MATH 4353
Complex Analysis
Spring 2019

Instructor: Dr Scott Gordon

Office: 212 Boyd (678-839-4134)

E-mail: sgordon@westga.edu

Time and Location: MWF 9:55–10:45 (107 Pafford)

Office Hours: 8:30–9:30, 11:00–12:00 MWF, or by appointment.

Textbook: *Complex Variables and Applications (9th ed)* by James W. Brown and Ruel V. Churchill. We will cover parts of Chapters 1–7.

Course Description: A study of the theory of complex functions and their applications, including analytic and elementary functions, derivatives, contour integrals, the Cauchy Integral Theorem, Laurent series, and the theory of residues.

Homework Exercises: Problems assigned after each lesson will be divided into two categories: exercises and turn-in problems. Exercises will not be graded and are designed to help you understand the important concepts and prepare for the tests.

Turn-in problems: There will be approximately 200 points worth of turn-in problems assigned during the semester. Your work should include a clear and complete explanation of how you solved the problem and (in accordance with university's honor code) cite any outside sources. If a problem is turned in late, 50% of its point value will be deducted from your grade for each day past the due date.

Tests: There will be four tests during the semester worth 80 points each.

Rescheduling a tests: If you have a valid reason for missing a test, you may be allowed to reschedule, but you must make arrangements with me *in advance*.

Final: There will be a *cumulative* final exam worth 160 points on Wednesday, 5/1, 8:00am–10:00am.

Grading: Your numerical grade will be your total points (on homework, tests, and the final) as a percentage of the total number of possible points. Your letter grade will be determined according the following grading scale: A: 88–100, B: 76–87, C: 64–75, D: 52–63, F: 0–51.

Withdrawal: February 27 is the last day to withdraw from the course with a grade of W.

Learning Outcomes: The student will be able to

1. Perform algebraic operations with complex numbers in standard and exponential form and relate those operations to the geometry of complex numbers.
2. Derive properties of complex numbers from basic algebraic properties.
3. Relate the differentiability of a complex function to the Cauchy-Riemann equations.
4. Differentiate and antidifferentiate elementary analytic complex functions.
5. Compute contour integrals of complex functions.
6. Represent analytic functions as power series and use series to derive important properties of analytic functions.
7. Apply Cauchy's Theorem and the Cauchy Residue Theorem to compute contour integrals.
8. Apply the properties of residues and contour integrals to evaluate real definite integrals.