MATH-4300 Introduction to Complex Variables, Spring 2013

Instructor: Bruce Piper, Amos Eaton 309, piperb@rpi.edu, 276-6892, Office Hours: Tuesdays 10:00-1:00
Teaching Assistant: Jessica Jones, Amos Eaton 424, Office Hours: Tuesday and Wednesday 4:00-5:00

The Course Web Page will be at http://www.rpi.edu/~piperb/cv/
Check this for more information and throughout the semester for updates, office hours, etc.

Texts and Materials

- **Required** *Fundamentals of Complex Analysis with Applications to Engineering and Science* by Saff and Snider (Third Edition)
  
  Most students should find this book to be very complete and well written. I think that it has the right level of rigor for students who have little or no Mathematical Analysis background.

Difficulty Level and Prerequisites:

This course has a prerequisite of Multivariable Calculus and hence Calculus 1 and 2 as well. For this course, the most important topics from these courses are

- From Calculus 1: The Definition of the Derivative
- From Calculus 2:
  - Polar coordinates
  - Parametric Curves
  - Infinite series, especially power series.
  - The ratio test for convergence
  - The taylor series $e^x, \cos(x), \sin(x), \frac{1}{1-x}$ etc..
- From Multivariable Calculus:
  - Limits and continuity of functions of several variables
  - Line integrals

It will be anticipated that students will be familiar with these topics and review them as needed.

*****Prerequisite Quiz over this Material (worth 3% of course grade): Monday, January 28th

Course Objectives: The course will cover most of chapters 1-7 in the textbook.

Learning Outcomes: Students will demonstrate

- knowledge of the standard complex functions and how they are defined
- knowledge of the basic definitions and theorems in complex variables
- the ability to solve basic complex variable problems
- the ability to write coherent arguments and proofs
Activities: On most class days, there will be lectures with intervals for students to work on problems. You will need to read the book to complete your understanding.

Grades: All of the learning outcomes listed above will be assessed through the following assessments.

- 1 prerequisite quiz worth 3%
- 10 equally weighted homework assignments worth a total of 40%
- 3 equally weighted in-class exams worth a total of 57%
- 1 extra credit final worth 5%

The items above will be combined to form a number score for the course. Letter grades will be achieved as follows: 90% + is an A; 88%-90% is an A-; 85%-88% is a B+; 80%-88% is a B; 78%-80% is a B-; 75%-78% is a C+; 70%-75% is a C; 68%-70% is a C-; 65%-68% is a D+; 60%-65% is a D; 0%-59% is a F.

Grade Appeals: Appeals will be granted only if something has been overlooked. The appeal must be made within one week of the date the item is returned in class. It is important that you KEEP all the returned material for the entire semester as they may be needed for studying for the final exam, and they will be your only method for correcting any recording errors that may accidentally occur on my part.

Late Policies: Late homework is not accepted without a legitimate excuse. Missing an exam without a legitimate excuse results in a grade of zero and cannot be made up. To get an legitimate excuse, please contact the office of Student Experience: (See se.rpi.edu/policies/ea/ )

Academic Integrity: Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts, which violate this trust, undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities defines various forms of Academic Dishonesty and you should make yourself familiar with these. Exams and tests are to be done individually. You must ask me before you work or get help on the homework with someone other than myself or the TA or another student taking the class this semester. Before working with other students in this class, you must think over the problems on your own. After you have found relevant definitions and theorems and considered several possible approaches to solving a problem, you may work with others in the class. Before you write up your solutions you must separate and rethink and rewrite your assignments alone. You are not allowed to just copy from a shared set of notes. You are not allowed to copy from another person’s homework.

First violations will result in a grade of F on the material and a report to the Dean of Students. Subsequent offenses will result in failure in the class.

Exam Dates and Due Dates

Please check the web page for the complete daily schedule:

1. Prerequisite Quiz: Monday, January 28th
2. Homework will be due in class on Thursday of almost every week in which there is no exam.
3. In-Class Exam Dates:
   (a) Thursday, February 21st
   (b) Thursday, March 28th
   (c) Monday, May 2nd
4. Final Exam: As scheduled by the registrar.

All students must take the final exam as scheduled by the Registrar. Please make travel plans accordingly.

Please check the course web page frequently for homework assignments, exam study guides and other information.