Course Information

Course Number:	Math 3360
Course Name:	Introduction to Fields and Rings
CRN:	20367
Location:	MCS 211
Class Hours:	3pm-3:50pm MWF
Textbook:	A First Course in Abstract Algebra by Anderson and Feil, 3rd edition
Prerequisites:	Math 2335

Instructor Information

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

Office Hours:

Monday	10:00am
Tuesday	10:00am
Wednesday	10:00am*
Friday	10:00am

*The office hours on Wednesday are in the MRC

Question: Can I only come during office hours?
Answer: You can come anytime! I am typically in my office from 8am until 4pm; office hours are merely designated times that I avoid scheduling meetings or running errands.
For up-to-date availability, see the link on Blackboard.

Course Description

A required course for majors in pure mathematics, UCA STEMteach Pure Mathematics, and UCA STEMteach Mathematics Education tracks. This course is designed to introduce students to abstract mathematics. Topics include binary operations, the integers, modular number systems, rings, and fields

Course Objectives and Requirements

The primary objective in this course is to develop the theory of fields and rings.

Grading Policy

- Your grade will be computed from tests, quizzes, oral problem presentations, homework, and a comprehensive final exam.
- Make-up tests/quizzes 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 by 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.
- Borderline grades will be determined based on the final exam and the quality of your work throughout the course.
- Oral problem presentations are in Dr. Beyerl's office. Each student will sign up for a time to meet with the instructor. There will be approximately three oral problem presentations throughout the semester.
- Homework problems will be assigned on a weekly basis. One problem, which will be specified beforehand, will be marked for both mathematical correctness as well as clarity of communication. That problem must be typed. Other problems may be handwritten or typed and will be graded only based on the main idea of the problem.

Test 1	15%
Test 2	15%
Test 3	15%
Quizzes	10%
Oral Problem Presentations	10%
Homework	10%
Final Exam	25%

Student Learning Objectives

Upon completion of the course, student will be able to:

- Be able to describe the minimal information on a set to guarantee the ability to solve equations in that set.
- Be able to extend a number system to a larger one so as to solve an equation previously unsolvable in the original system.
- Be able to explain in a general setting the standard rules of arithmetic.
- Run the Euclidean algorithm in the polynomial ring setting.

Tentative Course Outline

(We may cover other material too)

Chapter 1	The Natural Numbers Review – read it on your own
Chapter 2	The Integers
Chapter 3	$\mathbb{Z}_n$
Chapter 4	$\mathbb{Q}[x]$
Chapter 5	Factoring Polynomials
Chapter 6	Rings
Chapter 7	Subrings and Identity
Chapter 8	Integral domains and fields
Chapter 9	Ideals
Chapter 10	$\mathbb{F}[x]$
Chapter 11	Ring Homomorphisms
Chapter 12	The Kernel of a Homomorphism
Chapter 13	Rings of Cosets
Chapter 14	The Isomorphism Theorem
Chapter 15	Maximal and Prime ideals
Chapter 16	CRT

Important Dates

Last day to Drop Drop means the course is not on your record	August 30th
Test 1	TBD – After Chapter 5
Test 2	TBD – After Chapter 10
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	November 10th
Test 3	December 1st
Final Exam	Friday December 15th 1pm-4pm

Outside of class resources

- The Textbook
  - Description of material
  - Example problems
  - Exercise problems
  - Homework problems
- Blackboard
  - Quiz/test solutions
  - Notes from class
- Office Hours
  - Individual help
  - Availability changes every day. See https://ucamath.youcanbook.me/ for up to date availability
- Previous course materials
  - http://faculty.uca.edu/jbeyerl/courses.html
- The Math Resource Lab
  - Study Area
  - Tutors available throughout the day

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 miss more than two weeks of class meetings throughout the term, you may be administratively dropped from the course.

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.
Academic integrity is taken seriously: cheating on a test will result in a failing grade in the course; allowing another student to copy off of your test will result in a one-letter-grade penalty.

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.

Title IX disclosure:
If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: https://uca.edu/titleix. *Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.

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.