

Numerical methods in geotechnics D, GEO-E2020

Mon 19th of Apr – Thu 27th of May 2020

Classes: <https://aalto.zoom.us/j/7791646359>

Lectures Mon & Wed 10:15 Zoom		Exercises Tue & Thu 10:15 Zoom	
19.4	L1. Introduction & refresh: Finite Element Method for Linear Materials. Decision on exams, design presentation dates, course content (lectures after 10th of May)	20.4	Introduction to the course. Introduction to geotechnical software available: Plaxis 2D, Optum G2. Shallow foundation design: bearing capacity with variable water table
21.4	L2. Seepage and consolidation in Finite Element Method. Refresh of the Elasto-plastic constitutive models	22.4	Ex 1. Shallow foundation design: bearing capacity with variable water table , soil structure interaction / settlements
26.4	L3. Elasto-plastic constitutive models for soils available in FE software	27.4	Ex 2a. Simplified embankment analysis
28.4	L4. Hardening Soil model and Hardening Mohr-Coulomb model	29.4	Ex 2b: stability of reinforced embankment. consolidation & factor of safety Deadline exercise 1
3.5	L5. Soft Soil Model and other models based on Modified Cam Clay	4.5	Ex 3. Deep excavations analysis Deadline exercise 2
5.5	Design projects – distribution of subject, discussion, parameters estimation. Q&A before Exam 1.	6.5	Deep excavations analysis.
10.5	Exam part 1 (L1-L5 – FEM, Seepage, Consolidation, Soil Models)	11.5	Ex 4. Embankment analysis: Boston Embankment with creep model Deadline exercise 3
12.5	Non-linear finite element method analysis and analysis in 3D. Overview of exercises and lessons learnt.	13.5	Ascension day.
17.5	Case studies including Mexico City Cathedral and Barcelona Harbour	18.5	Design projects. Deadline exercise 4
19.5		20.5	Design projects
24.5	Exam part 2 – application of FEM in design. Includes materials from exercises!	25.5	Design projects; Course summary / feedback
26.5	Design project presentations	27.5	Reserved (e.g. exam resit)

The schedule may change during the course, please follow MyCourses announcements. Note that if you do not present your design project on the required date it will likely mean you will not pass the course – **due to industrial involvement, once set, the deadline is non-extendable and non-alterable.**