



# Math 481

The use of differential equations is a powerful mathematical tool in describing observed phenomena in modern science. Numerical simulations are widely used in science and engineering to understand those phenomena. It is important to develop accurate and efficient numerical methods for solving the underlying differential equations.

## Numerical Solutions of Differential Equations

Prereq: Math 265 and 266 (or 267)



# Spring 2010

The focus of Math 481 is on numerical methods for solving ordinary differential equations (ODEs) and partial differential equations (PDEs). The course begins with first order Euler methods, higher order multi-step and Runge-Kutta methods. We will study the concepts of stability and convergence, and introduce the Finite Difference and Finite Element methods for solving PDEs. We will discuss setup of basic schemes and formulation issues for elliptic and parabolic type PDEs. Error estimation of numerical solutions will be addressed.

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