Engineering geological and geotechnical project - BMEEOGMMS5P

I. Subject Specification

1. Basic Data

1.1 Title

Engineering geological and geotechnical project

1.2 Code

BMEEOGMMS5P

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Consultation	2

1.5 Evaluation

Midterm grade

1.6 Credits

5

1.7 Coordinator

name	Dr. Gyula Bögöly
academic rank	Assistant professor
email	bogoly.gyula@emk.bme.hu

1.8 Department

Department of Engineering Geology and Geotechnics

1.9 Website

https://epito.bme.hu/BMEEOGMMS5P
https://fiek2.mywire.org/course/view.php?id=2909

1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

Optional in the Structural Engineering (MSc) programme

1.12 Prerequisites

1.13 Effective date

5 February 2020

2. Objectives and learning outcomes

2.1 Objectives

The goal of the subject, that the students are getting familiar with the geotechnical and engineer-ing geological design process. The students get to know through a project work the geotechnical, engineering geological data collection, modelling, design and calculation tasks. Furthermore, they get familiar with practical application of analytical and numerical design methods.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. knows the methodology of determining geotechnical and engineering geological base data
2. knows the methodology of geotechnical and engineering geological modelling
3. knows the geotechnical and engineering geological design process
4. knows the most important analytical and numerical design methods in geotechnics and engineering geology

B. Skills

1. able to do independent geotechnical and engineering geological data collection and data evaluation
2. able to set up a site-specific model according to the available data
3. able to evaluating draft plans according to given criteria
4. able to solve complex civil engineering projects
5. able to choose the necessary analytical and numerical methods for a given task

C. Attitudes

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 which needs for the geotechnical and engineering geological problem solution
5. pursue to the exact and errorless task solution

D. Autonomy and Responsibility

1. thinks through and solve independently the geotechnical and engineering geological tasks and problems related to structural design according to given sources
2. open to accept the critical comments
3. use the systematic approaches in her/his mind

2.3 Methods

Lectures, practical tasks, communication in written and oral form, use of IT tools and technics, task solved independently and in groups as well, work organization technics.

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Description of the project, the goals of it.
2.	Geotechnical, engineering geological data collection.
3.	Processing and evaluation of the collected data set.
4.	Introduction of the soil and rock mass, determination of advantages and disadvantages of it.
5.	Analysis of solution possibilities of the project, preparation of conception plan.
6.	Analysis of solution possibilities of the project, preparation of study plan.
7.	Establishment of criteria for choosing the suitable solution possibilities according to the study plan.
8.	Evaluation of the individual solutions according to the established criteria, choosing the optimal solution.
9.	Detailed design of the chosen solution, setting up the geometry.
10.	Detailed design of the chosen solution, analytical calculations.
11.	Calculation of the given task with numerical method: choosing the necessary software and learn the operation of them.
12.	Calculation of the given task with numerical method: setting up and evaluation of the model.
13.	Calculation of the given task with numerical method: evaluation of the result, determination of stresses of structures, dimensioning.
14.	Presentation of the completed project.

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 Study materials

a) Textbooks

1. Hunt, E.R. (2005) Geotechnical engineering investigation handbook, Taylor and Francis.
2. Attkinson, J. (2014) Fundamentals of ground engineering, Taylor and Francis.
3. Hoek E. Practical rock engineering

b) Online materials

1. Software descriptions

2.6 Other information

1) The department provides the academic version of the introduced software.
2) It is recommended to use a notebook for the project work and for the successful consultation.

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:
bogoly.gyula@epito.bme.hu

This Subject Datasheet is valid for:

2023/2024 semester I

II. Subject requirements

Assessment 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 project work which will be evaluated in three parts and finally an oral presentation of the completed project.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1. subtask	ST1	A.1, A.2; B.1, B.2; C.1-C.5; D.1-D.3
2. subtask	ST2	A.1, A.2; B.1, B.2; C.1-C.5; D.1-D.3
3. subtask	ST3	A.1, A.2; B.1, B.2; C.1-C.5; D.1-D.3
4. oral presentation	OP	A.1-A.4; B.1-B.5; C.1-C.5; D.1-D.3

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

3.3 Evaluation system

Abbreviation	Score
ST1	20%
ST2	20%
ST3	40%
OP	20%
Sum	**100%**

In case of the subtasks to reach 50% of the points is required.

3.4 Requirements and validity of signature

There is no signature for this subject.

3.5 Grading system

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 Retake and repeat

1) The project work – 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.

3.7 Estimated workload

Activity	Hours/semester

attendance of the consultation	14×2=28
preparation of the project work (3. sub-tasks)	2×25+60=122
preparation for the oral presentation	12
Sum	**150**

3.8 Effective date

5 February 2020

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2023/2024 semester I