

# Math 132: Complex Analysis for Applications

- [Math 132: General Course Outline](#)

## Catalog Description

**132. Complex Analysis for Applications.** Lecture, three hours; discussion, one hour. Prerequisites: courses 32B, 33B. Introduction to basic formulas and calculation procedures of complex analysis of one variable relevant to applications. Topics include Cauchy-Riemann equations, Cauchy integral formula, power series expansion, contour integrals, residue calculus.

## General Information

Complex analysis is one of the most beautiful areas of pure mathematics, at the same time it is an important and powerful tool in the physical sciences and engineering. The course Math 132 is aimed primarily at students in applied mathematics, engineering, and physics, and it satisfies a major requirement for students in Electrical Engineering.

The topics covered in Math 132 include: analytic functions, Cauchy-Riemann equations, harmonic functions, branch points, branches of multiple-valued functions, Cauchy's theorem, integral representation formulae, power series of analytic functions, zeros, isolated singularities, Laurent series, poles, residues, use of residue calculus to evaluate real integrals, use of argument principle to locate zeros, fractional linear transformations, and conformal mapping.

Students entering Math 132 are assumed to have some familiarity with complex numbers from high school, including the polar form of complex numbers. Students in Math 132 are also assumed to have a strong background in single and multivariable calculus, including infinite series, power series, radius of convergence (ratio and root tests), integration term by term of power series, parametrized curves, line integrals, and Green's theorem. Some of this material is reviewed in Math 132, though at a fast pace.

Several sections of Math 132 are offered each term.

## Recent Enrollment Statistics

Year	Fall	Winter	Spring
1993-1994	77 (3 sections)	82 (2 sections)	98 (2 sections)
1994-1995	112 (3 sections)	92 (3 sections)	102 (3 sections)
1995-1996	72 (3 sections)	74 (3 sections)	128 (3 sections)
1996-1997	65 (2 sections)	64 (2 sections)	108 (3 sections)
1997-1998	45 (2 sections)	75 (2 sections)	115 (3 sections)
1998-1999	70 (2 sections)	84 (2 sections)	108 (3 sections)
1999-2000	70 (2 sections)	83 (2 sections)	131 (3 sections)
2000-2001	74 (2 sections)	63 (2 sections)	115 (3 sections)
2001-2002	68 (2 sections)	81 (3 sections)	71 (3 sections)
2002-2003	54 (2 sections)	93 (3 sections)	99 (3 sections)
2003-2004	53 (2 sections)	88 (3 sections)	(3 sections)