



## Texas A&M University - San Antonio

### Math 4340 Modern Algebra, Section 001 Spring 2026

<b>Instructor:</b>	Dr. Craig McCarron
<b>Office:</b>	Classroom Hall 314V
<b>Office Hours:</b>	MW 9:30-10:45 TR 11:00 – 12:00 or by appointment
<b>Class Meetings:</b>	MW 14:00 – 15:15 Classroom Hall 209
<b>Phone:</b>	210.784.2648
<b>Email:</b>	<a href="mailto:Craig.McCarron@tamusa.edu">Craig.McCarron@tamusa.edu</a>
<b>Course Website:</b>	Blackboard
<b>IMPORTANT NOTE: TO CONTACT THE INSTRUCTOR, USE EMAIL TO EITHER <a href="mailto:Craig.McCarron@tamusa.edu">Craig.McCarron@tamusa.edu</a> or <a href="mailto:emccarro@tamusa.edu">emccarro@tamusa.edu</a>. YOU SHOULD RECEIVE A RESPONSE TO EMAIL IN AT MOST ONE BUSINESS DAY. DO NOT USE BLACKBOARD MESSAGING TO CONTACT THE INSTRUCTOR, IT IS NOT RELIABLE.</b>	

### Course Description and Material

**Catalog Description:** A study of basic algebraic structures with applications from algebraic or analytic number theory. Topics include: properties of the Integers, prime factorization, congruences, finite groups, subgroups, cosets, homomorphisms, integral domains and rings.

**Prerequisite:** MATH 3325 and one of the following: MATH 3415, MATH 3370, MATH 3340, MATH 4341; all Prerequisite(s) require a grade of “C” or higher.

**Required Textbook:** *A First Course in Abstract Algebra*, 7<sup>th</sup> Ed by John Fraleigh. ISBN 10: 0201763907 / ISBN 13: 9780201763904

**Student Learning Outcomes:** By the end of this course, students will be able to:

1. Analyze algebraic structures using precise mathematical language and notation from logic, set theory, and functions.
2. Construct rigorous mathematical proofs, including direct proofs, proofs by contradiction, and proofs by induction.
3. Identify algebraic structures, particularly groups, rings, and fields, by checking axioms and providing examples and counterexamples.
4. Analyze group structure, including subgroups, cyclic groups, orders of elements, cosets, and consequences of Lagrange’s Theorem.
5. Apply the Fundamental Homomorphism Theorem to identify kernels, images, and quotient groups.
6. Construct Cayley Tables to describe the structure of finite groups.
7. Perform operations in polynomial rings.

MATH 4340 helps students develop Critical Thinking, Communication, and Empirical and Quantitative Skills by focusing on student understanding of key concepts and techniques in modern algebra.

**Attendance:** *Students should be present for each class meeting.* This fact cannot be stressed enough. If a student is unable to attend class for some reason, the student is responsible for contacting a classmate for notes and assignments.

**Exams:** There will be a 100 point take-home midterm exam. The final exam will consist of a take-home portion due before exam week and an in-class portion taken in accordance with the university exam schedule (on Monday, December 11<sup>th</sup> from 6:30 pm to 8:30 pm). The final exam will be worth a total of 200 points.

(The above dates are subject to change at the discretion of the instructor. Every effort will be made to give students at least one week of warning if an exam date must be changed.)

**Quizzes:** There will be a short 5-point Reading Quiz before each class. Sixty minutes are allowed for each Reading Quiz. These quizzes will be available on BlackBoard approximately 24 hours before the start of class and will be unavailable when class starts. Reading Quizzes are open-book and open-notes and the content of Reading Quizzes will come from the reading assigned for class.

Unscheduled quizzes will sometimes be given. These are also worth 5 points. The three lowest quiz scores will be dropped from the student's semester average.

**Note:** All quizzes and exams are *cumulative*. You can expect questions to cover material from the first day of the course to the day before the quiz or exam.

**Problem Sets:** The majority of your work for Math 4340 will be done outside of class. Each problem set is worth 20 points. Due to the challenging nature of the proofs and problems in this course, it is strongly recommended that students start the problem set as soon as it is assigned. Starting assignments the night before they are due will not lead to success in this course.

**Important:** Turn your problem sets in on 8.5" by 11" paper, with no perforated edges, stapled together.

**In case of emergency:** Sometimes a serious circumstance (sudden death/hospitalization of a relative, for example) prevents the student from turning in homework in person. In this case, homework scanned and emailed to the instructor at [Craig.McCarron@tamusa.edu](mailto:Craig.McCarron@tamusa.edu) by 18:00 on the due date, will be accepted. No student may use this *emergency* homework provision more than two times during the semester.

