Course Syllabus

1417: MATH 385 - 51
Numerical Analysis
Dr. Goutziers
Fall 2002

Room: Fitzelle Hall 201
Time: MWF 12:00 - 12:50 pm
This is an individual enrollment section.
Office: Fitzelle Hall 230
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Department Office: (607) 436-3708
E-Mail: GoutziCJ@oneonta.edu
Web Site: http://www.oneonta.edu/faculty/GoutziCJ
Office Hours: M 8:00 am W 2:00 pm
R 8:00 am F 1:00 pm
Textbook: Numerical Analysis
• Authors: Richard L. Burden, J. Douglas Faires
• Edition: Seventh
• Publisher: Brooks/Cole
• Year of Publication: 2001
• ISBN: 0-534-38216-9
Symbolic Software: Maple, Release 8
Numerical Software: Students may use the programming language of their choice. The textbook
provides programs in C, Fortran, Maple, Mathematica, MATLAB and Pascal.

College Catalog Description:
MATH 385: Equations in one variable: fixed-point iteration, slope methods, convergence
analysis. Real and complex zeros of polynomials. LU decomposition, iterative improvement,
condition numbers. Least square approximation. Numerical integration, one and multi-
panel formulas. (LA) Prerequisites: 2 semesters of calculus and knowledge of a programming
language.

Course Goals and Objectives:
MATH 385 provides an introduction to numerical analysis. The goal of the course is to
understand the fundamentals of a collection of widely used computational methods with
respect to derivation, convergence, and implementation.

To achieve this goal, students will, upon completion of homework assignments, and exams:
1) understand and use analytic techniques to derive computational methods;
2) use error analysis to provide problem solutions subject to accuracy requirements;
3) write code to implement numerical algorithms.

Course content:
Root finding methods: Bisection, Fixed point iteration and Newton Raphson. Followed by a
study of techniques which compute all the roots of a polynomial. Polynomial interpolation
and the construction of splines.

Continued on page 2.

Methods of Evaluation and Grading Policies:
There will be three tests during the course of the semester. Tests will be announced on my Web site at least four days in advance. A comprehensive final exam is scheduled for Friday, December 13, 2:00 - 4:30 pm in Fitzelle Hall 201. Homework will be assigned daily and is due at the beginning of the next class meeting. All submitted homework should include a coversheet indicating the course, the date, and the assignment number. Homework assignments, including test announcements, and coversheets are published on my Web site and updated daily. Homework grades depend on the percentage of assignments submitted.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
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<tbody>
<tr>
<td>00 - 50%</td>
<td>no homework credit</td>
</tr>
<tr>
<td>51 - 80%</td>
<td>half homework credit</td>
</tr>
<tr>
<td>81 - 100%</td>
<td>full homework credit</td>
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</table>

Submitted homework does not have to be perfect, but should show “reasonable attempt”. Merely copying the problems does of course not constitute reasonable attempt.

Course grades are computed according to the following:

<table>
<thead>
<tr>
<th></th>
<th>Tests:</th>
<th>Final Exam:</th>
<th>Homework:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40%</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>90 - 100%</td>
<td>90 - 100 A</td>
<td>87 - 90 A-</td>
<td>84 - 87 B+</td>
</tr>
<tr>
<td>77 - 80 B-</td>
<td>74 - 77 C+</td>
<td>70 - 74 C</td>
<td>67 - 60 C-</td>
</tr>
<tr>
<td>64 - 67 D+</td>
<td>60 - 64 D</td>
<td>57 - 60 D-</td>
<td>0 - 57 E</td>
</tr>
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Attendance Policy:
It is the student's obligation to take the tests and the final exam at the scheduled times and allow for on time submitting of homework assignments.

Make-up Test and Late Assignment Policy:
Make-ups will not be given. If a student misses a test, her/his grade for that test will be considered equal to her/his grade on the final exam. Late homework cannot be accepted.