

I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

Soil-structure interaction

1.2 Azonosító (tantárgykód)

BMEEOGMMS52

1.3 Tantárgy jellege

Kontaktórás tanegység

1.4 Óraszámok

Típus	Óraszám / (nap)
Előadás (elmélet)	3
Gyakorlat	1

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Félévközi érdemjegy

1.6 Kreditszám

5

1.7 Tárgyfelelős

név	Balázs Móczár PhD
beosztás	Egyetemi docens
email	moczar.balazs@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Geotechnika és Mérnökgeológia Tanszék

1.9 A tantárgy weblapja

<https://oktatas.epito.bme.hu/BMEEOGMMS52>
<https://edu.epito.bme.hu/course/view.php?id=2065>

1.10 Az oktatás nyelve

magyar

1.11 Tantárgy típusa

Kötelező a Szerkezet-építőmérnök (MSc) szakon

1.12 Előkövetelmények

1.13 Tantárgyleírás érvényessége

2022. szeptember 1.

2. Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The scope of the subject is to teach the students the fundamentals of geotechnics required for structural design, such as familiarity with and use of EC7. These include geotechnical categorization; types and contents of geotechnical documentations; geotechnical and structural design of piles for different loading types, design of soil-supported ground slabs along with the determination of the values of subgrade reaction modulus; design of pile-supported ground slabs and “rigid inclusion” slabs; structural design of excavation support structures, determination of soil reaction moduli along with their effect on deformations and internal forces; design of ground anchors; geotechnical questions of bridge abutments; and the basics of soil dynamics and geotechnical earthquake engineering.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Tudás

1. know the structure and fundamentals of EC7
2. know the geotechnical categories, types and contents of geotechnical documentations
3. know the process of pile design and the determination of spring stiffnesses
4. know the process of designing elastically supported slabs and the determination of spring stiffnesses
5. know the process of designing pile supported slabs and rigid inclusion and the determination of spring stiffnesses
6. know the process of designing excavation support structures
7. know the process of designing earth anchors and their detailing
8. know the geotechnical aspects of bridge abutments
9. know the fundamentals of designing for dynamic effects and earthquakes

B. Képesség

1. is able to interpret and apply EC7
2. is able to design pile foundations
3. is able to design elastically supported slabs
4. is able to design pile supported slabs and rigid inclusion foundations
5. is able to design excavation supporting structures
6. is able to carry out the geotechnical modelling of bridge abutments and calculate embankment settlements
7. is able to carry out geotechnical design for dynamic effects and earthquakes

C. Attitűd

1. is cooperative with the teacher and co-students in gaining new knowledge,

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2. is continuously expanding his/her knowledge through learning,
3. is open to the application of up-to-date software und state-of-the-art design methods,
4. seeks to learn and routinely employ the design framework for geotechnical problem solving
5. strives for accurate task solving

D. Önállóság és felelősség

1. individually assesses geotechnical problems and tasks associated with structural engineering, as well as their solution based on given sources
2. is open to reasoned critical remarks
3. applies a systematic way of thinking

2.3 Oktatási módszertan

Lectures, practical classes, verbal and written communication, application of IT devices and techniques, optionally tasks performed independently or in work groups, work organization techniques.

2.4 Részletes tárgyprogram

Week	Topics of lectures and/or exercise classes
1.	Geotechnics fundamentals revision
2.	Geotechnics fundamentals revision
3.	
ZH1 (1st midterm test)	
4.	Structural design of excavation supports
5.	Design of slab foundations
6.	
7.	
8.	Celebration - break
9.	
10.	Piled raft foundation design. Design of
11.	bridgeheads.
12.	Soil dynamics
13.	Soil dynamics and design of bridgeheads.
14.	ZH3 (3rd midterm test)

A félév közbeni munkaszüneti napok miatt a program csak tájékoztató jellegű, a pontos időpontokat a tárgy honlapján elérhető "Részletes féléves ütemterv" tartalmazza.

2.5 Tanulástámogató anyagok

a) Online materials:

1. Lectures note: ppt files

2.6 Egyéb tudnivalók

1. Attendance to exercise classes is compulsory. The signature and credits from the subject will be refused to students missing 3 or more exercise classes.
2. Each student is required to submit their original work . Copying and submitting work of others, cheating and plagiarism in any form is unacceptable. Whoever violate the Studies and Exam Regulations of the

University will be given a failing grade (1), without the possibility of retake and repeat, and will be reported to the Dean's Office. The definitions of cheating and plagiarism are to be found in the Studies and Exam Regulations.

2.7 Konzultációs lehetőségek

The instructors are available for consultation during their office hours, as advertised on the department website. Special appointments can be requested via e-mail:

moczar.balazs@emk.bme.hu

Jelen TAD az alábbi félévre érvényes:

2024/2025 semester II

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

The assessment of the learning outcomes specified in clause 0 above and the evaluation of student performance occurs via 3 tests, 3 homework assignments and exercise class activities.

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbreviation	Assessed learning outcomes
1. midterm test	ZH1	A.1-A.5; B.1-B.4; C.5; D.3
2. midterm test	ZH2	A.6-A.8; B.5-B.6; C.5; D.3
3. midterm test	ZH3	A.9; B.7; C.5; D.3
1. homework	HF1	A.6-A.8; B.7; C.1-C.5; D.1-D.3
2. homework	HF2	A.9; B.7; C.1-C.5; D.1-D.3

The dates of midterm tests and deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

A szorgalmi időszakban tartott értékelések pontos idejét, a házi feladatok ki- és beadási határidejét a "Részletes féléves ütemterv" tartalmazza, mely elérhető a tárgy honlapján.

3.3 Teljesítményértékelések részaránya a minősítésben

Abbreviation	Score
ZH1	25%
ZH2	20%
ZH3	15%
HF1	20%
HF2	20%
Total achievable during the semester	100%
Sum	100%

All three midterm tests and the two homeworks are failed if the sum points of the tests are less than the 50% of the obtainable points. It is also required to reach at least 50% of the points for every evaluation.

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége

There is no signature for this subjects.

3.5 Érdemjegy megállapítása

Determination of the final grade is according to the below described consideration:

The final grade is the sum of the percentage result of the midterm test and the homework tasks (summing up to a maximum of 100 points.

Grade	Points (P)
excellent (5)	80<=P
good (4)	70<=P<80%
satisfactory (3)	60<=P<70%
passed (2)	50<=P<60%
failed (1)	P<50%

3.6 Javítás és pótlás

1. The 3 midterm tests can be retaken once each. A second retake is possible for only one midterm test.
2. Homework can be submitted with delay - after the payment of the fee determined in the Studies and Exam Regulations – until 16:00 of the last day of the supplementary period, or submitted in electronic format until 23:59 on the same day.

3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	Hours/semester
contact hours	$14 \times 4 = 56$
preparation for the courses	$7 \times 2 = 14$
preparation for the tests	$2 \times 8 + 2 \times 2 = 20$
homework	10
home studying of the written material	20
Sum	120

3.8 A tárgykövetelmények érvényessége

2023. szeptember 1.

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