

Math 4364
Theory of Complex Variables
Fall 2007

Instructor: Dr. Ryan C. Daileda

- Office: Marrs McLean Science Building (MMS), Room 115H
- Telephone: (210) 999-8265
- e-mail: rdaileda@trinity.edu
- URL: <http://www.trinity.edu/rdaileda>

Scheduled Lectures: MW 2:30 PM - 3:45 PM, Marrs McLean Science Building (MMS), Room 110

Office Hours: MW 4:00 PM - 6:00 PM, T 10:00 AM - 12:00 PM, F 1:00 PM - 3:00 PM, and by appointment

Textbook: *Basic Complex Analysis* (third edition) by Jerrold E. Marsden and Michael J. Hoffman

Course URL: <http://ramanujan.math.trinity.edu/rdaileda/complex>

Prerequisites: Math 2326 (Introduction to Abstract Mathematics) and Math 3336 (Differential Equations and Linear Algebra).

Course Content: To a certain extent, complex analysis is the generalization of the ideas of calculus to complex-valued functions of a complex variable. As in calculus, in this course we will consider the visualization, differentiation and integration of such functions. While we will certainly make use of what we know about functions of real variables, we will quickly see that the main results of complex analysis are not simply those of real analysis with x 's and \mathbb{R} 's replaced by z 's and \mathbb{C} 's (which is fortunate since otherwise we'd be pretty bored for an entire semester!). Topics will include: the arithmetic of complex numbers; analytic functions; the Cauchy-Riemann equations; harmonic functions; contour integration; Cauchy's theorem; Cauchy's integral formula; the maximum modulus principle; series representations; singularities of functions; the calculus of residues; and the use of the theory of residues in the evaluation of *real* integrals and series. Time permitting, we may also touch on additional aspects of the theory, such as conformal maps (fractional linear transformations in particular), analytic continuation, the argument principal and mapping properties of analytic functions. For a more detailed list of topics, you can consult the schedule of lectures on the course web page.

Homework: Homework will be assigned daily and will consist of reading as well as problem solving. All assignments will be posted on the course homework web page. Reading assignments are to be completed daily while written work will typically be turned in once a week. Due dates for written work will be clearly indicated as the work is assigned. **Late homework will not be accepted in the absence of divine intervention or matters of similar weight. Unexcused late and missing papers count zero.**

Homework exercises are to be written *neatly* using *one side* of 8.5×11 inch paper, and multiple pages should be stapled or paper-clipped together. Do not use paper from a spiral notebook unless you can tear off the ragged edge. **Failure to adhere to these guidelines will be penalized. Sloppy work and work written on the backs of pages will not be graded!**

Collaboration on homework assignments is permitted and encouraged, but **NO COPYING**. In other words, you should feel free to talk to other students while you are in the process of thinking about a problem. However, when it comes time to write up your solution, you should do this by yourself without outside assistance.

Exams: There will be two midterm exams during the semester as well as a cumulative final exam held during the scheduled exam period. The dates and times for the exams are as follows:

First Midterm Exam	October 3, in class
Second Midterm Exam	November 7, in class
Final Exam	December 8, 8:30 - 11:30 AM

If you have a legitimate conflict with these exam times, contact me as soon as possible. Please do not wait until shortly before the exam. Be aware that **the final exam will not be given early to accommodate travel plans.**

No assistance of any kind is allowed on exams, except for resources that I may distribute with the tests. This means the use of books, notes, calculators, computers, PDAs, cell phones, etc. will not be permitted during exams. The only things you need to bring with you on the day of any exam are a pencil, an eraser and a positive attitude.

Grades: Your course grade will be based upon the scores on the homework, midterm exams, and the final exam as follows:

Homework	200 points
Midterm Exams (2)	100 points (each)
Final Exam	200 points
Total	600 points

Expectations: I expect each student to invest at least 3 hours of work and thought outside the classroom for every hour of lecture. Even though written work will only be collected once a week, **you are strongly encouraged to keep up with reading and problems as they are assigned.** I have no sympathy for students who routinely save all of their work for the night before it is due.

Attendance: Attendance is highly encouraged but is not mandatory. Roll will not be taken, but excessive absences should be explained to me.

Academic Integrity: All students are covered by a policy that prohibits dishonesty in academic work. The Academic Integrity Policy (AIP) covers all students who entered Trinity before the fall of 2004. The Academic Honor Code covers all those who entered the fall of 2004 or later. The Integrity Policy and the Code share many features: each asserts that the academic community is based on

honesty and trust; each contains the same violations; each provides for a procedure to determine if a violation has occurred and what the punishment will be; each provides for an appeal process. The main difference is that the faculty implements the AIP while the Code is implemented by the Academic Honor Council. Under the Integrity Policy, the faculty member determines whether a violation has occurred as well as the punishment for the violation (if any) within certain guidelines. Under the Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified. Students who are under the Honor Code are required to pledge all written work that is submitted for a grade: "On my honor, I have neither given nor received any unauthorized assistance on this work" and their signature. The pledge may be abbreviated "pledged" with a signature.

Special Needs: If you have a documented disability and will need accommodations in this class, please speak with me privately early in the semester so I may be prepared to meet your needs. If you have not already registered with Disability Services for Students, contact the office at 999-7411. You must be registered with DSS before I can provide accommodations.