Syllabus for Mathematics 552, Spring 2012

INSTRUCTOR: Ralph Howard OFFICE: LC 304 PHONE: 777-7471
OFFICE HOURS: TTh 2:00-3:00 and by appointment
TEXT: *Schaum's Outline of Complex Variables,* 2^{nd} *Edition* by Murray Spiegel , Seymour Lipschutz, John Schiller, and Dennis Spellman.

Grading: There will be three hour exams of 100 points each. Homework will be collected and will count for 100 points. The Final will count for 150 points. This makes a total of 550 points:

Three midterms @100 points each	300 points
Final	150 points
Homework (includes quizzes)	100 points
Total	550 point

The grade will be based on the total number of points out of the 550 points. Note that the homework counts as much as the final so it is important to spend time on the homework. Some homework many be "collected" in the form of in class quizzes. Letter grades will be assigned to all the tests. The last day to drop without a "WF" is Monday February 27 and you should have a good idea of where you stand by then.

There will be no make up exams. If you miss a test, then your score on that exam is 75% of the average of your other test scores (including the final). If you miss a second exam then the score on it is zero. Likewise **no late homework will be accepted.**

The exams will be on the following days:

Test 1	Friday, February 10
Test 2	Wednesday, March 21
Test 3	Friday, April 13
Final	Thursday, April 28 – 9:00am.

Course content: The goal of the class is to lean the basics of the calculus of a complex valued function of a complex variable that is differentiable. The theory is very different form that of functions of a real variable, for example if a function is once differentiable, then it has derivatives of all orders. Such maps have surprising geometric

properties, such as preserving angles between curves. The condition of differentiability will be shown to be equivalent to a system of partial differential equations, the Cauchy-Riemannian equations. The Cauchy integral theorem and Cauchy integral formula will be proven and used to show that differentiable functions of a complex variable have convergent power series. The residue theorem will be proven and used to evaluate definite integrals. If there is time, the basics of conformal mapping will be covered.

Learning Outcomes: Students will lean about the calculus of complex valued functions of a complex variable and how this differs from that corresponding theory for real valued functions. The differential and integral calculus of these functions will be used to solve a wide variety of problems in mathematics and, time permitting, in engineering.