

Tárgytematika / Course Description

Geotechnical design 1

EKNM_SETA022

Tárgyfelelős neve /

Teacher's name: dr. Ray Richard Paul

Félév / Semester: 2022/23/2

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 2/1/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Aim of the course is to extend the basic knowledge of BSc courses related to geotechnical design. The course focuses on the development of engineering skills based on describing decisionmaking and design methods. We pursue that the graduate students will be able to design individually. Methods of data collecting and evaluation, fixing of design viewpoints and requirements and choosing of optimal structural-technological solution will be presented. Software based on both conventional methods and finite element methods will be applied. To solve the most frequent geotechnical problems (retaining walls, foundations, deep excavations, slope stability) Eurocode 7 and Plaxis software will be used.

TANTÁRGY TARTALMA / DESCRIPTION

Cources

1. Introduction. Philosophy of geotechnical design
2. Documentation (soil investigation report, design)
3. Soil-structure interaction
4. Shallow foundation design
5. Team work - shallow foundation design
6. Pile foundation design
7. Team work - Pile foundation design
8. Pile load testing, evaluation

9. Deep excavation - retaining structures design

10. FEM modeling I.

11. FEM modeling II.

12. Student's presentation

13. Final exam

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

Homework assignments

HF1 Evaluation of English technical paper, presentation

HF2 Design problem

ITV Final written exam

Final exam will be offered by 4 occasions through the Neptun system. Examination will be closed book/closed notes.

One part exam - consists a 45 minute test of 30 questions

Course Grade Evaluation

Class activity – 20 points, HF1 –10 points, HF2 – 30 points, ITV – 40 point

Grades

0 - 49 points 1 unsatisfactory

50 - 61 points 2 satisfactory

62 - 73 points 3 fair

74 - 85 points 4 good

86 - 100 points 5 excellent

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

A. Bond és A. Harris: Decoding Eurocode 7, Taylor and Francis, 2008

Frank et. Al: Designers' Guide to EN 1997-1, Thomas Telford, 2004

U.Smoltczyk szerk.: Geotechnical Engineering Handbook Volume 1-3, Ernst and Sohn, 2003

B.H. Fellenius: Basics of Foundation Design, electronic edition, 2012

Muni Budhu: Soil Mechanics and Foundations, Wiley, 2011

Selected papers