Professor:	Dr. Taylor Martin	Time:	TR 12:30 - 1:50 PM
Office:	Lee Drain 411	Classroom:	Lee Drain 401
Email:	taylor.martin@shsu.edu	Office Hours:	Tuesday 3 - 4 PM
			Wednesday 9 - 11 AM
			and by appointment

Class Webpage: We will be using Blackboard.

Course Objectives: This course aims to introduce students to abstract algebraic systems. This course will be invaluable to students pursuing graduate school in mathematics, but will also be relevant and interesting to those wishing to enter the teaching profession. Key topics to be covered include rings, polynomial rings, fields, and groups. This course is writing intensive, which means much of the focus will be on developing students' skills in proof writing, constructing and understanding mathematical arguments, and thinking like mathematicians.

Grading: Course grades will be determined using the following guidelines: Homework in this class will consist of two components - Daily and Weekly Homework - each worth 15%. We will have periodic short quizzes, which will comprise 5% of your final grade. There will be two midterm examinations, each worth 15%. The final exam will be worth 20%. Class participation will be of vital importance in this class, and will count for 15%.

Exams: There will be two midterm exams and a cumulative final exam. Tentative dates for the midterms are: Tuesday, February 27 and Tuesday, April 2. No books, notes, calculators, or any other aids will be permitted on exams unless otherwise specified.

Quizzes: There will be occasional 20 minute in-class quizzes. These will be announced at least a week in advance. Quizzes will assess material such as definitions, short examples or counterexamples, or statements (but not proofs) of theorems. No books, notes, calculators, or any other aids will be permitted on quizzes.

Daily Homework: Homework will be assigned for nearly each class meeting, and students are expected to complete (or try their best to complete) each assignment *before* walking into the next class period. All problems should be written nearly, using correct grammar, punctuation, and spelling and good mathematical exposition. You should always write a rough draft of each problem's solution, and then rewrite your final argument. I strongly suggest double-spacing your work and writing each solution on a separate sheet of paper. I expect that students will make a good attempt at ALL assigned problems.

On the day that a given assignment is due, much of the class period will be devoted to students presenting or discussing some or all of the assigned problems at the board. During these presentations, the class will discuss the solution being presented. Students will be encouraged to modify and annotate their written work as a response to the discussion; however **only colored markers provided in class may be used.** This will allow me to track each student's progress more accurately. At the end of each class period, students will submit their Daily Homework assignments, which will be graded on a \checkmark system and returned during the following class period. Students are welcome

and encouraged to work together on homework; however, each student is responsible for writing up his or her own work. Students are welcome to discuss Daily Homework questions with me in office hours. Late homework will not be accepted; absent students may submit Daily Homework to me before the start of class for full credit. Students will receive bonus for turning in every Daily Homework assignment. Daily Homework assignments will be graded on the following scale:

Grade	Criteria	Value
√ +	Good progress has been made on every problem; the student com-	100%
	pleted this work thoughtfully.	
\checkmark	Every problem has been attempted; good progress has been made	85%
	on several problems.	
v -	Not every problem has been attempted or it is otherwise clear that	70%
	the student did not sufficiently focus on this assignment.	
Х	Little to no progress made, or student did not turn in the assign-	No Credit
	ment.	

Weekly Homework: In addition to the Daily Homework, students will submit 2 - 3 formally written proofs each week. These proofs will be a subset of the Daily Homework that was turned in during the previous week. Weekly Homework will be due on Thursdays at the beginning of class. Beginning with the second homework assignment, written work must be typed. I will provide a template using IATEX. I will encourage students to use www.overleaf.com as a IATEXplatform, but you are welcome to use any compiler that you are familiar with. You may also type your assignments using Word, Open Office, or Google Drive. Weekly Homework problems will be graded according to the following scale:

Points	Criteria
4	Solution is mathematically correct and well-written.
3	This is good work; however, there are minor mathematical errors or the
	exposition is lacking.
2	The ideas are good, but there is at least one major mathematical oversight
	or mistake.
1	I do not follow your argument, but I see that you have worked hard on this
	problem. Come discuss in office hours!
0	You have not communicated that you have put enough work into this prob-
	lem.

It is a sad but true fact that many solutions to mathematics problems may be found on the internet. Using these resources as a shortcut is cheating and will inhibit your academic progress. Academic dishonesty is a serious offense, and the penalty if discovered is severe. As with Daily Homework, I will not accept any late Weekly Homework unless prior arrangements have been made. Weekly Homework is of critical importance and should not be taken lightly. It is expected that you will turn in every assignment.

