410. Complex Analysis.

Professor: Robert Strain (strain at math DOT upenn DOT edu)
Professor office hours: Tuesday 10-11am
Professor office: DRL 3E5

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TA office hours: Fri 10:30-11:30am
TA office: DRL 4C15

Course Web Page: `http://www.math.upenn.edu/~strain/14ma410/`
Class schedule: TH @ 3:00 - 4:30PM in DRL A5.
First class, last class: August 28, December 9.

Textbook: "Complex Analysis" by Joseph Bak and Donald J. Newman (3rd Ed). This text is currently on reserve at the Math/Phys/Astro Library.

Brief course description: Complex numbers, DeMoivre's theorem, complex valued functions of a complex variable, the derivative, analytic functions, the Cauchy-Riemann equations, complex integration, Cauchy's integral theorem, residues, computation of definite integrals by residues, and elementary conformal mapping. Further topics such as the Riemann Mapping Theorem, special and harmonic functions might be covered, time permitting.

Prerequisites: Math 240 or its equivalent. Some knowledge of real analysis and writing proofs, such as the coursework in Math 360/508.

Homework: Weekly, posted on the courses Canvas website. Homework will be assigned on Fridays, and it will be due the following Friday at 4pm in your TA's mailbox. You will be allowed one week to complete each assignment. Collaboration between students is encouraged, but you must write your own solutions, understand them and give credit to your collaborators. (To be precise, put a list of the students with whom you collaborated on your homework.)

  Late homework will not be accepted.
  Your two lowest homework scores will be dropped.

Canvas: The class will make use of Canvas to post assignments, grades, announcements, etc. You will be responsible for checking Canvas regularly during the semester.

Exams: There will be three in class exams. Exam attendance is *manditory*; please make sure you can attend the exams *before* enrolling in the course. Make-up exams will only be administered for medical reasons with a doctor's note. Exams are closed-book and closed-notes. No calculators, computers, or smart phones are allowed.

    The first exam is on Tuesday, September 30. **Before drop deadline.**

    The second exam is on Tuesday, November 4. **Before withdraw deadline.**

    The third exam is on Tuesday, December 9 (which is the last day of classes). **Note that this exam dates were updated. Be sure you have the correct dates.**

Attendance and Course Notes: It is in your best interest to attend each lecture and take accurate notes. You will be tested on the material **as it is covered in class**. If you miss a lecture, make sure that you copy from a classmate and review the notes from that day.

Evaluation: Your final grade is based on your level of participation in class (10%), the homework (21%), as well as the in class exams (23% each).

Topics to be covered:

- Functions of the Complex Variable z (Bak-Newman Chapter 2)

- Analytic Functions (Bak-Newman Chapter 3)

- Line Integrals and Entire Functions (Bak-Newman Chapter 4)

- Properties of Entire Functions (Bak-Newman Chapter 5)

- Properties of Analytic Functions (Bak-Newman Chapter 6-7)

- Simply Connected Domains (Bak-Newman Chapter 8)

- Isolated Singularities of an Analytic Function (Bak-Newman Chapter 9)

- The Residue Theorem (Bak-Newman Chapter 10-11)

- Introduction to Conformal Mapping (Bak-Newman Chapter 13)

(The above topics are conditional on time constraints and subject to change.)