

Course Syllabus
MATH 4303-001: Modern Algebra
Spring 2015

Instructor: Dr. Angela Brown
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Office Telephone Number: (432)837-8223
Email Address: abrown4@sulross.edu
Office Hours: MW 10-12, TR 2-3:30, others by appointment.
Time and Place of Class Meetings: TTh 3:30-4:45 ACR 108

Prerequisites: Math 2414 and Math 2330

Required Textbooks: *Contemporary Abstract Algebra, 6th Edition* Gallian, J., 2006. ISBN 0-618-51471-6.

Other Equipment Needed: paper and pencils.

Course Content: We will cover group theory in depth and introduce the topics of rings and fields. This will be adjusted as necessary.

Learning Objectives The student will be able to prove mathematical statements with varying methods of proof, including direct proofs, proof by induction, proof by contradiction and proof by contrapositive. The student will be able to use the varying methods of proofs to prove their own theorems pertaining to abstract algebra. The student will be able to recognize and dispute invalid mathematical statements using counter-examples. Students will gain understanding of groups and rings in part by the study of such underlying concepts as equivalence relations, congruence classes, and quotient structures.

Mathematics Program Learning Objectives: The graduating student should be able to

- Apply knowledge of basic mathematics principles.
- Identify and provide valid proofs or solutions for theorems or problems.
- Recognize and dispute invalid mathematical statements by using counter-examples.

Grading Scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, 59-Below F

Grading Policy: The grade weighting will be as follows:

Homework/Quizzes/In Class Work: 30%

Exams : 40%

Final Exam: 30%

For each class period, you will be expected to read your textbook before the material we will be covering that day. For this purpose, you will have online quizzes that will be due the evening before the material to be covered. These will be graded on your completion of the assignment and on the accuracy of what you have read. For this purpose, you will also want to point out what you have not understood in this material so Dr. Brown can form

the lecture and class activities around this material. After a lesson is gone through for the day, in class quizzes over the actual material will be given as well.

Homework will be assigned periodically throughout the semester. Homework assignments must be complete and will be turned in on Tuesdays during class. Not all problems will be graded for content, but the assignment grade is contingent on completeness. If you use outside references, make sure to properly source the material.

There will be three exams in addition to the final exam. All exams will be closed notes, closed book, and no calculators allowed. No make-up exams will be given unless due to a school function. If you miss an exam with a valid excuse, the grade you make on the final exam can replace this grade.

The final exam is on Tuesday May 12 at 3:00 pm.

General Policies: Class will start at the designated time and run for 1 hour and 15 minutes with no breaks. You are expected to be on time, attend every class meeting, stay for the duration of class time and come to learn. Do not schedule any appointments that will conflict with class time; if you have done so then I need documentation of the appointments.

You are expected to bring all necessary materials and take notes and participate. You are expected to turn-off and not to access any electronic, non-task oriented device such as cell/smart phones/pads and i-pods. A cell phone cannot be used as a calculator. Devices for recording the lecture are permitted; either audio or video.

If you come to class without your materials then you will be released from class to go get the appropriate materials. If you try to sleep during class or put your head on your desk you will have to leave class and go home and sleep. Working on another class is not allowed. If you sit with your arms crossed, you will be asked to take notes and participate. If you are causing others around you to miss lecture material then you will be asked to leave.

Any personal business must be conducted during office hours or by appointment. I will only discuss grades and attendance issues in my office. Classroom time is for the entire class.

Attendance Policy: Students are expected to attend every class. If class must be missed, the student is expected to get the notes from a classmate, and to check with me or on Blackboard for announcements and updated assignments. You are expected to check your Sul Ross e-mail account. Absences due to school functions should be discussed with me ahead of time.

Students are expected to arrive to class on time. If a student is perpetually late, they will be asked to not attend class unless they arrive on time. If tardiness becomes a problem for the class as a whole, people who arrive late will not be permitted to enter the class. If this stricter policy becomes necessary, there will be an announcement made in class.

It is policy of the university to drop a student with a grade of "F" if 9 hours or more of class are missed. For this course that would be 6 or more class sessions missed.

Americans With Disabilities Act: As an instructor, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing the instructor for MATH 4330 of their need for accommodation and in providing authorized documentation through designated administrative channels. If you need to request such accommodations,

please contact the ADA Coordinator in Counseling and Accessibility Services, Ferguson Hall 112, 432-837-8203.

Important Dates:

January 20 First Day of Classes
 January 23 Last Day for Late Registration and Schedule Changes
 March 16-20 Spring Break
 April 10 Last Day to Withdrawal from University or Drop Classes with a Grade of “W” (by 4 pm)
 May 6 Last Day of Classes
 May 11-14 Final Exams
 May 16 Commencement

Tentative Schedule-Subject to Change

	Tuesday		Thursday
Jan 20	Intro/Chapter 0	Jan 22	Intro to Groups
Jan 27	Groups	Jan 29	Finite Groups
Feb 3	Subgroups	Feb 5	Cyclic Groups
Feb 10	Permutation Groups	Feb 12	Exam 1
Feb 17	Isomorphisms	Feb 19	Isomorphisms
Feb 24	Cosets	Feb 26	LaGrange’s Theorem
Mar 3	External Direct Products	Mar 5	Normal Subgroups
March 10	Groups Homomorphisms	Mar 12	Fundamental Theorem of Finite Abelian Groups
Mar 24	Fund Theorem Cont.	Mar 26	Intro to Rings
Mar 31	Exam 2	Apr 2	More Rings
Apr 7	Integral Domains	Apr 9	Ring Homomorphisms
Apr 14	Fields	Apr 16	Fields Cont
Apr 21	Extension Fields	Apr 23	Exam 3
Apr 28	Finite Fields	Apr 30	Finite Fields
May 5	Review/Catch Up Day		