Math 4513 - Numerical Analysis

Syllabus - Fall 1998

Instructor: Dr. Birne Binegar
430 Mathematical Sciences
Tel. 744-5793
Email: binegar@okstate.edu
WWW page: http://www.math.okstate.edu/~binegar
Office Hours: Mondays and Wednesdays at 2:30 pm, MS 430

Required Text: *Numerical Analysis*, Second Edition,

Prerequisites: Differential Equations (Math 2233) and Linear Algebra
(Math 3013) and programming experience with C, BASIC, PASCAL, or FORTRAN

Objectives: Upon completion of this course students should have a basic understanding
of machine computing, algorithms, and analysis of errors applied to interpolation
and approximation of functions, solving equations and systems of equations, discrete
variable methods for integrals and differential equations

Homework: Homework problems will be assigned daily in class. All the homework assigned during
a given week will be due at the beginning of the first class of the following week. Several
of the homework assignments will involve the use of the computing facilities at the MLRC
(Mathematical Learning Resource Center), located in the basement of South Murrary.

Examinations: There will be two midterm examinations worth 100 pts each and one final
examination worth 150 pts.

Grades: Grades will be determined exclusively from homework, midterm, and final exam scores.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Homework and Quizzes</td>
<td>20</td>
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<tr>
<td>2 Midterm Examinations</td>
<td>200</td>
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<tr>
<td>Final Examination (5:00 p.m., Dec. 11)</td>
<td>150 possible pts.</td>
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<td>370 possible pts.</td>
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Letter grades will be assigned as follows:

A: 360 - 400 pts.
B: 320 - 359 pts.
C: 280 - 319 pts.
D: 240 - 279 pts.
F: 0 - 239 pts.

Course Outline

1. Mathematical Preliminaries
2. Computer Arithmetic
3. Solution of Nonlinear Equations
4. Solving Systems of Linear Equations
5. Approximating Functions
6. Numerical Differentiation and Integration
7. Numerical Solution of Ordinary Differential Equations