

Math 526
Complex Variables
Fall 2007 (MW 3:40-4:55pm, MG 120)

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Office Hours: MTuW 12:35-2:00pm, or by appointment, or whenever I'm free

Text: Ablowitz and Fokas, *Complex Variables, Introduction and Applications*, 2nd Edition, Cambridge University Press.

Course webpage: <http://math.boisestate.edu/~wright/courses/m526/>

Course description and outline: The following topics will be covered in roughly the order listed:

1. Review the fundamentals of complex variables: complex numbers, functions of a complex variable, contour integration, Cauchy theorems, infinite series, analytic continuation, singularities, and residue calculus.
2. Generalized Cauchy theorem, infinite products, Mittag-Leffler theorem, differential equations in the complex plane, Fourier/Laplace transforms.
3. Conformal mappings with applications, Riemann mapping theorem, basics of Schwarz-Christoffel transformations.
4. If time permits, we will also discuss asymptotic expansions.

These topics roughly cover Chapters 1-5 of the book as well as some additional notes I will provide.

Prerequisites: It is not absolutely necessary for you to have had a previous complex variables course. You should, however, have knowledge of the following topics is required:

- Single and multivariable calculus
- Ordinary and partial differential equations.

Homework: Homework is assigned on a weekly basis and is posted on the course webpage on Tuesdays or Wednesdays and is due the following Wednesday **at the end of class**. Late homework is accepted up to 2 days after the due date for half the credit.

Collaboration: Collaboration is part of the real world and therefore permitted for all homework assignments, BUT NOT EXAMS. However, **each student is responsible for turning in their own written solutions to the problems**. Straight copying of another students work will result in a zero on that assignment for all parties involved.

Technology: You may find it helpful to use computer algebra software such as *Maple* and *Mathematica* to simplify some of the messy computations involved on the homework. However, on the work you turn in, it should be obvious how you could have obtained the result by hand. No software packages will be allowed on exams.

Grading policy: The final grade for the course is based on homework assignments, one midterm exam, a course project, and a cumulative final exam. The breakdown for the course grade is as follows:

- Homework: 50%

- Midterm (Wednesday, Oct. 17, 2007): 10%
- Final exam or course project (Wednesday, Dec. 19, 2007) at 5:30pm: 40%

Course project: Instead of taking the final exam, each student has the option of doing a course project consisting of a written report and an oral presentation. The topic should fall somewhat outside the scope of the topics covered. The project report and presentations will be due on the day of the final. More information will be given as the semester proceeds, however, you should start thinking of projects now.

Important dates:

- **Sept. 10** – last day to register; add classes; change from credit to audit or audit to credit; and last day to drop classes without a “W” and receive a refund.
- **Oct. 5** – last day to drop classes or completely withdraw.
- **Dec. 14** – Classes end
- **Dec. 20** – **Final exam, 10:30am-12:30pm**

Academic honesty: All students are expected to be familiar with and adhere to the policies and standards given in the BSU Student Code of Conduct (<http://www2.boisestate.edu/studentconduct/Student%20Code%20of%20Conduct.htm>)

Some quotes:

The complexity of complex variables is more imaginary than real. –An encouraging observation

The number you have dialed is imaginary. Please rotate your phone 90 degrees and try again. –A math joke

The shortest path between two truths in the real domain passes through the complex domain. –Jacques Hadamard