
Complex Analysis

Math 214 Spring 2004
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Fowler 112 MWF 3:30pm - 4:25pm
<http://faculty.oxy.edu/ron/math/312/04/>

INSTRUCTOR Ron Buckmire ~ Fowler 320 ~ x2536 ~ ron@oxy.edu ~ **Buckmire2536**

OFFICE HOURS I am almost always in my office (Fowler 320) until at least 5pm. My official office hours for Spring 2004 are **MWF 1-2pm, R 1-3pm and W 11a-12pm**.

I am readily accessible by e-mail at ron@oxy.edu and by phone at **323-259-2536** and AIM at **Buckmire2536** If you need to see me at a time not specified here, then contact me and make an appointment and I'll be happy to meet with you then.

TEXTBOOK *Fundamentals of Complex Analysis (with Applications to Engineering and Science)*, by Saff and Snider, 3rd Edition (2003), Prentice Hall.

WEBSITE <http://faculty.oxy.edu/ron/math/312/04/>

NATURE OF THE CLASS The main goal of the course is for you to learn different aspects of complex analysis. I shall be teaching the course with an idea towards how complex variables are used to solve real-world or physical problems in other disciplines. We shall be covering topics such as elementary and analytic functions of a complex variable, contour integration, conformal mapping, Laurent and Taylor series, and residues and their applications.

FORMAT OF THE CLASS I believe strongly in collaborative learning. This will be an integral part of the class. I predict that you will learn the most from the weekly quizzes and homework sets. I expect that every single student will have met with me in my office *at least* once and probably a dozen times, by the end of the semester. *Complex Analysis* is not a class that you can “do well” on your own. I also believe that students should be able to explain the mathematics they are learning, in both written and oral form. Thus, everyone in the class will have to give an oral presentation before the class detailing the answer to a homework or quiz question at least once throughout the semester. In addition, you will probably be explaining details of complex analysis to each other as you do the problem sets.

GOALS OF THE CLASS The goal of the class is that you gain an appreciation for and dexterity with, complex variables. And to have fun doing it! Complex variables was my favorite class when I was an undergraduate, and I hope to make *Complex Analysis* yours. Specifically, by the end of the class you should feel comfortable

- manipulating complex numbers as well as you manipulate real numbers
- solving equations containing complex variables
- differentiating and integrating functions of a complex variable
- constructing mappings from one 2-D region to another
- calculating Residues to evaluate improper integrals

among other skills.

TESTS There will be **three (3)** exams in this course. To be precise, two tests and a final exam. The tests are scheduled for

- TEST 1: Friday, March 5, 2004
- TEST 2: Friday, April 23, 2004
- FINAL : Thursday, May 6, 2004 (1pm-4pm)

Of course, these dates are subject to change (with at least one week's notice). It should be noted that students generally think that my tests are too hard.

QUIZZES There will be quizzes given every week. These quizzes will almost always be take-home, weekend quizzes given out on class on Friday to be handed in in class on Monday. They will consist of relatively simple homework problems which you work on by yourself and will be a way in which you can assure yourself you are keeping up with the course.

HOMEWORK Homework should be done in **pencil**. Homework will be assigned in PROBLEM SETS due every two weeks or so. You are **strongly** encouraged to work on the homework together. However, whatever you hand in must represent your own understanding of the material. Copying homework is cheating and will be dealt with accordingly.

TERM PROJECT I will provide more information about the term project later in the semester. It will probably consist of either a 5-paged written presentation or a 15-minute oral presentation (your choice) which describes some topic involving complex variables which is of interest to the student. You could choose to write about a particular interesting question on a quiz or problem set, write a computer program or talk about an application of complex variables to some other field. The point is to communicate to me that at least one topic covered in the class was interesting enough to write about, and why. There are examples of previous student projects in *Complex Analysis* on the web.

GRADES Your course grade will be composed of the following:

- Two (2) Tests **20%**
- Final Exam **20%**
- Quizzes and Problem Sets **40%**
- Class Participation & Oral Presentation **10%**
- Term Project **10%**

OTHER NOTES We will not have class on Monday February 16 (Presidents Day), March 15-19 (Spring Break). I will let you know at least a week ahead of time if there may be other days off.

ON-LINE MATERIALS I have set up a web page for the course, where the official version of this syllabus and all class materials will be available. The URL is <http://faculty.oxy.edu/ron/math/312/04/>. Also there is a class mailing list, which all students are on, at math312-L@oxy.edu.

In addition, we will be using the Blackboard online course management system where student can obtain their course documents and grade information, at <http://blackboard.oxy.edu>.