Instructor: Professor Stefen Hui, GMCS 523.
Office Hours: 845AM-925AM, 1230PM-130PM.

Prerequisites: Math 631A.
Text: Freitag and Busam, Complex Analysis, 2nd ed, Springer.
Homework: (50%) There will be 8 homework assignments and you must complete the assignments by yourself.
Midterm: (20%) There will be one midterm and it is tentatively scheduled for Thursday, March 27, 2014.
Final: (30%) 1PM-3PM, Tuesday, May 13, 2014.
Grades: The grades will be determined by a modified curving procedure with the guarantee that: 90% - A, 80% - B, 70% - C, 60% - D, and below 50% - F.

Topics:

1. Consequences of Cauchy’s Theorem (3 weeks)
   (a) Open Mapping Theorem
   (b) Maximum Modulus Theorem
   (c) Schwarz’s Lemma
   (d) Rouche’s Theorem
   (e) Argument Principle I
   (f) Proof of Homological Form of Cauchy’s Theorem

2. Singularities (2 weeks)
   (a) Classification
   (b) Casorati-Weierstrass Theorem
   (c) Picard’s Theorem
   (d) Residue Calculus

3. Applications of Residue Calculus (2 weeks)
   (a) Definite Integrals
   (b) Argument Principle II
   (c) Counting Zeros and Poles

4. Conformal Mapping (3 weeks)
   (a) General Properties
   (b) Construction
   (c) Normal families
   (d) Riemann Mapping Theorem

5. Other (5 weeks)
   (a) Analytic Continuation
   (b) Riemann Surfaces
   (c) Uniformization