Course Information

Course Number:	Math 1496
Course Name:	Calculus I
CRN:	30664
Location:	MCS 111
Class Hours:	11:00am-11:50am MWF; 10:50-12:05pm TTh
Textbook:	Required: Calculus (Early Transcendentals 2nd ed.) by Brings, Cochran, and Gillett Optional/Supplemental: Calculus for Cats by Amdahl and Loats.
Prerequisites:	C or better in MATH 1390 and C or better in MATH 1392 OR C or better in MATH 1580

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
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.

Course Description

This course is required of all majors or minors in mathematics, chemistry, or physics. Topics include applications of the definite integral, techniques of integration, infinite series, conics, parametric equations, polar coordinates, vectors, and vector functions. This course is a prerequisite for Calculus III and most of the upper division mathematics courses.

Course Objectives and Requirements

The primary objective in this course is to develop the theory and computational skills for the three main topics in calculus:

- Limits
- Derivatives
- Integrals

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 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 participation 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 one problem presentation every three weeks, approximately.
- Homework problems will be assigned on a weekly basis. If you are absent from class for any reason, the homework from that entire week must be turned in on the upcoming Monday. If you were in class each day, you automatically receive full marks for the homework.

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:

- Evaluate limits algebraically.
- Evaluate derivatives using basic rules.
- Evaluate limits, continuity, and derivatives graphically.
- Use concepts from calculus to locate extrema over a closed interval.
- Evaluate antiderivatives, integrals, and definite integrals using basic rules.
- Use definite integrals to find areas of given regions.

Algebra Review

Algebra is the mathematical foundation on which calculus is built. We cannot do calculus without doing even more algebra. In fact, it is said that most students that fail calculus do so because of the algebra, not the calculus. As such if you make algebra mistakes you may be assigned additional algebra homework to complete.

Tentative Course Outline

Chapter 1	Functions • Review of Functions • Representing Functions • Inverse, Exponential, and Logarithmic Functions • Trigonometric Functions and Their Inverses
Chapter 2	Limits • The Idea of Limits • Definitions of Limits • Techniques for Computing Limits • Infinite Limits • Limits at Infinity • Continuity • Precise Definitions of Limits
Chapter 3	Derivatives • Introducing the Derivative • Working with Derivatives • Rules for Differentiation • The Product and Quotient Rules • Derivatives of Trigonometric Functions • Derivatives as Rates of Change • The Chain Rule • Implicit Differentiation • Derivatives of Logarithmic and Exponential Functions • Derivatives of Inverse Trigonometric Functions • Related Rates
Chapter 4	Applications of the derivative • Maxima and Minima • What Derivatives Tell Us • Graphing Functions • Optimization Problems • Linear Approximation and Differentials • Mean Value Theorem • L'Hospital's Rule • Newton's Method • Antiderivatives
Chapter 5	Integration • Approximating Areas under Curves • Definite Integrals • Fundamental Theorem of Calculus • Working with Integrals • Substitution Rule
Chapter 6	Applications of integration • Velocity and Net Change • Regions Between Curves • Volume by Slicing • Volume by Shells • Length of Curves • Surface Area • Physical Applications (Maybe) • Logarithmic and Exponential Functions Revisited (Maybe) • Exponential Models (Maybe) • Hyperbolic Functions (Maybe) • Definitions of Limits (Maybe)

Important Dates

Last day to Drop Drop means the course is not on your record	January 19th
Test 1	February 16th
Test 2	March 16th
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 25th
Final Exam	Thursday May 4th 11am-1pm

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 (Fall 2016)
    - 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 10 class meetings throughout the term, you will 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.

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.