MATH 5331-001: Graduate Abstract Algebra I
Spring 2016

Instructor: Prof. M. Vancliff PKH 462 vancliff@uta.edu 817-272-3932

Web pages: **http://www.uta.edu/math/vancliff/T/S16** http://www.uta.edu/math/vancliff
https://www.uta.edu/profiles/michaela-vancliff

Course Classroom: PKH 311 (check mymav!) **Course Time:** Tues/Thurs 5:30-6:50 pm.

Instructor's Office Hours: see http://www.uta.edu/math/vancliff/T/S16/

Textbook: Abstract Algebra, by D. S. Dummit & R. M. Foote, 3rd Ed., Wiley (Note the edition!) This book is required. You might find an undergraduate book helpful as a companion to our textbook; for that purpose, consider Fraleigh's textbook.

Prerequisite: A, B or C in Math 3321 or equivalent.

Attendance: the instructor of this class chooses to record attendance and it will factor into the students' grades (see "weighting" below). You are responsible for any, and all, announcements made in class and on the course website. You are responsible for any, and all, material missed during lecture. If you miss a lecture, you can figure out the material covered by checking the homework assignment for that day.

Tests: Test 1: Thurs Feb 11 (30 minutes) = 12%; Test 2: Tues Mar 8 (45 minutes) = 18%;
Test 3: Thurs April 14 (70 minutes) = 32%; Final Test: 5:30-8:00 pm on Tues May 10 = 38%.
All tests are comprehensive. Bring photo ID to all tests.

Weighting: each test will be "curved" separately and its grade (not score) will contribute to your course grade. If you have a nonzero score on each of Tests 1-3 and if the grade on your Final Test is higher than your lowest grade from Tests 1-3, then your lowest grade will be replaced by the grade from the Final Test. Good attendance & participation will help your course grade if your course grade is borderline. **Any student who does not earn a nonzero score on the Final Test for this class will not pass this class.**

Important Dates: Wed Feb 3 = Census date; Tests (see above): Feb 11, Mar 8, Apr 14, May 10;
Fri Apr 1, 4 pm = last day/time to drop course with W (see page 3); Mar 14-19 = Spring Break;
Thurs May 5 = our last class. **Note these dates in your calendar!**

Course Schedule: Chapters 1-3 (roughly 2 or 3 lectures each), Chapter 7 (roughly 3 lectures), Chapters 8 & 9 (roughly 1 lecture each), Chapter 10 (roughly 3 lectures), Chapter 4 (roughly 4 lectures), Chapter 5 (roughly 3 lectures), Chapter 6 (roughly 1 lecture). See the book for the topics to be covered in these chapters. Of course, snow/ice days etc will interfere with the schedule, if they occur. The goal of this course is to teach you the concepts in those chapters and mathematical formalism, together with some practice at reading & writing proofs.

Student Learning Outcomes: upon completion of this course, for any of the topics covered, students should be able to do the following: 1. write the definition of many of the terms; 2. solve problems; 3. construct correct and detailed mathematical arguments to justify their claimed statements, i.e., write proofs of some basic results.

This course is a first course in Abstract Algebra, and the topics covered will enable students to pursue courses such as algebraic geometry (both commutative & non-commutative), non-commutative algebra, commutative algebra, Galois Theory, Lie algebra, Number Theory, Coding Theory, homology, etc.

Groups, rings & modules are useful in classical & quantum mechanics, coding theory & other areas; in particular, they play a crucial role in robotics, & in describing the behavior of electrons in an atom.

Homework: the homework will be posted on the course website (see above). It will not be collected, but is assigned to help you learn the material and prepare for the tests. It is your brain exercise. The tests will be designed to determine whether you have mastered the ideas in the homework and in the lectures. Indeed, at least half of each test will be based on homework problems. Some reading will also be assigned, owing to the amount of material that we need to cover.

Calculators: no calculator is allowed on any test, so you are advised not to use one on the homework.

Expectations for Out-of-Class Study: beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours/week of their own time in course-related activities, including reading required materials, completing assignments, preparing for tests, etc. The best way to guarantee a good grade in this course is to take good lecture notes and to read them over after class before starting the homework, and to do ALL the assignments on a regular basis and to discuss the material with each other. After completing any one assignment, put together a list of the ideas you learned in doing that assignment; keep your list to help in studying for the tests. It is very important that you know how to work out the homework problems correctly. If you use a solutions manual, be sure to use it in a way that helps you understand & remember the concepts and arguments. See the course website for a link to a list of techniques on how to study.

Help Outside Class Time: feel free to ask the instructor **relevant** questions during class & right after class. You can also go to the instructor's office hours. You can also e-mail the instructor questions, or you can ask the instructor to look over your solution to a homework problem. No appointment is necessary for office hours.

