Course Information

Course Number:	Math 1496
Course Name:	Calculus I
CRN:	29235
Location:	MCS 104 / MCS 220
Class Hours:	1pm-1:50pm MWF in MCS 220 12:15-1:30pm TTh in MCS 104
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
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Phone:	501-450-5652

Course Description

As a prerequisite for nearly all upper-division mathematics, this course is a requirement for majors and minors in mathematics and other majors in the natural sciences and engineering. The content includes the study of limits, continuity, derivatives, integrals, and their applications.

Office Hours

My availability changes every day. Go to the website below for up to date availability. When you schedule an appointment, please specify what you're coming for.

Walk-ins are also welcome: if my office door is open, I'm available. However, if somebody with an appointment comes, they will receive priority.

Office Hours Website: https://ucamath.youcanbook.me/

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

- **Make Ups**
  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**
  Borderline grades will be determined based on the final exam and/or the quality of your work throughout the course.

- **Oral Problem Presentations**
  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**
  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.

- **Activities**
  Activities are given most Tuesday and Thursday meetings. Most activities will be worksheets due that day at the end of class.

- **Algebra Review Projects**
  As we progress through the material, we'll find that calculus relies heavily on algebra (and to some extent trigonometry). As we require certain algebra skills, we'll have review quizzes. Students falling below 85% on these quizzes will be required to complete a review project on that content.

- **Test Average**
  In order to pass the course, your test average or final exam must itself be passing ($\geq 60\%$).

Test 1	15%
Test 2	15%
Test 3	15%
Quizzes & Activities	10%
Oral Problem Presentations	10%
Homework	7%
Algebra Review	3%
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.

Tentative Course Outline

Chapter 1 (Review on your own if necessary)	**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 (Maybe) • 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 18th
Test 1	Thursday, February 15th
Test 2	Thursday, March 15th
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	March 30th
Test 3	Tuesday April 24th
Final Exam	Tuesday May 1st 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/.
- Previous course materials
    - http://faculty.uca.edu/jbeyerl/courses.html
- The Math Resource Lab
    - Study Area
    - Tutors available throughout the day
- Academic Success Workshops (every Tue at Xperiod)
    - http://uca.edu/studentsuccess/academic-success-workshops/
- Online Success Workshops (reading strategies, note-taking skills, test prep, etc!)
    - http://uca.edu/studentsuccess/academic-success-workshops/
- Peer Coaching (time management skills, study skills, motivation!)
    - http://uca.edu/studentsuccess/successcoaching/
- Communication Skills (oral and written)
    - http://uca.edu/cwc/

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.