Math 185: Introduction to Complex Analysis

MWF 3-4, Room 4 Evans

Lecturer: Dr. Martin Olbermann
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Course Webpage: http://math.berkeley.edu/∼olber/185/index.html
GSI: Emily Peters, Office Hours in 891 Evans: Mon, Tu 12:30pm-5:30pm
Textbook: Donald Sarason: Notes on Complex Function Theory, Henry Helson
The Sarason text is concise and without many figures or worked examples, so you are encouraged to look also at at least one other text, such as one of the following:

- Stewart and Tall, Complex analysis, Cambridge University Press.
- Lang, Complex analysis, Springer-Verlag.
- Brown and Churchill, Complex Variables and Applications, McGraw-Hill
- Bak and Newman, Complex Analysis, Springer Verlag

I put Stewart & Tall's book and Lang's book on reserve - they should be available in the Moffatt Library.

Course outline:
This is a standard introduction to the theory of analytic functions of one complex variable. The main topics are contour integration, Cauchy's Theorem, power series and Laurent series expansions of analytic functions, classification of isolated singularities, and the residue theorem with its applications to evaluation of definite integrals. If time permits, we will also discuss the argument principle and Rouché's Theorem, analytic continuation, harmonic functions, and conformal mapping (including fractional linear transformations).
A rough outline: We will cover most of chapters I (1 week), II (1 week), V (2 weeks), IV (1 week), VI (1 week), VII (2 weeks), VIII (1 week), IX (2 weeks) and X (2 weeks) of Sarason's book.
Homework:
will be assigned every week on Wednesdays and posted on the course website. Homework assignments are due the following Wednesday, in class. No late homework will be accepted. Proofs and explanations should be written using proper English grammar. You may discuss the problems with your classmates (I encourage you to do that!), but your written solutions must be your own. Don't forget to write your name and the course number (Math 185) in the right corner of the front page. Your lowest homework score will be discarded.
Exams:
Midterm 1: Feb. 20, in class. Midterm 2: Apr. 14, in class.
Final Exam: May 19, 5-8 pm. (No make-up exam!)
Grading:
Homework 20%, Midterm 1: 20%, Midterm 2: 20 %, Final: 40 %.