

Spring 2002: Course Announcement

Numerical Analysis (Math 471)

Undergraduate or Graduate Credit

Instructor: Scott Stevens

Numerical Analysis is the development and study of procedures (algorithms) for solving problems with a computer. A major advantage of numerical analysis is that a numerical answer to a problem can be obtained even when no analytic solution exists in a closed form. This is the case, more often than not, in problems from the *real world*. These types of problems extend from the simple; applying the trapezoid rule to approximate a definite integral, to the complex; approximating the solution to a system of nonlinear partial differential equations. In any case, numerical analysis involves reducing the problem to a sequence of operations involving addition, subtraction, multiplication, division and the making of comparisons. Because these simple operations are exactly the functions that computers can perform, computers and numerical analysis make a perfect combination. This course will be devoted to investigating the reliability, accuracy, and efficiency of computer algorithms and applying them to *real world* problems.

This is a four credit course and is well suited for anyone having some experience in differential equations, linear algebra and computer programming. While these are not entirely necessary, successful completion of Calculus II is required. We will be meeting in the computer lab once a week where programming with Matlab will be the focus. However, you are free to do the assignments in whatever language you are most proficient, provided you are capable of producing graphs in this language. For those with little experience in programming, you should find Matlab to be incredibly user friendly and the first few computer labs will be geared towards learning the basics involved in writing a Matlab program.

Meeting Time: MTWF 3:10 - 4:00 Room 312 (math building)