Course Name: Introduction to Numerical Analysis

Course Number: MTH 351

Course Credits: 3 credits (3 hours per week, lecture)

Prerequisites: MTH 253 or MTH 306 or MTH 306H or ((MTH 264 or MTH 264H) and (MTH 265 or MTH 265H)) (enforced). Programming experience (recommended). All courses used to satisfy MTH 351 prerequisites must be completed with a grade of C- or better.

Course Catalog Description: Introduction to the computation of approximate solutions to mathematical problems that cannot be solved by hand: analysis of errors; rootfinding for nonlinear equations in one variable; interpolation of functions; numerical integration.

Course Content:
- Taylor polynomials.
- Error and computer arithmetic.
- Rootfinding.
- Interpolation and approximation.
- Numerical integration and differentiation.
- Solutions of systems of linear equations.

Course Learning Outcomes: A successful student in MTH 351 will be able to:
- Obtain an intuitive and working understanding of some well-known numerical methods for the basic problems of numerical analysis, and apply these methods to solve a variety of problems of continuous mathematics. Understand advantages and disadvantages of various methods.
- Analyze numerical methods to determine properties of error and convergence. Gain some appreciation of the concept of error and the need to analyze and predict it.
- Develop some experience in the implementation of numerical methods by using a computer, including an understanding of computer arithmetic and its effects. More specifically, utilize MATLAB codes to understand the performance of methods.

Evaluation of Student Performance: Your overall grade will be determined by the following:
- Worksheets: 10%
- Written Assignments: 15%
- Computational Assignments: 15%
- Midterm: 25%
- Final Exam: 35%


Statement Regarding Students with Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies
students and faculty members of approved academic accommodations and coordinates im-
plementation of those accommodations. While not required, students and faculty members
are encouraged to discuss details of the implementation of individual accommodations.

**Student Conduct Expectations link:** Students are expected to be familiar with Ore-
gon State University’s Statement of Expectations for Student Conduct. Please review this
statement at http://studentlife.oregonstate.edu/code.