UNIVERSITY OF SOUTHERN CALIFORNIA  
Department of Civil Engineering  

Spring 2012  

CE 402 COMPUTER METHODS IN ENGINEERING  

Instructor: S.F. Masri; KAP 206A; email: masri@usc.edu  
Office Hours: Monday/Wednesday: 3:30 - 5:30 pm  
Telephone: 740-0602; 740-0603  
Teaching Assistant: (Discussion Session) Miguel Hernandez Garcia  
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T.A. Office Hours: (KAP 239) M 1:00-2:00 p.m., T 2:00-3:30 p.m., W 1:00-2:00 p.m.  

Class No. 29638R  
Time & Place: Lecture 2:00 - 3:15 p.m. MW; TTH 116  
Time & Place: Discussion 5:00 - 5:50 p.m. W; KAP 144  

Textbook: “Numerical Methods for Engineers” (Sixth Ed.)  
by: S.C. Chapra & R.P. Canale (McGraw-Hill)  
Prerequisite: CE 108 or equivalent:  
“Introduction to Computer Methods in Civil Engineering”  

Final Exam: Monday, 07-MAY-2012, 2:00-4:00 p.m.  
Grades: Homework/Midterm/Final: 20%/30%/50%  
Remarks: About 10 homework projects will be assigned  

Late Homework will not be accepted.  
No make-up on any examinations.  

*************** COURSE OUTLINE ***************  

1. Introduction - Course Overview; Flowcharts  
2. Software Tools - Mathematical Computation Software (Fortran, C, Matlab, Mathematica)  
3. Solution of Nonlinear Algebraic Equations  
4. Solution of Sets of Equations (Linear and nonlinear)  
5. Optimization  
6. Interpolation  
7. Numerical Differentiation  
8. Numerical Integration  
9. Monte Carlo Techniques  
10. Numerical Solution of Ordinary Differential Equations  
11. Boundary-Value Problems and Characteristic-Value Problems  
12. Curve-fitting and Approximation of Functions