets to Counting and Assign Project 3
	Wednesday	Section 34: Isomorphism Theorems
	Friday	Finish Section 34
Week 16		Cumulative Final Exam and Project(s) Due