<u>Resources</u>: It will probably feel uncomfortable to have few resources to fall back on in this class. We will not use a textbook, though I will give reading material from a book and/or post video

material to Blackboard. Your main resources in this class are yourself, your classmates, and me. That's it. You will not be permitted to consult the internet, textbooks, friends who have had this class before, your mathematician cousin, your very smart dog, etc. If ever you find yourself desiring additional material, please email or come see me with questions or requests and I will happily honor your request.

Participation: The only effective way to learn mathematics is to *do* mathematics. Therefore, this class will be nearly entirely student-driven. Nearly every day will consist of student presentations and discussions of Daily Homework problems. Students will present work both independently and in pairs/trios. My expectations for student presentations include the following:

- To maximize class efficiency, the presenter must have a proof written out in detail and must have practiced communicating the major ideas and transitions so that he/she can effectively explain the proof to others.
- Class presentations are not intended to show me that the presenter has completed the problem. They are intended to be a learning tool for both the presenter and the class.
- Presenters are to write in complete sentences, using correct English and mathematical grammar.
- Presenters should explain their reasoning as they go along, not just write everything on the board and then explain.
- Classmates are expected to be active participants in the presentation; they should ask questions of the presenter frequently. The presenter is expected to answer these questions to the best of his/her ability.
- The presenter should practice good speaking skills, including making frequent eye-contact with classmates in order to address questions as they arise and confirm that the class is following the presentation.

In-class presentations can happen in one of three ways:

- 1. I will often assign students randomly to partners/trios and assign each group to combine their ideas into a well-written proof to write and present at the board. The entire group will be evaluated on the proof using the rubric below, and the student who presents the proof to the class will earn an extra presentation point.
- 2. I may ask students to present a proof independently. I will first solicit for volunteers to present a specific problem. If multiple students volunteer, I will give priority to the student with fewer participation points accrued. An individual presentation will be graded using the rubric below.
- 3. If no student volunteers to present a proof, I may randomly select a student to go to the board. Each student will receive a free pass, to be used at any point of the semester, where, if I call on you, you may "pass" with no repercussions on your grade. Presentations will be graded according to the following scale:

Points	Criteria
4	Completely correct and well-explained proof or solution. Hooray!
3	The proof has minor flaws, unclear language, or is lacking in detail, but is
	essentially correct.
2	The ideas are good, but the proof is incomplete or has a significant gap.
1	Minimal relevant progress has been made.
0	Presenter was completely unprepared.

In addition to the above rubric, presenters may be rewarded for being courageous, sharing creative ideas, and answering a question particularly well. However, please do not come to the board unless you have spent sufficient time thinking about the problem and have something meaningful to contribute.

Classmates are expected to be active participants in each presentation. In addition to annotating their own Daily Homework, students are expected to ask questions during the presentations. Students will earn a bonus participation point for asking a particularly good question or providing a particularly insightful comment on the presentation. Additionally, once the class has agreed that a solution is correct, I may ask another student to come to the board and summarize the proof or emphasize the most important points. Participation points may also be earned by contributing to small group discussion and activities. Every student present in class will be awarded a baseline of 2 participation points for each class period.

Expectations and Class Etiquette: I expect students to attend every class and to arrive on time. While attendance is not a direct component of your grade, you will find that poor attendance will be a detriment to your grade. Your Daily Homework will suffer if you are not present for discussions, and if you are called to present and are not there, you will automatically earn a 0 for the presentation. An exception to this will be: if you are ill or have another acceptable reason for missing class, you may email me ahead of time to let me know. In that case, if you are called on to present a problem, you may choose to use a "pass" and will not be penalized. Students will be responsible for all material and announcements given in class. Students are expected to treat each other, and me, with courtesy and respect. For example, during a presentation, a student may *not* say, "Your third line is wrong." Instead, you may say, "I don't understand how you got from the third line to the fourth." Similarly, a presenter may *not* respond to a question by saying, "Your question doesn't make sense." Instead, you may say, "I don't think that I understand your question. Could you rephrase?"

Disability Support: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance are expected to visit the Office of Services for Students with Disabilities located in the Counseling Center. They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Counseling Center. For a complete listing of the university policy, see:

http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf

Religious Holy Days: Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Section 51.911 (a) (2) defines a religious holy day as: a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

<u>Visitors</u>: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.