Engineering geological risk assessment - BMEEOGMDTV1

I. Subject Specification

1. Basic Data

1.1 Title

Engineering geological risk assessment

1.2 Code

BMEEOGMDTV1

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	3

1.5 Evaluation

Exam

1.6 Credits

3

1.7 Coordinator

name	Ákos Török, DSc
academic rank	Professor
email	torok.akos@emk.bme.hu

1.8 Department

Department of Engineering Geology and Geotechnics

1.9 Website

http://epito.bme.hu/geotechnika-es-mernokgeologia-tanszek
https://edu.epito.bme.hu/course/view.php?id=2528

1.10 Language of instruction

english

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1.11 Curriculum requirements

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1.12 Prerequisites

PhD education program

1.13 Effective date

1 September 2022

2. Objectives and learning outcomes

2.1 Objectives

The scope of this course is to familiarise students with the full range of geological hazards and risks, with a particular focus on problems or activities that may potentially be harmful to the population and damaging the built and natural environment. It presents the impact of geological processes on engineering facilities (unexpected and quantifiable geological risks).

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. how geological hazards appear and their expected effects

2. understanding the catastrophes that have caused damage to the largest engineering facilities that has ever occurred on Earth

3. knows major features in terms of geological risk

4. prepares a written report (study) on the given topic with independent work

5. gives a presentation on the given topic (oral report, at least 15 slides)

B. Skills

1. is able to characterize the main engineering geological risk factors

2. is able to characterize the appearance of geological hazards and their forecasted effects

3. is able to present examples of events that have caused disasters in the past

4. is able to search for and interpret data from any field

5. is able to collect geological and geomorphological data of any area based on both digital and paper-based data

6. is able to process a given topic independently

7. is able to present a given geological phenomenon in writing (study) and orally (lecture).

8. knows and is able to apply the steps of the national disaster risk assessment process

C. Attitudes

1. expands his knowledge by continuously acquiring knowledge

2. open to the use of technology tools

3. open to independent research work

4. strives for accurate and error-free task solutions

5. interested in geological processes

6. open to expanding his field trip knowledge

D. Autonomy and Responsibility

1. the student will independently search for the previous data from the area assigned to him, available on the Internet and in printed form

2. accepts well-founded critical comments with an open mind

3. independently prepares a written paper presenting the geological and geomorphological characteristics of the assigned area and the disaster situation that has developed, and presents it to fellow students

4. behaves responsibly during field trips, takes care of the physical integrity of both himself and his co-workers

2.3 Methods

Presenting the geological hazards and risks on the example of case studies

Lectures, written and oral communication, use of IT tools and techniques, self-made assignment, field trip.

2.4 Course outline

Week	**Topics of lectures and/or exercise classes**
1.	Overview of the course topics, description of natural hazards, sources of danger that can be traced back to geological causes
2.	Main terminology, hazard, vulnerability, exposure and risk in earth sciences – individual project topics
3.	Geological hazard characterization

4.	Geological phenomenon and engineering geological hazards, differences and causes
5.	Seismic hazards and their main causes, engineering geological aspects of earthquakes
6.	Mass wasting and slope movements – main types
7.	Mining activity as a geological hazard
8.	Volcanic activity and their effects, hazardous volcanic eruption
9.	Impact of climate changes and weathering related engineering geological hazards
10.	Hydrogeological hazards and risks
11.	Vulnerability of geological environment
12.	Engineering geological hazard assessment techniques
13.	Case studies
14.	Presentation of student tasks – oral presentations

Classes are held for 14 weeks. The basic programme for the 14 weeks (week per 3 hours)

The exact daily schedule will only be known the beginning of the period of Classes (on the first week)

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) Online materials

1. Electronic notes presented on the site

2.6 Other information

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@emk.bme.hu

This Subject Datasheet is valid for:

Engineering geological risk assessment - BMEEOGMDTV1

Inactive courses

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

There is an oral exam.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
study + presentation on the assigned area	HW	A.1-A.6; B.1-B.7; C.1-C.6; D.1-D.4
oral exam	E	B.1-B.7; C.1-C.3, C.5; D.2-D.4

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**
HW	70%
E	30%
Sum	**100%**

3.4 Requirements and validity of signature

Participation in 100 % of on-site

3.5 Grading system

Grade	**Points (P)**
excellent (5)	85<=P
good (4)	74<=P<84%
satisfactory (3)	62<=P<73%
passed (2)	50<=P<61%
failed (1)	P<50%

3.6 Retake and repeat

1) There is no retake

3.7 Estimated workload

Activity	**Hours/semester**
participation of on-site	14x2=28
mid-semester preparation for lessons	14x1=14
doing homework	20
independent learning of designated written curriculum	12
Sum	**74**

3.8 Effective date

1 September 2022

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Inactive courses