In any case, the lowest homework score for the semester will be dropped, so if a student is unable to turn in an assignment due to sickness or emergency, this should not impact the student's grade.

**Exams:** The midterm exam will be on or about March 4<sup>th</sup>. The final exam will be on Monday, May 11<sup>th</sup> from 2:00 – 3:50 pm.

Students are encouraged to form study groups and help each other with study and homework. *Copying* another student's homework is cheating. However, an acceptable form of help from a classmate would be a *verbal* explanation of how to solve a particular problem (not including the final answer). A student's homework should represent the *student's own work*. You should never gaze upon (i.e. look at) another student's homework, and you should never allow another student to gaze upon your homework.

### Scoring:

category	number	points each	drops	total
Problem Sets	12	20	1	220
Quiz	16	5	3	55
Midterm Exam	1	100	0	100
Final Exam	1	200	0	100
			Total	475

(All numbers above are approximate and subject to adjustments.)

**Note:** Exam, test, and quiz content are determined by the lectures, reading assignments, and practice problem content.

### Grading Scale:

90.0%-100%	A
80.0%-89.9%	B
70.0%-79.9%	C
60.0%-69.9%	D
59.9% and below	F

**Tips for Studying:** The main characteristic of a mathematics course is the fact that all the topics are linked to each other, so that every newly introduced concept is built upon old ones. The most common reason for difficulty in this course is failure to study consistently. You must study this course consistently. You are developing a skill; **no one would expect to become good at tennis by only playing once a month.** In order to succeed, the student should do all the following:

- Read the material in the text before class. Attend the lecture and take notes. During the lectures relevant examples are discussed.
- Practice solving many problems in the e-text even not assigned ones.
- Do *all* assigned homework and attempt *all* questions.
- Seek help. Visit your instructor during office hours. Ask about poorly understood points as soon as possible.

- Exam Preparation. Redo all the homework, quiz problems, and questions solved in the class.
- Work neatly. Make sure you show all work. Answers/solutions given with no explanation may receive little or no credit! During the exams, if you have time, check your work.
- Keep track of your grade.

**Classroom Etiquette:** Students are expected to refrain from distracting classmates as a result of off-task conversation, electronic devices, or other class interruptions.

**Electronic Communication Devices:** Electronic communication devices (e.g., laptop computer, tablet computer, cellular phone, smart phone) can be useful learning tools, but can also be distractions. Mathematical concepts often require *intense concentration* to grasp, so missing even a few words of classroom discussion can leave a student confused and frustrated. During scheduled classroom times, electronic communication devices are not to be used unless specifically authorized by the instructor. Unauthorized use of electronic communication devices during class time *will result in the student being dismissed from class*. If a student has an urgent situation (e.g., family member in the hospital), inform the instructor at the beginning of class that you wish to leave your cell phone on in case you receive an emergency call.

**Recording:** If a student wishes to record any part of classroom activity, the student must obtain written permission from the instructor *in advance* of recording. Unauthorized recording can infringe on other class members' rights, violates University policy, and can result in disciplinary action under the University's Code of Student Conduct.

## Important Policies and Resources

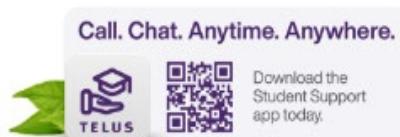
**University Email Policy and Course Communications:** All correspondence between professors and students must occur via University email accounts. You must have your Jaguar email account ready and working. If it is not working, contact the Help Desk at [helpdesk@tamusa.edu](mailto:helpdesk@tamusa.edu) or at 210-784-HELP (4357). If you don't hear back within 48 hours, contact them again. They have many requests during the first part of the semester, so you may need to follow up with them.

