Course Information

Course Number:	Math 4385
Course Name:	Complex Analysis
CRN:	4385
Location:	MCS 212
Class Hours:	3:00pm-3:50am MWF
Textbook:	Complex Variables: Introduction and Applications by Ablowitz and Fokas, 2nd ed. Schaum's Outline of Complex Variables, 2ed.
Prerequisites:	Math 2471 (Calculus III)

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*
Thursday	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.

Course Description

This course is an elective for majors and minors in mathematics. The content of the course includes the arithmetic and geometry of the complex numbers, extension of transcendental functions to the field of complex numbers, analytic function theory, contour integration, and the Cauchy Integral Theorem, series, calculus of residues, and harmonic functions. This course is fundamental to physics and engineering as well as an extensive source of problems in pure mathematics.

The primary objective in this course is to develop the theory of complex variables. It will not be a proof-based course, but we will encounter numerous proofs.

Textbooks

There are two texts for this course. The course will primarily follow the material as presented in Complex Variables. Homework assignments will come primarily from problems in Schaums.

Grading Policy

- Your grade will be computed from tests, homework, quizzes, oral problem presentations, and a final exam.
- 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.
- Borderline grades will be determined based on the final exam and effective learning throughout the course.
- The homework policy will be determined on the second or third week of school, based on performance on the first couple quizzes.
- 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 one problem presentation every three weeks, approximately.
- If any of your homework average, test average, or final exam are a letter grade higher than your course average, your course grade will be increased by one letter grade.

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

Student Learning Objectives

- Be able to understand, explain, and apply fundamental concepts in complex analysis:
  - Working with functions over a complex variable
  - Differentiation of complex functions
  - Integration of complex functions
  - Series expansions of complex functions
  - Singularities of complex functions
  - Branch points of complex functions

Question: Will we see applications in this class?
Answer: We'll see that applications exist and may even touch on a couple of them, but this is primarily a pure math class.

Tentative Course Outline

Chapter 1	• Complex numbers • Working with complex numbers • Complex variables and complex functions. • Derivatives of complex functions • Continuity of complex functions
Chapter 2	• Analytic: What it means to be differentiable • Multivalued functions: we're not in Kansas anymore. • Integration and methods of integration
Chapter 3	• Sequences • Taylor series, Laurent series, and singularities
Chapter 4	• When integration meets singularities • When integration meets branch points • Fourier and Laplace transforms
Other material may be covered as time permits	

Important Dates

Last day to Drop Drop means the course is not on your record	January 19th
Test 1	February 24th
Test 2	March 24th
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	March 27th
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 current grade is above or below 60%. Please see me to verify your grade before withdrawing with a WF/WP.	April 14th
Test 3	April 24th, 25th, or 26th. (TBD)
Final Exam	Friday May 5th 1pm-4pm

Outside of class resources

- The Textbook
    - Description of material
    - Example problems
    - Exercise 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
- The Math Resource Lab
    - Study Area

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.

University required items that are identical on every UCA syllabus:

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.

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.