IUSS
Scuola Universitaria Superiore Pavia

Course: **Advanced Nonlinear Seismic Analysis**
Lecturer: Professor Amjad J. Aref
Teaching Assistant: Alexander Kagermanov
Date: 07/11/2016 - 25/11/2016
Classroom: 1-14 (1st and 3rd week) / Sala del Camino (2nd week)

Course schedule

	Date	Lecture hours 9:00-10:30 & 11:00-12:30	Tutorial hours From 14:00 To 16:30	Subject	
1	7/11/2016 Classroom1-14			Introduction to structural Mechanics concepts and analysis methods	5.5
	8/11/2016 Classroom1-14			Balance laws, stress and strain measures and their time rates	5.5
	9/11/2016 Classroom1-14			Strong and weak form; formulation of the stiffness method	5.5
	10/11/2016 Classroom1-14			Overview of the stiffness method: Linear structural analysis of truss and frame structures	5.5
2	14/11/2016 Sala del Camino			Formulation and computational solutions of time-dependent structural problems - I	5.5
	15/11/2016 Sala del Camino			Formulation and computational solutions of time-dependent structural problems - II	5.5
	16/11/2016 Sala del Camino			Introduction to nonlinear analysis	5.5
	17/11/2016 Sala del Camino			Geometric nonlinear analysis	5.5
3	21/11/2016 Classroom1-14			Material nonlinear analysis	5.5
	22/11/2016 Classroom1-14			Solution of nonlinear systems - I	5.5
	23/11/2016			Solution of nonlinear systems - II	5.5
	24/11/2016 Classroom1-14			review	2.5
	25/11/2016 Classroom1-14			Exam	3

Brief Course Description:
This course melds concepts from mechanics of solids and structural analysis, and presents ideas to analyze structures under wide-range of response regimes including: nonlinear geometry, nonlinear material modeling, and importantly, the dynamic response and vibration of structures. Short exercises using MATLAB on various numerical solution schemes related to the topical areas will be given.