Student Support Services: in addition to the resources provided by this class (& on the course website, which you should check every couple of days), UTA provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students should either visit the reception desk at University College, or call the Maverick Resource Hotline at 817-272-6107, or send a message to resources@uta.edu, or view the information at http://www.uta.edu/universitycollege/resources/ . Also, a list of tutors is available from the Mathematics Department Office, but note that this list is not endorsed by the Mathematics Department.

Conflict with Test Dates: students who miss tests due to UNauthorized reasons will NOT be accommodated. Your personal commitments (e.g., job) must accommodate the test dates/times. If you have a conflict with a test, or if you miss a test, you should contact the instructor as soon as possible (in person, by e-mail, or by phone (leave a message on instructor's office answering machine (NOT with the math office) if the instructor is not there)). If you miss any test for an authorized reason that can be verified with official documentation (e.g., hospitalization), then accommodations will be offered (no make-up tests). **Any student who does not earn a nonzero score on the Final Test for this class will not pass this class.**

Americans with Disabilities Act: the University of Texas at Arlington is on record as being committed to both the spirit & letter of all federal equal-opportunity legislation, including the *Americans with Disabilities Act* (*ADA*). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria & policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at 817-272-3364.

Furthermore, if a student has an officially recognized disability, and would like special arrangements for any test, then s/he **should notify the instructor** informally (e.g., by e-mail) **as soon as possible** so that appropriate arrangements can be made in time for the test. The instructor is happy to help in such cases, but early advance notification helps the instructor a lot in this endeavor.

Title IX: the University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity. For more information, visit www.uta.edu/titleIX.

Drop Policy: students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if s/he does not plan to attend after registering. Students will **not** be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://www.uta.edu/fao/). See page 1 above for the drop date for this semester.

Academic Integrity: students enrolled in UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University & a grade of FAIL in the class given to involved student(s). In particular, the Regents' Rules and Regulations states: scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or material that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts".
Photo-ID is REQUIRED at all tests. UTA has informed all its instructors that steps should be taken to discourage cheating on tests. Consequently, the instructor will uphold the following during the tests:

- cellular phones & other electronic devices need to be OFF (not silent mode);
- all items not needed for the test, including cellular phones & other electronic devices, should be placed on the floor by the side wall;
- if you wish to leave the room during a test, you should ask permission first and turn in your test to the test proctor & only in exceptional circumstances will you be permitted to continue the test should you return (so it is better to be 3 minutes late to the test, rather than ask to go to the restroom during the test);
- if you finish a test early but prefer to stay in the room, then you should NOT get out any work, book nor item, no matter what the subject matter is.

Remember, in any test, keep your eyes on your own work only.

Final Review Week: a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the course grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. **During this week, classes are held as scheduled.** In addition, **instructors** are not required to limit content to topics that have been previously covered; they **may introduce new concepts as appropriate**.

In-Class Behavior: during all classes & tests, cellular phones should be SWITCHED OFF and any electronic device not used for learning the class material should be out of sight. UTA reserves the right to impose disciplinary action for any kind of infraction of UTA policies. Engagement in conduct that disrupts, obstructs or interferes with activities authorized by UTA will result in disciplinary action against the perpetrator(s). Such conduct includes (but is not limited to) leaving and returning to the room frequently during class (even for bathroom breaks), refusing to put one's belongings by the wall when asked to do so, the use of a cellular phone, ringing cellular phones, etc.

Emergency Exit Procedures: should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, i.e., for fire, turn right and right again, and take the stairs down, but for tornado, use those same stairs or stairs by restrooms so as to exit stairs **inside building** on 1st floor. When exiting the building during an emergency, never take an elevator; use the stairs. During a tornado siren, students are advised to congregate in PKH 110 (turn left on 1st floor after using interior stairs), or in a classroom near PKH 110 that does not have a window. Faculty members and instructional staff will assist students in selecting the safest route for evacuation & will make arrangements to assist individuals with disabilities.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: at the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Writing Center: the Writing Center, 411 Central Library, offers individual 40-minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit https://uta.mywconline.com/ to register and make appointments. For hours & other information visit www.uta.edu/owl/.

Some Libarary Resources:

Library Home Page..... http://library.uta.edu

Subject Guides..... http://libguides.uta.edu/

Subject Librarians..... http://library.uta.edu/subject-librarians

Database List..... http://libguides.uta.edu/az.php

Course Reserves..... http://pulse.uta.edu/vwebv/enterCourseReserve.do

Library Tutorials ..... http://www.uta.edu/library/help/tutorials.php

Connecting from Off- Campus.....http://libguides.uta.edu/offcampus

Ask a librarian.....http://ask.uta.edu

Emergency Phone Numbers: in case of an on-campus emergency, call the UT Arlington **Police** Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial **911**.
(For non-emergency, call the UTA police at 817-272-3381.)