

Mathematics 3210: Complex Analysis – Fall 2009

Classrooms: HH 3017

Time: Tue, Thur 10:30 - 11:45 pm

Instructor: Dr. Margo Kondratieva

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Prerequisite:

The prerequisite is Math-3000.

Getting Help:

There are few ways of getting help. First, I'll have **office hours from 12:30pm-1:30pm on Thursdays**, so feel free to come to them. If you need to speak to me outside of those times please make an appointment. If you have a quick question or remark send me an e-mail.

Marking Scheme:

There will be an assignment almost every week which I'll usually hand out on Tue. They'll usually be due a week later on Tue in class or assignment box before 4pm. Late assignments will not be accepted. The **assignments** will be worth *only 20%* of your final mark, *but doing them is extremely important for your understanding and success in the course!*

There will also be **one midterm test on October 27**. The test will be worth **30%** of your final mark.

The **final exam** will cover the entire course. It will be worth **50%** of your final mark.

Note: If you miss an assignment or midterm for an acceptable reason, write me a note explaining the circumstances and I'll shift the weighting for the missed work to the final exam. Such notes should be submitted within a week of the missed event.

Missing the final exam is a much more serious matter. It can be deferred if you have three exams all scheduled within a 24 hour period, or if you suffer bereavement or serious medical problems. Deferrals must be officially applied for using forms that you can obtain from the General Office (HH-3003).

Formula Sheet and Calculators:

Graphing calculators such as the TI81,82,83,84,85,86 are allowed during tests and the final exam. However, calculators that can do symbolic manipulations such as the TI89, TI92, or HP48G are not allowed. If you use your calculator to store notes or formulas, you must delete this material before the start of any test, or exam. Bringing electronic notes into an exam is the equivalent of bringing in a cheat sheet, and will be dealt with in the same way (see MUN calendar).

Text and Course Outline:

The official text is Complex Variables and Applications by James Ward Brown and Ruel V. Churchill. We will cover chapters 1-6 and part of chapter 7 from the book. **You are advised to read an appropriate section and do as many exercises from the book as you can before starting doing your homework assignment.**

We'll cover the following material, which is organized into five units (the class schedule is tentative and may vary):

Unit 1	Complex Numbers	class
1.1	Arithmetic of complex numbers	Sept 10
1.2	Geometry of complex numbers	Sept 15,17
Unit 2	Analytic functions	class
2.1	Functions and mappings	Sept 22
2.2	limits and continuity	Sept 24
2.3	Derivatives	Sept 29
2.4	Conditions for differentiability	Oct 1
2.5	Analyticity	Oct 6
2.6	Examples: exp, log, trig, hyperbolic	Oct 8
Unit 3	Integrals	class
1.1	integral of complex-valued function of a real argument	oct 15
1.2	Contour integrals	Oct 20
1.3	Cauchy-Goursat theorem	Oct 22
	Test	Oct 27
1.4	Cauchy integral formula	Oct 29
1.5	Liouville's Th., FTh of algebra, max modulus principle	Nov 3
Unit 4	Power Series	class
3.1	Taylor series	Nov 5
3.2	Laurent series	Nov 10
3.3	Absolute and uniform convergence; continuity	Nov 12
3.4	Integration, differentiation, uniqueness	Nov 17
Unit 5	Residues, poles and applications	class
1.1	Cauchy's residue theorem	nov 19
1.2	Singular points	nov 24
1.3	Poles and zeroes	nov 26
1.4	Improper integrals	dec 1
1.5	Important examples	dec 3
	Review for final	Dec 4-8 TBA
	Final exams	Dec. 9-18 TBA