CS/MATH 3414 Fall, 2001
L.T. Watson
MW 8:00–8:50 MCB 126
630 McBryde Hall
CRN #91313 or 93351 F 8:00 MCB 118
231-7540
CRN #91314 or 93352 F 12:20 MCB 118
ltw@cs.vt.edu
http://courses.cs.vt.edu/~cs3414/F01/

Prerequisites:
MATH 2214, MATH 2224, some knowledge of FORTRAN and UNIX.

Topics Covered:
0 - linear algebra, norms, inner products
1 - floating point arithmetic
2 - linear systems
3 - interpolation
4 - roots of nonlinear equations
5 - integration
6 - least squares
7 - cubic splines and approximation
8 - ordinary differential equations
9 - eigenvalue problems

Text:

References:
Hornbeck, Numerical Methods, Quantum, 1975.
Meissner, Fortran 90, PWS, 1995.
Ortega, Poole, Numerical Methods for Differential Equations, Pitman, 1981.

Office Hours:
9:00–9:50 MWF, and by appointment.

Grading:
Course grade = two exams (≈ 50%) + homework/programs/quizzes (≈ 25%) + final (≈ 25%).
Late homework will not be routinely accepted, and its value decreases by a factor of 1/2 per
day or fraction thereof. Grading typically follows approximately a Gamma distribution. The
comprehensive final exam will be held on Monday, December 17, 2001 at 1:05–3:05 pm.

Honor System:
The Honor System applies to this course. See the statement from the Department of Computer
what is permissible, please ask.

Programming Languages:
FORTRAN 90 and Mathematica.

Computer System:
DEC Alpha or other UNIX-based workstations. Mathematical software for the assignments
will be available in the McBryde 116/118 Undergraduate Computing Laboratory.

Programming Assistance:
Contact the consultants in McBryde or the GTA for the course.

Note:
I will make every effort to make this course enjoyable and profitable to you. However, “nu-
merical analysis is not a spectator sport.” You must have a positive attitude toward computer
science, mathematics, theory, and the pursuit of knowledge. I can present, clarify, and query,
but I cannot learn for you. You must make the effort to learn. For example, you should study
your notes, read your text, and use the library without being reminded.
Supplementary Reading – CS/MATH 3414


