Geology - BMEEOGMAT41

I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

Geology

1.2 Azonosító (tantárgykód)

BMEEOGMAT41

1.3 Tantárgy jellege

Kontaktórás tanegység

1.4 Óraszámok

Típus	Óraszám / (nap)
Előadás (elmélet)	1
Laboratóriumi gyakorlat	2

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Vizsga

1.6 Kreditszám

3

1.7 Tárgyfelelős

név	Dr. Ákos Török
beosztás	Egyetemi tanár
email	torok.akos@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Geotechnika és Mérnökgeológia Tanszék

1.9 A tantárgy weblapja

www.epito.bme.hu/BMEEOGMAT41
https://edu.epito.bme.hu/course/view.php?id=434

1.10 Az oktatás nyelve

magyar és angol

1.11 Tantárgy típusa

Kötelező az építőmérnöki (BSc) szakon

1.12 Előkövetelmények

1.13 Tantárgyleírás érvényessége

2022. szeptember 1.

2. Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The aim of the subject is that the students improve their knowledge focused on geological information for engineering purposes, especially for civil-engineering design, construction and research. The subject presents geological factors that determine the choice of the location of engineering facilities and the design and required maintenance of structures.
The gained geological knowledge will include the structure and dynamics of Earth, building materials of earth's crust, mineralogy; rock properties, volcanic, sedimentary and metamorphic rocks. Events affecting the ground, analysis of the influence of earthquakes and volcanism, and characterization of the surface movements, surface waters and groundwater are of priority importance. The subject also refers to environmental geology and interaction between structure and surrounding rock mass. The course inducates the development of scientific reasoning of engineering students and it establishes a link between engineering and natural sciences.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Tudás

1. Knows the internal structure of Earth and the geological time scale
2. Knows the terminology of the mineral and the rock,
3. Knows the ingenious rock,
4. Knows the sedimentary and the metamorphic rocks,
5. Knows the terminology of the structural geology,
6. Knows the geological map and the properties of the sections,
7. Knows the surface forming processes,
8. Knows the system of the surface waters and the groundwaters,
9. Knows the basic filed and laboratory tests,

B. Képesség

1. Able to identify rock types,
2. Able to understand geological maps, and create geological cross-section
3. Able to carry out in situ rock diagnostic, and write experts reports,
4. Able to express her/his thoughts orderly in written and oral.

C. Attitűd

1. cooperate with the teacher during the learning process,
2. improve her/his knowledge with continuous learning,
3. open to use the up-to-date software and design methods,
4. pursue to know and use of the toolkit that is necessary for the geotechnical and engineering geological

problem solution,
5. pursue to the exact and errorless task solution.

D. Önállóság és felelősség

1. individually assesses geological problems and tasks associated with structural engineering,
2. their solution based on given sources
3. take into consideration the logical steps of the solution of engineering geological tasks,
4. open to reasoned critical remarks,
5. applies a systematic way of thinking

2.3 Oktatási módszertan

Lectures, mineral-rock recognise practise, geological mapping, verbal and written communication.

2.4 Részletes tárgyprogram

Week	**Topics of lectures and/or exercise classes**
1.	Earth's history, the internal structure of Earth and continental drift. Building materials of the Earth' crust. The rock cycle.
2.	Requirements of the subject, Civil engineering aspects of geology, application area, engineering geology Rock-forming minerals.
3.	Igneous rocks, their characterization and usage, practice of igneous rock recognition
4.	Igneous rocks recognition, rock recognition test
5.	Sedimentary rocks, their characterization and usage
6.	Metamorphic rocks, their characterization and usage, practice for the rock recognition test
7.	Mineralogy and rock forming minerals: properties, types, recognition
8.	Metamorphic rocks recognition, rock recognition test
9.	Structural geology: faults, folds and geological structures
10.	Field trip to the Gellért-hill, structural geology, rock slope stabilization
11.	Processes acting on the Earth's surface: weathering, erosion, mass movements, landslides, earthquakes, volcanism
12.	Engineering geological tasks and problems; examples, case studies
13.	Surface waters (oceans, seas, lacustrine environments and rivers), Groundwater(types, karstic water, groundwater flow, springs, and water chemistry
14.	Geologic mapping

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) Textbooks:

1. Török Á.: Geológia Mérnököknek, Műegyetemi Kiadó, 2008
2. Bell F.G. Fundamentals of Engineering Geology, Elsevier, 2016

b) Online materials:

1. 1. Lecture notes
2. Manual for the homework

2.6 Egyéb tudnivalók

1. The theoretical knowledge should be presented under practical trainings for students.
2. The minerals will be presented in Mineral and Rock Collection of ELTE (Eötvös Lorand University).
3. For the stone diagnostic home assignment, all students have to analyses a part of stone structure or a part of stone masonry structure on site.

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: torok.akos@epito.bme.hu

Jelen TAD az alábbi félévre érvényes:

2024/2025 semester I

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

The assessment of the learning outcomes is specified in clause 2.2. above and the evaluation of the student's performance happens via 2 tests, 1 home assignment and the exam.

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbreviation	Assessed learning outcomes
1. control test	CT1	A.5-A.7; B.1,-B.4; C.1-C.5, D.2
2. control test	CT2	A.1-A.3; B.1; C.1-C.2; C.4-C.5;D.1
3.control test	CT3	A.1-A.4; B.1; C.1-C.2; C.4-C.5;D.1
1. homework	HW	A.1-A.7; B.1-B.4; C.1-C.5; D.1-D.2
Written exam	E	A.1-A.9; B.1-B.4; C.4-C.5; D.1-D.5

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
CT1	15%
CT2	10%
CT3	15%
HW	15%
Total achievable during the semester	**55%**
E	45%
Sum	**100%**

The final result is failed if on the exam minimum 50% of the points are not reached.

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége

The criterion of obtaining the signature is to reach half of the points achievable during the

semester according to clause 3.3.
To accomplish the practical part of the subject it is required to pass all tests and the home assignment separately.

The final result of the student who has the signature but instead applying for the examine course applies the practice again will be calculated from her/his better results.

The previously acquired signature is valid for 6 semesters for the calculation of the final result.

3.5 Érdemjegy megállapítása

The grade of those who accomplished the attendance is determined by the following criteria:
The midterm grade is coming from the result of the two midterm tests and the home assignment.
The final grade is computed as the weighted of the midterm requirements and the exam as described in 3.3.

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) Homework – after the payment of the fee determined in the regulation – can be submitted with a delay until 16.00 or in electronic format until 23.59 of the last day of the completion week.
2) The submitted and accepted homework can be corrected without any fee until the deadline described in point 2.
3) The two midterm tests can be repeated once in the completion week free of charge.
In case of correction, the better result will be taken into account from the new and previous results.

3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	**Hours/semester**

contact hours	14×3=42
preparation for the courses	14×1=14
preparation for the tests	9+3=12
homework	6
home studying of the written material	16
Sum	**90**

3.8 A tárgykövetelmények érvényessége

2022. szeptember 1.

Jelen TAD az alábbi félévre érvényes:

2024/2025 semester I