Drainage of engineering constructions - BMEEOVKMI53

I. Subject Specification

1. Basic Data

1.1 Title

Drainage of engineering constructions

1.2 Code

BMEEOVKMI53

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	28

1.5 Evaluation

Midterm grade

1.6 Credits

3

1.7 Coordinator

name	Dr. Fülöp Roland
academic rank	Associate professor
email	fulop.roland@emk.bme.hu

1.8 Department

Department of Sanitary and Environmental Engineering

1.9 Website

https://epito.bme.hu/BMEEOVKMI53
https://fiek2.mywire.org/course/view.php?id=3522

1.10 Language of instruction

english

1.11 Curriculum requirements

Compulsory in the Infrastructure Engineering (MSc) programme

1.12 Prerequisites

1.13 Effective date

2 February 2022

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2. Objectives and learning outcomes

2.1 Objectives

The aim of the course is to acquaint the student with the importance of dewatering engineering structures.
Topics to be discussed:

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. understands the theoretical background of hydrogeological and hydraulic modeling of drainage,
2. is aware of the types of pollution on the road,
3. knows the removal options for contaminants,
4. is aware of the technical and legal background of drainage planning,
5. understands the effects of long-term planning on environmental and climate change,
6. knows modern construction and maintenance technologies,
7. is familiar with dewatering problems during operation,

B. Skills

1. is able to identify the hydrogeological features of the area during drainage planning,
2. is able to identify dewatering problems during design and operation,
3. complex management of various technical problems related to draining,
4. selects the optimal intervention for the dewatering system,
5. is able to present the optimal intervention to decision makers,
6. identifies construction defects related to dewatering during construction and afterwards,
7. is able to express his thoughts in an orderly form orally and in writing.

C. Attitudes

1. cooperates with the teacher and fellow students in expanding the knowledge,
2. expands his knowledge with continuous acquisition of knowledge,
3. open to the use of information technology tools,
4. strives to know and routinely use the system of tools needed to solve drainage problems,
5. strives for an accurate and error-free solution,
6. strives for economic efficiency

D. Autonomy and Responsibility

1. independently considers and solves drainage tasks and problems based on specific resources,
2. openly welcomes substantiated critical remarks,
3. in some situations - as part of a team - cooperates with his / her fellow students in solving the tasks,
4. takes a systematic approach to its thinking.

2.3 Methods

Lectures with theoretical knowledge; written and oral communication. Use of IT tools and techniques. Solving case study tasks together

2.4 Course outline

Hét	**Előadások és gyakorlatok témaköre**
1.	Introduction, Hydrogeological aspects of the path of transport routes
2.	The effects of the old and the new approach to municipal water management (on the runoff factor, concentration time, design water flows, water quality)
3.	Modeling possibilities of drainage system (side and catch water drain, open, closed channels)
4.	Overview of storage options, infiltration options, sizing problems
5.	Determination of the flow profile of bridges, sizing of culverts, watercourses, crossings, corrections (small watercourses, canals, rivers, lakes, standing waters) from the point of view of construction, design, technical solutions
6.	Sediment traps, sinks, raised and other drainage edges
7.	Impact of climate change on drainage, design considerations
8.	Environmental aspects of runoff
9.	Maintenance aspects of roadway drainage
10.	Modern construction and renovation technologies in stormwater drainage
11.	Peculiarities of airport dewatering
12.	Case studies (hydrological, hydraulic aspects)
13.	Case studies (track structure aspects)
14.	Sub-summary, Midterm Test

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

- Downloadable materials
- Lecture drafts
- Slides of lectures

2.6 Other information

2.7 Consultation

Consultation dates: as indicated on the department's website,

or by prior arrangement by e-mail; e-mail: fulop.roland@epito.bme.hu

This Subject Datasheet is valid for:

Inactive courses

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The assessment of the learning outcomes set out in chapter 2.2. is based on a midterm test and active participation in the lectures (partial performance assessment).

3.2 Assessment methods

Teljesítményértékelés neve (típus)	Jele	Értékelt tanulási eredmények
Midterm test (summary evaluation)	MT	A.1-A.7; B.1-B.7; C.1-C.6; D.1-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
MT	100%
Összesen	**100%**

3.4 Requirements and validity of signature

Writing the successful midterm test

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%
Fail (1)	<50%

3.6 Retake and repeat

The midterm test can be repeated – once without fee – at a previously determined date given in the course schedule. If the first repetition is also unsatisfactory (failed), then the test can be repeated once more, during the repetition week, by paying a fee.

3.7 Estimated workload

Activity	Hours/semester
contact hours	2×14=28
preparation for the courses	32
preparation for the tests	30
Sum	**90**

3.8 Effective date

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