Syllabus: MAA 4402/5404 — Introduction to Complex Analysis

Summer A 2025, University of Florida Instructor: Cheng Yu Email: chengyu@ufl.edu Office: LIT306 Office Hours: MW10:40-12:10 am or by appointment

Course Information

- Time and Location: M-F, Period 4 (12:30 PM 1:45 PM), [LIT205]
- Credits: 3
- **Prerequisites**: MAC 2313 (Calculus 3) or MAC 3474 (Honors Calculus 3), and MAP 2302 (Differential Equations), both with a minimum grade of C.
- **Textbook**: Complex Variables and Applications, 9th Edition, by Brown and Churchill, McGraw-Hill, 2013. (Recommended, not required)
- Course Dates: May 12, 2025 June 20, 2025 (No class on May 26, Memorial Day)

Course Description

This course provides an introduction to the theory of functions of a complex variable. Topics include:

- Complex numbers and their algebraic properties
- Analytic functions and the Cauchy-Riemann equations
- Harmonic functions
- Elementary functions (exponential, logarithmic, trigonometric)
- Complex integration, Cauchy-Goursat theorem, Cauchy integral formula
- Infinite series, Taylor and Laurent series
- Residues and poles
- Conformal mappings

Note: Credit will be given for at most one of MAA 4402 or MAA 5404.

Course Objectives

By the end of the course, students will be able to:

- Understand the geometry and algebra of complex numbers
- Analyze properties of analytic and harmonic functions
- Apply complex integration techniques, including Cauchy's theorems
- Work with power series and Laurent series expansions
- Compute residues and apply them to evaluate integrals
- Understand and apply conformal mappings

Grading Policy

- Homework: 30% (Weekly assignments)
- Quizzes: 20% (Short in-class quizzes)
- Midterm Exams: 30% (Two exams, 15% each, tentative dates: May 28 and June 11)
- Final Exam: 20% (Comprehensive, June 20, 2025)

Grading Scale:

Percentage	Grade
90-100	А
85 - 89	A-
80-84	B+
75 - 79	В
70 - 74	B-
65 - 69	C+
60 - 64	\mathbf{C}
55 - 59	C-
50 - 54	D
0 - 49	Ε

Course Policies

• Attendance: Expected but not graded. Absences during exams require prior approval or documented emergencies.

- **Homework**: Assigned weekly, due at the start of class. Late submissions are not accepted.
- Quizzes: Short, announced quizzes to reinforce concepts. No make-ups unless excused.
- **Exams**: No make-ups without prior approval or documented emergencies. Calculators and formula sheets are not allowed.
- Academic Honesty: All work must be your own. Violations (e.g., plagiarism, cheating) will result in a zero for the assignment/exam and may be reported to the Dean of Students.
- Accommodations: Students with disabilities requiring accommodations must register with the Disability Resource Center and provide documentation.

Tentative Schedule

Week	Topics
May 12–16	Complex numbers, algebra, geometry, polar form
May 19–23	Analytic functions, Cauchy-Riemann equations, harmonic functions (Midterm 1: May 2
May 27–30	Elementary functions, complex exponential, logarithm
June 2–6	Complex integration, Cauchy-Goursat theorem, Cauchy integral formula
June $9-13$	Taylor and Laurent series (Midterm 2: June 11)
June 16–20	Residues, poles, conformal mappings, review (Final Exam: June 20)

Note: No class on May 26 (Memorial Day).

Additional Resources

- Office Hours: Available for questions and clarification.
- **Online Resources**: Course materials, including homework and solutions, will be posted on Canvas.
- **Tutoring**: Check the University of Florida's Teaching Center for math tutoring support.

University Policies

- Academic Honesty: Adherence to the university's honor code is mandatory. See https://sccr.dso.ufl.edu/policies/student-honor-code/.
- Accommodations: Contact the Disability Resource Center at https://disability.ufl.edu/.

• Evaluations: Students are expected to provide feedback via course evaluations at https://gatorevals.aa.ufl.edu/.