

SUBJECT DATASHEET

I. SUBJECT SPECIFICATION

1 BASIC DATA

1.1 Title

GEOLOGY

1.2 Code

BMEEOGMAT41

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	hours/week
lecture	1
seminars/exercise classes	2

1.5 Evaluation

exam

1.6 Credits

3

1.7 Coordinators

name:	Dr. Ákos Török
academic rank:	Professor
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1.8 Department

Department of Engineering Geology and Geotechnics (www.gmt.bme.hu)

1.9 Website

www.epito.bme.hu/BMEEOGMAT41

1.10 Language of instruction

Hungarian and/or English

1.11 Curriculum requirements

Compulsory in the in the Civil Engineering (BSc) programme

1.12 Prerequisites

-

1.13 Effective date

1 st of September, 2019

2 OBJECTIVES AND LEARNING OUTCOMES

2.1 Objectives

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 inductates the development of scientific reasoning of engineering students and it establishes a link between engineering and natural sciences.

2.2 *Learning outcomes*

After successful completion of the course, the student will be able:

A. Knowledge

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 field and laboratory tests,

B. Skills

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. Attitude

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. Autonomy and responsibility

6. individually assesses geological problems and tasks associated with structural engineering,
7. their solution based on given sources
8. take into consideration the logical steps of the solution of engineering geological tasks,
9. open to reasoned critical remarks,
10. applies a systematic way of thinking

2.3 *Methods*

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

2.4 *Course outline*

Week Scope of lectures and practical 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

The above programme is tentative and subject to changes due to calendar variations and other reasons specific to the actual semester. Consult the effective detailed course schedule of the course on the subject website.

2.5 Course outline

a) Textbooks

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

b) Online materials

1. Lecture notes
2. Manual for the homework

2.6 *Other information*

- 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 rock diagnostic home assignment all students have to analyse a part of stone structure or a part of stone masonry structure on site.

2.7 *Consultation*

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

II. SUBJECT REQUIREMENTS

3 ASSESSEMENT AND EVALUATION OF THE LEARNING OUTCOMES

3.1 General rules

The assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via 3 test, homework assignments and exam.

3.2 Assessment methods

Evaluation form	abbrev.	assessed learning outcomes
1. midterm test	MT1	A.1-A.3, B.1; C1-C2, C4, D1
2. midterm test	MT2	A.1-A.4, B.1; B4, C1-C2, C4-C5, D1
3. midterm test	MT3	A.5-A.7; B.1-B4; C.1-C.5; D.2
1. homework	HW	A.1-A.7; B.1-B.6; C.1-C5; D.1-D.2,
Written exam	E	A.1-A.9; B.1-B.6; C.4-C5.; D1-D4

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

3.3 Evaluation system

abbreviation	score
MT1	10%
MT2	10%
MT3	10%
HW	10%
Total achievable during the semester	40%
E	60%
SUM	100%

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

3.4 Requirements and validity of signature

Criterion of obtaining the signature is to reach the half of the points which achievable during the semester according to the clause 3.3.

In case of the homework to reach the 50% of the points is required both of the homework separately.

The final result of the student who has the signature but apply not only for examine course will calculate from her/his better semester results.

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

3.5 Grading system

The attendance conditions achievers's grade is determined by the following criteria:

The midterm grade is coming from the result of the three midterm test, and the homework.

The final grade is computed as the weighted of the midterms and exam as described in

3.3.

grade	Points (P)
excellent (5)	$80 \leq P$
good (4)	$70 \leq P < 80\%$
satisfactory (3)	$60 \leq P < 70\%$
passed (2)	$50 \leq P < 60\%$
failed (1)	$P < 50\%$

3.6 *Retake and repeat*

- 1) Homework – after the payment of the fee determined in the regulation – can be submitted with 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 the point 2.
- 3) The three midterm test can be retaken in merged form 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 *Estimated workload*

Activity	hours/semester
contact hours	$14 \times 3 = 42$
preparation for the courses	$14 \times 1 = 14$
preparation for the tests	$3 \times 3 + 1 \times 3 = 12$
homework	6
home studying of the written material	16
Total	90

3.8 *Effective date*

September 1, 2019.