Course Announcement – Fall 1995

MATH 727 – Numerical Analysis II
Professor Doug Meade

Meeting Time	MWF 9:05 – 9:55, LeConte College 401A
Text	Numerical Analysis, Kincaid and Cheney, Brooks-Cole Publishing Co., 1991.

Course Description

This is the second semester of a two-semester sequence in graduate level numerical analysis. The content of the course is divided between the approximation of functions and the numerical solution of ordinary differential equations.

The first half of the semester will be spent discussing several different approximation methods, including interpolation, splines, Taylor series, best approximation, trigonometric approximation (including the Fast Fourier Transform) and adaptive approximation. This component of the course will conclude with the application of these techniques to numerical differentiation and integration.

Numerical methods for the approximate solution of ordinary differential equations will be the theme of the second half of the course. A few of the topics to be discussed include Taylor series methods, Runge-Kutta methods, multi-step methods, error analysis, stiff equations, systems and higher-order ODEs, boundary-value problems, shooting methods, and finite difference methods.

At the end of this course, students will have been exposed to the theory, application, and implementation to many of the fundamental numerical methods commonly used in scientific computing.

Grades will be based on periodic homework assignments and a final exam. The assignments will contain both theoretical and applied problems to be solved with the use of the computer. A familiarity with Matlab is expected; Maple will used to a lesser extent (no familiarity with Maple will be assumed).

The official prerequisite for this course is MATH 726. The key topics in this course are a (graduate-level) background in linear algebra, including numerical algorithms, and the numerical solution of nonlinear equations.

Additional information (including this document) can be found on the WWW. To access this information, point your browser to the URL

`http://www.math.scarolina.edu/~meade/math727/`