UNIVERSITY OF SOUTHERN CALIFORNIA
Department of Civil Engineering

Spring 2013

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
	Telephone: 213-740-0575; email: miguelrh@usc.edu
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
TTime & Place: Lecture	2:00 - 3:15 p.m. MW; MHP 105
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: "Introduction to Computer Methods in Civil Engineering"
	MATH 245: "Mathematics of Physics and Engineering"
Drop Dates:	1-FEB-2013 without "W"; 12-APR-2013 with "W"
Final Exam:	Wednesday, 08-MAY-2013, 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.

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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