



University of Tehran
School of Civil Engineering

Course:	8102.... – Numerical Methods in Geomechanics		
Course type:	Optional		Credit: 3
Level:	MSc and PhD		
Co-requisite(s):	-		
Prerequisite(s):	-		
Prerequisite by topic:	-		
Textbook(s):	[1] Introduction to Finite Element Method, E. Hinton, D.R.J. Owen, 1980. [2] Extended Finite Element Method for Fracture Analysis of Structures, Wiley/Blackwell, 2008. [3] Discontinuum Mechanics; S. Mohammadi, WIT Press, 2003.		
Coordinator:	S. Mohammadi, Professor of Computational Mechanics, School of Civil Engineering		
Goals:	The main objective is to introduce the basics of various important numerical techniques for solution of different engineering problems, with emphasize on the geo-mechanical applications.		
Topics:	<ol style="list-style-type: none"> 1. A historical review of available techniques 2. A review of mathematical bases 3. Solution of simultaneous equations 4. Finite Difference Method (FDM) 5. Matrix Analysis of Structures 6. Finite Element Method (FEM) 7. An Introduction to the Boundary Element Method (BEM) 8. Discrete Element Method (DEM and DDA) 9. An introduction to advanced techniques 		
	Necessary for assignments and final project		
Assignments:	5 homework assignments (programming and theoretical)		
Projects:	1 final programming project		
Grading:	Assignments:	40 %	
	Project:	30 %	
	Final exam:	30 %	
Further readings:	[1] Several papers published on the subject every year.		
Prepared by:	Soheil Mohammadi		

Date:

February 9, 2014