

Syllabus: MATH 5317

Introduction to Modern Algebra

Spring 2015

Instructor Information

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Course Information

Classes: TR 2:00 pm - 3:20 pm in Mathematics 111

Prerequisites: None.

Textbook: *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;
- Ideals and quotient rings;
- The ring isomorphism theorems;
- Rings of fractions; and
- The Chinese Remainder Theorem.

These topics correspond to Chapters 1-4 & 7 of the textbook.

Learning Assessment

Learning outcomes will be assessed through class participation, homework exercises and examinations.

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

Homework: Homework will be assigned throughout the semester as written assignments, usually on a weekly basis. There will be approximately 10 such assignments over the course of the semester. Late homework will not be accepted.

Exams: There will be two exams: a midterm given during class, roughly half way through the semester; and a final exam which will take place on Thursday May 7, 4:30 pm - 7:00 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%; and
- 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%

Civility In The Classroom

Texas Tech University endeavors to foster a classroom climate of mutual respect among students, and between students and teacher. Mutual respect means that we should be tolerant of different ideas and varying opinions about topics of discussion in class, that we address each other respectfully and without interrupting while others are speaking, and that we do not engage in disruptive behavior in class. Signs of disrespect include, but are not restricted to: ringing cell phones (students must turn them off or leave them home), reading a newspaper or other 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.

Academic Honesty

The TTU “Code of Student Conduct”, which you should have received when you enrolled in the university, contains a lengthy list of prohibited behaviors, among which is “Academic Dishonesty”. Please note that cheating and plagiarism (a form of cheating) are included among the actions that are subject to disciplinary action. Cheating will not be tolerated in this course. A student who is caught cheating will receive a grade of 0 on the exam, paper, or exercise. Awarding of a grade of F for the course is also a possible penalty. In addition, the incident of academic dishonesty will be reported to the Dean of the appropriate academic college for such disciplinary action as they see fit to administer.

Plagiarism: “The appropriation or imitation of the language, ideas, and thoughts of another author, and representation of them as one’s original work” The Random House College Dictionary, revised edition. New York: Random House, 1975, p. 1014.

“1. The use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgement; 2. the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.” Student Affairs Handbook, Texas Tech University, Lubbock, Texas, 1998-99, p. 22.

Plagiarism and cheating are not tolerated and will result in a grade of 0 on work that contains plagiarized material. In addition, a grade of F may be awarded for the course. Any cases of cheating will be reported to the Honors College and the responsible academic dean (i.e., Arts & Sciences, Business Administration, Engineering, etc.)

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, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

Student Absences

Observation Of Religious Holy Days: A student who is absent from classes for the observation 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 if, not later than the fifteenth day after the first day of the semester, the student had notified the instructor of each scheduled class that the student would be absent for a religious holy day.

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.