

Syllabus - MATH 5317
Introduction to Modern Algebra
Spring 2023

Instructor Information

Name: Dr. Dermot McCarthy

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Office Hours: MWF 11:00-11:50 am in Mathematics 247.

Note: The best way to contact me is via e-mail. Please e-mail me from your TTU account. Include the course number and your full name in any e-mail that you send to me.

Course Information

Class Times and Room: MWF 12:00–12:50 pm in Mathematics 115.

Prerequisites: None.

Textbooks (optional): *Abstract Algebra*, third edition, by Dummit and Foote, published by Wiley.

Course Description and Purpose

This is a graduate level introduction to the theory of groups and rings. It prepares the student for the graduate algebra sequence Modern Algebra I & II (Math 5326-5327), and the textbook is the same as the one used for that sequence. Students with a solid background in abstract algebra can go directly to Math 5326-5327.

Course Learning Outcomes

The students will develop the skills in basic group theory and ring theory that are required to succeed in the Math 5326-5327 sequence. After completion of the class, students will have an operational understanding of the basic concepts in group theory and ring theory, including the following:

- Important examples of groups, such as dihedral groups and matrix groups;
- Subgroups and quotient groups;
- The group isomorphism theorems;
- Group actions, centralizers, normalizers, and stabilizers;
- Important examples of rings, such as polynomial rings, matrix rings, and group rings;
- The ring isomorphism theorems;
- Rings of fractions; and
- The Chinese Remainder Theorem.

Learning Assessment

Learning outcomes will be assessed through class participation, homework assignments and a written exam.

Attendance: Class attendance is mandatory, except in the case of an excused absence (see section below on student absences).

Homework: Written homework will be assigned throughout the semester. There will be 8-10 such assignments in total. Late homework will not be accepted.

Final exam: There will be two exams: a midterm given during class, roughly halfway through the semester; and a final exam which will take place on Friday May 5th, 1:30 pm - 4:00 pm in our regular classroom.

Grading

A student's overall percentile grade for the course will be calculated based on his/her percentile grade in each of the assessment categories described above, weighted as follows:

Homework	30%
Class attendance	10%
Midterm exam	30%
Final exam	30%

Letter grades will then be assigned in accordance with the following correspondence:

Letter grade A = a percentile grade of 90% or higher

Letter grade B = a percentile grade of 80% or higher, that is lower than 90%

Letter grade C = a percentile grade of 70% or higher, that is lower than 80%

Letter grade D = a percentile grade of 60% or higher, that is lower than 70%

Letter grade F = a percentile grade lower than 60%

Academic Integrity

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [Texas Tech University ("University") Quality Enhancement Plan, Academic Integrity Task Force, 2010].

Accommodation Of Students With Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Student Absences

Observation Of Religious Holy Days: "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Officially Approved Trips and Excused Absences: A student who misses an examination or is unable to complete an assignment due to an officially approved trip or an excused absence (e.g. illness) will be allowed to make-up the missed examination or assignment within a reasonable timeframe thereafter. Students should notify the instructor of any such absences as soon as is possible. The student should be able to provide official evidence to support the reason for their absence (e.g. a doctor's note in the case of illness).

Unexcused Absences: Make-up of examinations or assignments will not be allowed in the case of unexcused absences.

Civility In The Classroom

Texas Tech University is a community of faculty, students, and staff sharing an expectation of cooperation, professionalism, and civility in all forms of university communication and business. This expectation applies to all interactions in a classroom setting where an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Disruptive students may be subject to sanctions according to the *Texas Tech University Code of Student Conduct*. Examples of behavior that may be considered disruptive include: ringing cell phones (students must turn them off or leave them home), reading material that is not part of a class assignment while in class, talking with classmates during class, eating and drinking in class, and similar disruptive behaviors. Students who engage in disruptive behavior will be warned. Repeated disruptive behavior may result in the student being asked to leave the classroom.

(www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).

Regarding the online classroom's civility, please remember one rule, "the online class setting is the same as the face-to-face class setting." Disruptive behavior may result in academic response or disciplinary sanctions ranging from a verbal warning to grade implications to potential removal from the course. Disciplinary actions may be initiated pursuant to the *Texas Tech University Code of Student Conduct*. Students are expected to maintain online behaviors that are conducive to learning.

Examples of behavior that may be considered disruptive include:

- Using or posting inappropriate, obscene, or lewd comments, language, or content or discussing inappropriate topics online or via email.
- Enabling or participating in online classroom hijacking ("Zoombombing") by participating in online classroom streams without being enrolled in the course or by sharing streaming classroom links with parties not enrolled in the course.
- Spamming, hacking, or using TTU or Blackboard platforms for commercial purposes.
- Cyberbullying or online harassment.
- Interfering with or stopping instructional delivery.
- Using non-readable fonts or font sizes.
- Interrupting class discussion by speaking out of turn or having excessively distracting background noise(s) while unmuted.

Online Synchronous Meetings

If at any point during the course we schedule to meet online via Zoom during class time, you are expected to do the following:

1. Attend.
2. Log into the video conference on time and remain logged in for the duration of the class period.
3. Activate your camera so that you are visible to the instructor and other students in the class. Your camera should remain on for the duration of the class period.
4. Refrain from engaging in non-class related activities during class time that create a distraction for other students in the class and/or limit your ability to engage in the course (e.g., walking around, talking to others off camera, working at a job, driving a vehicle, etc.).
5. Maintain the same level of civility and professionalism that would be expected in a face-to-face classroom setting.

Failure to meet these expectations may result in the following consequences:

1. Being counted as absent for the class meeting.
2. Not receiving credit for class participation for that class period.

3. Other consequences as stipulated in the syllabus, *Texas Tech Code of Student Conduct*, or other university policy.

Repeated failure to meet expectations, in addition to the above consequences, may result in the one or more of the following consequences:

1. Referral to the appropriate Associate Dean.
2. Academic penalty, ranging from a warning to failure of the course.

COVID-19

The University will continue to monitor CDC, State, and TTU System guidelines concerning COVID-19. Any changes affecting class policies or temporary changes to delivery modality will be in accordance with those guidelines and announced as soon as possible. Students will not be required to purchase specialized technology to support a temporary course modality change, though students are expected to have access to a computer to access course content and course-specific messaging as needed.

This is where students can find information about COVID testing, vaccinations, isolation, and quarantine.

<https://www.depts.ttu.edu/communications/emergency/coronavirus/>.

If you test positive for COVID-19, report your positive test through TTU's reporting system:

<https://www.depts.ttu.edu/communications/emergency/coronavirus/>. Once you report a positive test, the portal will automatically generate a letter that you can distribute to your professors and instructors.

Change in Teaching Modality

While it is expected that all classes will be face-to-face, students should be prepared for the possibility of a change in teaching modality to online instruction. If this happens, students are expected to have all necessary equipment to allow full participation, e.g, internet access, microphone, webcam etc.