**Academic Accommodations for Individuals with Disabilities:** Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact us via phone at (210) 784-1335, visit us at the [DSS website](#) or email us at [dss@tamusa.edu](mailto:dss@tamusa.edu). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

**Academic Learning Center:** All currently enrolled students at Texas A&M University-San Antonio can utilize the Academic Learning Center for subject-area tutoring. The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the Tools section of Blackboard. You can contact the Academic Learning Center by emailing [tutoring@tamusa.edu](mailto:tutoring@tamusa.edu), calling (210) 784-1307, or visiting the Central Academic Building, room 202. Online tutoring is also available for after hours and weekend assistance. While tutoring hours may change based on tutor schedules and availability, the current tutoring hours for MATH in the ALC are as follows:

<b>Days needed</b>	<b>Appointments available</b>	<b>Walk in Tutoring – No appointment</b>
MONDAY	8 am – 6 pm	9 am – 5 pm
TUESDAY	8 am – 6 pm	9 am – 5 pm
WEDNESDAY	8 am – 6 pm	9 am – 5 pm
THURSDAY	8 am – 6 pm	9 am – 5 pm
FRIDAY	8 am – 5 pm	11 am – 4 pm

**Counseling/Mental Health Resources:** As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call 210-784-1331 or visit Madla 120 between the hours of 8:00 AM and 5:00 PM. All mental health services provided by the SCC are free and confidential (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services visit the [Student Counseling Services website](#). Crisis support is available 24/7 by calling the SCC at 210-784-1331 (after-hours select option '2'). The National Suicide Prevention hotline also offers a 24/7/365 hotline at 1-800-273-8255.



Additionally, the [TELUS Student Support App](#) provides a variety of mental health resources to support in the moment of distress, including an anonymous peer-to-peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.

**Emergency Preparedness:** JagE Alert is Texas A&M University-San Antonio's mass notification system. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit the [Emergency Notifications page](#). More information about Emergency Operations Plan and the Emergency Action Plan can be found at

the [Texas A&M website for Emergency Management](#). Download the [SafeZone App](#) for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900.

**Financial Aid and Verification of Attendance:** According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

**Jaguar Writing, Language, and Digital Composing Center (WLDCC):** The Jaguar Writing Center provides writing support to graduate and undergraduate students in all three colleges. Writing tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. The Writing Center has both online and in person appointments. Students can schedule appointments with the Writing Center in JagWire under the student services tab. Students wanting to work in real-time with a tutor can schedule an "Online Appointment." Students wishing to receive asynchronous, written feedback from a tutor can schedule an "eTutoring" appointment. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on the [WLDCC website](#). The Writing Center can also be reached by emailing [writingcenter@tamusa.edu](mailto:writingcenter@tamusa.edu).

**Meeting Basic Needs:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live and believes this may affect their performance in the course, is urged to submit a [CARE report](#) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources. A food pantry is available on campus; the [food pantry's hours](#) vary but are available online. Other resources are posted in Blackboard as well.

**Military Affairs:** Veterans and active-duty military personnel are welcomed and encouraged to visit the [Office of Military Affairs](#) for any question involving federal or state VA Education Benefits. Visit the Patriots' Casa building, room 202, or to contact the Office of Military Affairs with any questions at [military.va@tamusa.edu](mailto:military.va@tamusa.edu) or (210)784-1397.

**Religious Observances:** Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or course work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

**The Six-Drop Rule:** Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive

course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

**Statement of Harassment and Discrimination:** Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, gender expression, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the [Title IX Coordinator](#). Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamus.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

**Pregnant/Parenting Students:** Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable accommodations to pregnant students as would be provided to a student with a temporary medical condition that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings

of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the [Title IX Coordinator](#) with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K).

Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

**Young Jaguars** can support parenting students with daycare if students meet this criteria: (1) must be enrolled in classes at TAMUSA in the current semester, (2) must be Pell eligible or a single parent, (3) child(ren) must be aged 3 to 12-years-old, and (4) child(ren) must be enrolled in Pre-K-3 through 6th grade. For more information, please contact [Young Jaguars](#) at youngjaguars@tamusa.edu or call (210) 784-2636.

**Students' Rights and Responsibilities:** The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

### **Students' Rights**

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

### **Students' Responsibilities**

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.

4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated.

Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the [Student Code of Conduct](#) or visit the resources available in the [OSRR website](#).

#### **Important Dates:**

<b>Dates</b>	<b>Event</b>
January 13	Tuition & Fee Payments deadline
January 19	HOLIDAY - Martin Luther King, Jr. – No Classes
January 20	First day of class
February 4	Census date
February 23-March 6	Midterm grading period
March 9-March 14	Spring Break
April 3	Study Day – No classes
April 17	Last day to drop with an automatic "W"
May 1	Last day to drop a course or withdraw from the University
May 4	Last day of classes
May 5	Study Day – No classes
May 6-May 12	Final exams
May 19	Commencement

The complete [academic calendar](#) is available online.

**AI Policy:** No Use of Generative AI Permitted: MATH1324 assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.