

## Syllabus for Math 433E, *Survey of Modern Algebra*, Fall 2016

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**COURSE DESCRIPTION:** An introduction to rings, fields and groups with an emphasis on polynomial rings, reducibility and rational, real, and complex number systems. Applications to areas such as geometry, number theory, trigonometry and calculus. This is a proof based course. Pre-requisite Math 245 and Math 238 or Math 300.

**COURSE GOAL:** Topics for this course will include the integers, rational numbers, real numbers, complex numbers, groups, rings and fields with an emphasis on polynomials. We will cover most of the sections in Chapters 1-12 of the text.

**TEXT (Required):** *A Concrete Approach to Abstract Algebra* by Jeffrey Bergen.

**QUIZZES:** There will be a 10 point quiz at the beginning of class each Friday. This quiz will cover material through the previous class. Quiz questions will be similar (but certainly not limited) to homework questions. The 10 best quiz scores will be kept, and the rest will be dropped. There will be no make up quizzes given.

**L<sup>A</sup>T<sub>E</sub>X:** As part of our objective to “write” mathematics (as well as to learn it and to speak it) we will learn to use the mathematical typesetting program L<sup>A</sup>T<sub>E</sub>X. L<sup>A</sup>T<sub>E</sub>X is the standard typesetting tool of mathematicians all over the world. Whether you will be teaching, working in business or in academia, L<sup>A</sup>T<sub>E</sub>X will be useful for preparing mathematical documents. See my website for information on installing and running L<sup>A</sup>T<sub>E</sub>X.

**HOMEWORK:** Homework will be assigned after each section. We will discuss the homework, but most of it will not be collected. Once a week or so I will assign one problem to be typed in L<sup>A</sup>T<sub>E</sub>X and handed in for grading. There will be opportunities to ask questions about the homework problems at the beginning of each class. However, there may not be time to answer everyone’s questions, or go over every homework problem. You are encouraged to work together in groups on the homework problems, however any work that you turn in must be your own.

**MIDTERMS and FINAL:** There will be three midterms during the semester and a final exam each worth 100 points each. If you cannot make it to a scheduled exam, you **MUST** contact the instructor **BEFORE** the exam if at all possible, or if an emergency, **WITHIN 24 HOURS** after the exam if you need to schedule a make up exam. Make up exams will only be given for extreme excuses. A doctor’s note or some other physical excuse is required.

**NOTES:** There will be class notes available on Canvas. It is advisable to print these notes before class, and take handwritten notes on top of them. Read through the notes before class, so that you can have an idea of what we will cover. Then ask questions during class about anything that you didn't understand. You should keep a stack of index cards with definitions and theorems. Use these to study for quizzes and exams.

**GRADING:** The grading will be assigned on the following scale:

A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: Below 60%.

There will be no curves and no extra credit. I will assign +/- on an individual basis. WF's will not be assigned. Points are assigned as follows:

Quizzes (10) - 100 points, Midterm exams (3) - 100 points each, Homework - around 70 points, Final exam - 100 points.

**HONOR CODE:** You are to abide by the JMU honor code at all times. Ignorance of the law is no excuse. Cheating will not be tolerated and will be prosecuted to the fullest extent. Please familiarize yourself with the honor code here: <http://www.jmu.edu/honorcode/>. When turning in homework or group work, you may work together and discuss the problems, but you must write up the homework to turn in **by yourself**. Every answer requires an explanation, and no two student's explanations will be exactly the same. Copying someone else's homework or copying something from the internet (words or ideas) and putting your name on it is a violation of the Honor Code, even if you change the words around. Do not share your  $\text{\LaTeX}$ code with anyone. You are welcome to look at each other's code, but do not share files, and do not copy code from someone else word for word.

**UNIVERSITY POLICIES** For University policies for attendance, inclement weather, disability accommodations and religious accommodations, please see: <http://www.jmu.edu/syllabus/>

**FIRST WEEK ATTENDANCE POLICY:** At the instructor's discretion, any student registered for a class in the Department of Mathematics and Statistics who does not attend at least one of the first two scheduled meetings of the class (or does not attend the first scheduled meeting of a class that meets once a week) MAY be administratively dropped from the class. Students will be notified by e-mail if they will be dropped. Students who fail to attend should not assume they will be administratively dropped by their instructor; it is the students responsibility to drop the course on their own or they will receive a grade at the end of the semester. All students are responsible for verifying the accuracy of their schedules and changes made in their schedules.

**LEARNING:** Your goal in this class is to learn Abstract Algebra. My role is to facilitate that learning. You will get out of this class what you put in to it. There are no shortcuts. Learning is not easy. It takes effort and persistence. It is a struggle. Do not see your mistakes as failures, but rather as learning opportunities! It is the struggle that leads to learning. Embrace the challenge.