

MA 540-VT Advanced Calculus I

Fall 2025

Instructor: Zoran Grujic

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Office: UH 4051

Lectures: MW 15:35 – 16:50, UH 4004

Office hours: W 13:15 – 14:45, UH 4051

Exams: an in-class midterm on Wednesday, October 15 and a take-home final to be posted on December 3 and turned in on December 5

Homework/Presentations: homework problems will be posted on Canvas and solutions either presented in class or turned in as a hard copy (mostly the former)

Grade: homework/presentations 35%, midterm 30% and the final 35%

Learning Outcomes: Upon successful completion of the 540/541 sequence, the students will be able to:

- (i) write rigorous mathematical proofs
- (ii) present rigorous mathematical arguments to their peers
- (iii) independently peruse mathematical texts
- (iv) more efficiently attack complex problems requiring sophisticated analytical reasoning, regardless of the area

Text: *Understanding Analysis*, 2nd ed by Stephen Abbott, Springer

MA 540 will cover the Real Numbers, Sequences and Series, Basic Topology of the Real Line, and Functional Limits and Continuity, while MA 541 will cover the Derivative, Sequences and Series of Functions, and the Riemann Integral (the topics correspond to the chapters in the text).

In comparison to 440/441 sequence, 540/541 sequence will have several additional assignments requiring a higher level of mathematical maturity.

Divisive Concepts Statement

All University faculty, instructors, and teaching staff have the academic freedom to explore, discuss, and provide instruction on a wide range of topics in an academic setting. This class may present difficult, objectionable, or controversial topics for consideration but will do so through an objective, scholarly lens designed to encourage critical thinking. Though students may be asked to share their personal views in the academic setting, no student will ever be required to assent or agree with any concept considered “divisive” under Alabama law, nor penalized for refusing to support or endorse such a concept. All students are strongly encouraged to think independently and analytically about all material presented in class and may express their views in a time, place, and manner consistent with class organization and structure, and in accordance with the University’s commitment to free and open thought, inquiry, and expressions.

Shared Values Statement

Collaboration, integrity, respect, and excellence are core values of our institution and affirm what it means to be a UAB community member. A key foundation of UAB is diversity. At UAB, everybody counts every day. UAB is committed to fostering a respectful, accessible, and open campus environment. We value every member of our campus and the richly different perspectives, characteristics, and life experiences that contribute to UAB’s unique environment. UAB values and cultivates access, engagement, and opportunity in our research, learning, clinical, and work environments. Arts & Sciences aims to create an open and welcoming environment and to support the success of all UAB community members.

Title IX Statement

In accordance with Title IX, the University of Alabama at Birmingham does not discriminate on the basis of gender in any of its programs or services. The University is committed to providing an environment free from discrimination based on gender and expects individuals who live, work, teach, and study within this community to contribute positively to the environment and to refrain from behaviors that threaten the freedom or respect that every member of our community deserves. For more information about Title IX, policy, reporting, protections, resources, and supports, please visit the [UAB Title IX webpage](#).