MA 648-1D Complex Analysis

Fall 2025

Instructor: Zoran Grujic

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Office: UH 4051

Lectures: MWF 11:15 – 12:05, UH 4002

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

Exams: a two-hour in-class final exam 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

Grade: homework/presentations 50% and the final exam 50%

Learning Outcomes: Upon successful completion of MA 648, the students will be able to:

(i)   design rigorous mathematical proofs in the realm of complex analysis
(ii)   present it to their peers in a streamlined fashion
(iii)   accumulate a critical mass of working complex analysis knowledge enabling them to successfully pursue various applications of complex function theory in pure mathematics, applied mathematics and mathematical physics

Text: *Function theory of one complex variable*, 3rd ed. by Robert E. Greene and Steven G. Krantz, American Mathematical Society Graduate Studies in Mathematics

MA 648 will cover the first eight chapters in the text in detail: Fundamental Concepts, Complex Line Integrals, Applications of the Cauchy Integral, Meromorphic Functions and Residues, The Zeroes of a Holomorphic Function, Holomorphic Functions as Geometric Mappings, Harmonic Functions and Infinite Series and Products. Time permitting, additional toppings will be sampled from the remaining chapters.

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](#).