Course Information

Course Number:	Math 4362/5362
Course Name:	Advanced Calculus I
CRN:	12357 & 12316
Location:	MCS 212
Class Hours:	2:40-3:55pm (Tuesday and Thursday)
Textbook:	Advanced Calculus (2nd edition) by Fitzpatrick
Prerequisites:	Math 2471

Instructor Information

Name:	Dr. Jeffrey Beyerl
Office Location:	MCS 231
E-mail:	jbeyerl@uca.edu
Phone:	501-450-5681

Course Description

This course is required for mathematics majors and serves a mathematics elective for applied mathematics majors. This rigorous theoretical treatment of calculus includes completeness, compactness, connectedness, sequences, continuity, differentiation, integration, and series. Lecture format and problem solving.

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.

To promote social distancing, office hours will use Google Meet by default. If you desire to come in person, you must request it when booking an appointment, properly wear a mask, maintain 6 feet of separation, and wash your hands or apply hand sanitizer shortly before arriving.

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

Course Objectives and Requirements

After completing this course, a student will be able to write complete proofs and to do some abstract problem solving in elementary mathematical analysis. Besides the intrinsic importance of the actual subject, the study of advanced calculus instills habits of thought that are essential for proper understanding of many areas of pure and applied mathematics.

Student Learning Objectives

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

- Present rigorous definitions of limits, continuity, uniform continuity, and derivatives,
- Understand the concepts of convergence and divergence of a sequence.
- Understand the supremum and infimum of a set of numbers.
- Apply the completeness axiom on the set of real numbers.
- Construct epsilon-N and epsilon-delta proofs.
- Apply the Extreme Value Theorem, Intermediate Value Theorem, And Mean Value
- Theorem to prove simple results.

Grading Policy

- **Homework**

  Homework problems will be assigned on a weekly basis. Completing the homework will be on the honor system: you will need to self-report through Blackboard what you have completed. Homework will be plentiful. Do them – and other problems that aren't assigned because you need to work problems to develop the proper mathematical intuition.

- **Tests**

  All tests are written full-class-length non-calculator tests. Each one is cumulative.

  Test scores will be reported as a percentage. The point-value assigned to tests will be determined at the end of the semester to make each test worth $23.\bar{3}\%$ of the course grade. The tests will utilize a benchmarking approach I've developed and will be different in structure than a typical test in a mathematics course.

- **Project – Upper Division Capstone Assessment Tool**
  - Projects will be marked by the instructor as part of the course grade and in years that we are assessing, given to a university assessment committee as part of the upper division core assessment.
  - Timeline
    - Topics must be selected and approved by the 6th week.
      (A group may select its own topics or get a topic from the instructor).
    - Outline of the paper must be presented to the instructor by 8th week.
    - First Draft must be presented by 10th week.
    - Presentation and final draft of the paper 12th week.
  - Guidelines for organization of the paper
    - Introduction
    - Context
    - Main points of the paper
    - Concluding remarks
    - Bibliography

Important Dates

Last day to Drop Drop means the course is not on your record	August 26th
Test 1	September 24th
Project Topic Selection Due	October 4th
Project Outline Due	October 18th
Test 2	October 22nd
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	November 6th
Project First Version Due	November 8th
Test 3	November 19th
Project Video Presentation Due	Thursday, December 3rd
Project Final Version Due	Thursday December 10th, 4pm
Project Peer Review Due	Thursday December 10th, 4pm
Late work for reduced credit Due	Thursday December 10th, 4pm

Outside of class resources

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

Late Work

Last assignments and online activities may be turned in late for a 20% penalty. They will be kept by the instructor until the end of the semester; at the end of the semester if there is a chance they can affect your course letter grade, they will be graded.

Expected Study Time

A good rule of thumb is that to be successful in a college course, you should work on your own two hours for every one hour of lecture. This course has 3 credit hours, so you should plan on studying 6 hours per week for this course. If you are well prepared you may need to study less; if you are not well prepared you may need to study more. If this is your first semester in college, please experiment with different study techniques throughout the course of the semester to figure out what works best for you. You can schedule a study technique consolation during office hours if you would like assistance developing a study plan.

Excused Absences

If you are part of an organization that includes official university trips, you will be excused from each day that you are on travel as long as you contact me each time to make arrangements for any missed work. It is your responsibility to make arrangements to make up any missed work before you leave for the trip. If you are going to miss a test or quiz, you must contact me approximately one week beforehand to make arrangements for the make-up, preferably by email.

For personal emergencies, you should contact me when it is safe and reasonable to do so, include documentation of the emergency. At his discretion, the instructor may choose to administer a make-up, issue a zero, or use the final exam to replace the missing test or quiz.

VERY IMPORTANT DO NOT COME TO CLASS IF YOU THINK YOU MIGHT BE SICK. If you have a fever or persistent cough or other coronavirus symptoms, take the appropriate recommended action. E-mail me when you are able to, we will make accommodations for you to be able to complete anything you miss on your own or at a later date.

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.

Pandemic Adaptation

- All students are expected to comply with the University policy regarding face coverings.
  In particular, as of the start of the semester, this means that all students should wear a mask or face covering during class that covers their mouth and nose. I plan to wear a mask during class sessions as well.
- Our course is thankfully small enough that we fit in our classroom even allowing for social distancing.
- DO NOT COME TO CLASS IF YOU THINK YOU MIGHT BE SICK. If you have a fever or persistent cough or other coronavirus symptoms, take the appropriate recommended action. E-mail me when you are able to, we will make accommodations for you to be able to complete anything you miss on your own or at a later date.
- MCS Building Specifics:
  - Doors for the restrooms, and department suite should be propped during business hours times to minimize contact.
  - Social distancing should be a priority at all times. Students should use first floor atrium and other designated places on the 2nd and 3rd floors to wait for classes while maintaining social distancing. Seating in the common spaces is intended for single

occupancy. Only one person at a time should be seated at any table, chair, or bench. People who live together may sit together, but should remain socially distanced from all others. No congregations allowed in the hallways.

- o The schedule for cleaning and sanitation in the building has been revised to increase their frequency. Everyone should use the provided wipes to clean any space before using it. Example: Wipe down a table and chair in the lobby before sitting there to do homework.
- o Once seated, students should remain in their seats for the duration of the class session. Activities or moving into groups are not allowed.
- o If a student does not have a class in the building immediately after yours, ask them to leave the building.
- o On each floor, those who are walking down the hall toward the restroom/elevator, use the right side of the hallway. Others walk on the left side to have an orderly flow.
- o No food or drinks in classrooms.
- o Everyone will use the designated entry and exit doors for the building.
- o To limit disruption and physical contact, seats near the entry door of the classroom will be reserved for students who arrive late.