

Spring 2011  
MATH 138  
COMPLEX VARIABLES  
TTH 10:30 – 11:45 a.m.  
(3 units)

Prerequisites: Math 32 with a grade of C- or better  
in Calculus III or an equivalent course)

Instructor: S. Obaid , MH 412 [sobaid@math.sjsu.edu](mailto:sobaid@math.sjsu.edu)

In this course we will study several topics including:

1. Complex Numbers
2. Geometric Connections with Complex Numbers
3. Roots of Complex Polynomials
4. Mappings and their applications
5. The Cauchy-Riemann equations
6. Harmonic functions and their use in applied math,  
engineering, and physics such as solving boundary  
value problems
7. Cauchy's integral theorem
8. Cauchy's Integral Formula
9. Series of complex numbers, Taylor and Laurent  
series.
10. The residue theorem  
Applications of the residue theorem in evaluating  
definite integrals and summations  
Text: Complex Variables with Applications  
R. Churchill and J. Brown, 8<sup>th</sup> Edition  
(McGraw-Hill)  
(You can use 7<sup>th</sup> or 6th edition)

