Aalto-yliopisto

Finite Element Method in Geoengineering GEO-E1050 (draft schedule)

Week	Lectures Tue, 12:15, M1 Otakaari 1 Thu, 10.15, R1 Rakentajanaukio 4		Exercises: Otakaari 1, Y338 Wed 10:15 Fri 8:30	
43	25 Oct	Introduction to the course & refreshing existing knowledge (tensors, coordinates, etc)	26 Oct	Introduction to the course, solving a linear elastic problem in Comsol
43	27 Oct	Basic derivation of FEM	28 Oct	Solving a linear elastic problem in Optum G2 and Comsol
44	1 Nov	Basic derivation of FEM Convergence of FEM	2 Nov	Introduction to Matlab
44	2 Nov 8:30	Some more advanced FEM subjects.	4 Nov	Solving a simple FEM problem in Matlab
45	8 Nov	General Derivation of FEM Finite difference method	9 Nov	Solving a simple FEM problem in Matlab
45	10 Nov	**Test 1 –FEM**	11 Nov	Finite Difference Method
46	15 Nov	Introduction to constitutive modelling	16 Nov	Shallow foundation in Optum and Comsol
46	17 Nov	Perfect Plasticity, Mohr-Coulomb, Hoek-Brown	18 Nov	Shallow foundation in Optum and Comsol
47	22 Nov	Perfect Plasticity, Mohr-Coulomb, Hoek-Brown	23 Nov	Tunnel excavations in Comsol & Optum G2
47	24 Nov	**Test 2 – Constitutive models & Finite Difference Method** L: (Pitfalls of FEA)	25 Nov	Tunnel excavations in Comsol & Optum G2
48	29 Nov	Other numerical methods	30 Nov	Water flow in Comsol and Optum G2
48	1 Dec	Other numerical methods	2 Dec	Water flow in Comsol and Optum G2

It is recommended that you install Matlab and Comsol (https://download.aalto.fi/index-en.html) and OptumG2 (https://optumce.com) on your personal computer. When the course starts, you will be given a more comprehensive license for OptumG2. For that you will need an account at Optum, hence **please register at optumce.com for the student's license with your Aalto account.**

Most lectures will be recorded and shared among the participants only. The recordings will be incomplete (e.g. due to group work during the lecture etc.) and may be missing due to technical issues. Attendance in both lectures and exercises is highly recommended and will be recorded. The number of resit exams will be limited to 1 for those who do not attend the lectures.

The lecture scheduled on the 3rd of November may be moved, depending on how many students will attend the SGY organised Geotechnical Day

The exercises will be taught by Abhishek Gupta, Debasis Mohapatra and Zhongsen Li.

The current schedule is a draft schedule, small changes are possible and likely. Please follow the MyCourses system and messages!