

# Math 542: Complex Variables I

## Fall 2018

**Instructor:** Florin P. Boca

Office: 371 Altgeld Hall

Office hours: Mo 4-5 pm, Wed 1-2 pm

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**Lectures:** MWF 12:00-12:50 pm, 443 Altgeld Hall

**Course description:** This is the core graduate course in Complex Analysis, covering (at least) the following topics:

- *Elementary properties of holomorphic functions. Elementary conformal mappings.*
- *Laurent series. Classification of isolated singular points.*
- *Harmonic functions. The Poisson integral and the mean value theorem.*
- *The maximum modulus principle.*
- *Zeros of holomorphic functions.*
- *Infinite products. The Weierstrass factorization theorem.*
- *Approximation by rational functions. The Runge and the Mittag-Leffler theorems.*
- *The Ascoli-Arzela theorem. Normal families. The Riemann mapping theorem.*

**Prerequisite:** MATH 446 and MATH 447, or MATH 448, or equivalent.

**Textbook:** There is no required textbook. Recommended textbooks include:

- W. Rudin, Real and Complex Analysis.
- J. B. Conway, Functions of One Complex Variable Vol.I.
- B. Palka, An Introduction to Complex Function Theory.

**Grading policy:** Comprehensive final exam: 40%; Two midterm exams:  $2 \times 20 = 40\%$ ; Homework: 20%.

**Exam calendar:** 1st midterm: Monday, Oct 8; 2nd midterm: Monday, Nov 12; final exam: Friday, Dec 14, 1:30-4:30 pm.