

*Course Information*

<b>Course Number:</b>	<i>Math 3362</i>
<b>Course Name:</b>	Introduction to Abstract Algebra II
<b>CRN:</b>	20554
<b>Location:</b>	MCS 213
<b>Class Hours:</b>	11:00am-11:50am MWF
<b>Textbook:</b>	A First Course in Abstract Algebra by Anderson and Feil. 2 <sup>nd</sup> edition
<b>Prerequisites:</b>	3360 or consent of instructor

*Instructor Information*

<b>Name:</b>	Dr. Jeffrey Beyerl
<b>Office Location:</b>	MCS 237
<b>E-mail:</b>	jbeyerl@uca.edu
<b>Phone:</b>	501-450-5652

**Office Hours:** My office hours for each week will be posted outside my office during that week. Typically I am available between 7am and 4pm on school days whenever I'm not otherwise obligated. In particular, I anticipate being available before and after most class sessions.

\*\*\*Special note for algebra: When you ask about a proof, the first thing I'm going to do is ask you what the objects of interest are, so please be sure to review the definitions before coming in.

**Course Description**

Required for majors in mathematics, this course is designed to introduce students to abstract mathematics and provide a foundation for more advanced mathematics. Topics include sets, methods of proof, functions, binary operations, the integers, divisibility, binary relations and partitions, modular arithmetic, groups, subgroups, group homomorphisms, cyclic groups, and cosets.

**Course Objectives and Requirements**

The primary objective in this course is to develop the theory of groups.

## Grading Policy

- Your grade will be computed from tests, a final exam, and other items as deemed appropriate. The other items will be determined as the semester progresses.
- Tests will be administered approximately one third, two thirds, and three thirds into the semester. The final exam will be worth two tests.
- Make-up tests will only be given for official university events or personal emergencies. In the former case the test must be taken before official test date, in the latter case a short letter explaining why you missed the test, why this justifies a make-up, and supporting documentation must be turned in before the day you're able to return to class. In the event that a make-up is justified, it must be taken before you are able to return to class. At his discretion, the instructor may choose to administer a make-up test or use the final exam to replace the make-up.

## Student Learning Objectives

- Use results from elementary group theory to solve contemporary problems;
- Explain from elementary principles why certain algebraic facts are true;
- Use Lagrange's Theorem to analyse the cyclic subgroups of a group;
- Explain the significance of the notion of a normal subgroup, and of a simple group;
- Describe the structure of finite Abelian groups;

## Tentative Course Outline

(We may cover other material too and/or skip the latter chapters listed here)

Chapters 22 & 23	Examples We'll cover this material fairly quickly
Chapter 24	Groups Standard Pace
Chapter 25	Subgroups Standard Pace
Chapter 26	Cyclic Groups Quick Pace
Chapter 27	Homomorphisms Standard Pace
Chapter 28	Isomorphisms Standard Pace
Chapter 29	Permutations Quick Pace
Chapter 30	Cycles Quick Pace
Chapter 31	Cosets Quick Pace
Chapter 32	Normal Subgroups Standard Pace
Chapter 33	The Fundamental Isomorphism Theorem Standard Pace
Chapter 34	Transpositions and the Alternating Group Quick Pace

### Tentative Course Progression

Last day to Drop Drop means the course is not on your record	January 14 <sup>th</sup>
Test 1	Target date: February 6 <sup>th</sup>
Test 2	Target date: March 13 <sup>th</sup>
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	March 20 <sup>th</sup>
Last day for WF/WP WF means withdraw failing and is factored into your GPA as an "F" WP means withdraw passing and is not factored into your GPA WF/WP will be decided by whether or not your currently passing. Please see me to verify your grade before withdrawing with a WF/WP.	April 17 <sup>th</sup>
Test 3	Target date: April 10 <sup>th</sup> , 17 <sup>th</sup> , or 20 <sup>th</sup>
Final Exam	April 27 <sup>th</sup> , 2:00pm-4:00pm.

### Outside of class resources

- The Textbook
  - Description of material
  - Example problems
  - Exercise problems
- Blackboard
  - Quiz/test solutions
- Office Hours
  - Individual help
  - Come with questions
- The Math Resource Lab
  - Study Area
- A note on working together and using the internet: it is very important to develop intuition. Short circuiting the thinking process undermines your ability to learn. As such, the use of the internet to find complete proofs is discouraged. Working with other students in the class is highly encouraged, as long as you use appropriate peer study techniques:
  - Always think about a problem individually before discussing it together
  - Make sure you're on the same page by discussing the definitions and what the objects you're playing with are.
- A note on asking and giving assistance: as above to avoid short-circuiting your own education or somebody else's, you should never ask for or give a complete solution or key insight. Asking for or giving hints, however, is acceptable.

**Attendance Policy**

Your active participation in this course is expected and required for you to learn the material and earn a passing grade. If you fail to regularly and actively participate it will demonstrate that you are not making a reasonable effort to complete this course, and you will be administratively dropped for non-attendance with a grade of WF.

\*\*\*Punctuality: Class starts at 11am. Please be ready to learn when class starts.

**Academic Integrity Statement**

The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

**Americans with Disabilities Act Statement**

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Office of Disability Services, 450-3613.

**Sexual Harassment and Academic Policies Statement**

All students are required to familiarize themselves with the University of Central Arkansas policy on sexual harassment and on academic policies. These policies are printed in the Student Handbook.

**Building Emergency Plan Statement**

An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.