Desing of Water Damage Prevention Structures - BMEEOVVMV62

I. Subject Specification

1. Basic Data

1.1 Title

DESIGN OF WATER DAMAGE PREVENTION STRUCTURES

1.2 Code

BMEEOVVMV62

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	2
Seminar	1

1.5 Evaluation

Midterm grade

1.6 Credits

4

1.7 Coordinator

name	Dr. Csoma Rózsa
academic rank	Associate professor
email	csoma.rozsa@emk.bme.hu

1.8 Department

Department of Hydraulic and Water Resources Engineering

1.9 Website

https://epito.bme.hu/BMEEOVVMV62
https://edu.epito.bme.hu/course/view.php?id=4914

1.10 Language of instruction

english

1.11 Curriculum requirements

Recommended elective in the Specialization in Water and Hydro-Environmental Engineering (MSc) programme

1.12 Prerequisites

Recommended prerequisites:

- Water Damage Prevention and Water Use (BMEEOVVA-F1)
- Hydraulic Engineering Project Work (BMEEOVVA-FP)

1.13 Effective date

1 September 2021

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2. Objectives and learning outcomes

2.1 Objectives

The course introduces the hydraulic engineering structures for flood retention, their hydrological and hydraulic dimensioning, solving soil mechanical, structural, constructional problems, and taking environmental questions also into consideration.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. to be aware of the general terminology of flood protection structures,
2. to be aware of the methodology of flood calculation,
3. to be aware of the basic relationships of flood storage,
4. to be aware of the basic types of flood diversion structures, their dimensioning and construction,
5. to be aware of the basic idea of the dimensioning of dykes and earth dams,
6. to be aware of the basic idea of the dimensioning of compound and large structures.

B. Skills

1. to be able to compare the results of several methods for a given catchment to determine peak flood, and to be able to evaluate the results and choose the best method,
2. to be able to identify and analyse the hydraulic process going on in compound systems of structures, and to choose the best method available for the dimensioning
3. to be able to prove the stability of simple earth dams,
4. based on the knowledge collected in the field of informatics to be able to solve problems of medium size computational requirements,
5. to be able to present the results in clear technical drawings,
6. to be able to present his/her results in proper written form,

C. Attitudes

1. to collaborate with the teachers and his/her mates in gaining knowledge,
2. to follow the lectures, to make effort to understand the study material,
3. to be open to the use of IT tools and equipment
4. to strive for the proper identification of flood protection problems and their proper solution,
5. to strive for accuracy in his/her calculations/solutions,
6. to realize the importance of the effects of human activities on the environment.

D. Autonomy and Responsibility

1. to be independent in problem statements and solutions in case of flood storage problems,
2. to be open to careful and deep going critique,
3. as a group member to collaborate with the mates to solve technical problems,
4. to understand the complexity, comprehensiveness of the problems and recognizing the synergies.

2.3 Methods

Theoretical lectures, design guidelines and continuous consultation, oral and written communication, the application of IT tools and technics, group work of 2 or 3 persons preparing a larger project work, the organisation of the work.

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Introduction, the most important features of flood retention reservoirs
2.	The determination of the design flood
3.	The determination of the reservoir volume
4.	The design of the diversion and outlet structures

5.	The design of the dam and the other structural elements
6.	The stability of the structures
7.	First presentation and discussions
8.	The sizing and stability of the dam
9.	The calculation of the sinking of the dam
10.	The control of the calculations, consultation
11.	The presentation of the results in drawing and text, technical report
12.	Special reservoirs, special questions of the design work, case studies
13.	Second presentation and discussions
14.	The finalizing of the 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. CHANSON, Hubert: The Hydraulics of Open Channel Flow: An Introduction. Elsevier, 2004.
2. S. L. Dingman: Physical Hydrology, Prentice-Hall.

b) Online materials: materials uploaded to the web site of the subject, e.g.:

1. Lecture notes, electronic lecture notes,
2. Slides of lectures and practices,:

2.6 Other information

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2.7 Consultation

The instructors are available for consultation during their office hours, as advertised on the department website at the beginning of the semester.

This Subject Datasheet is valid for:

2025/2026 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 two midterm presentation and the final project work.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1st presentation	PREZ1	A.1-A.4; B.1-B.2, B.4-B.6; C.1-C.6; D.3
2nd presentation	PREZ2	A.1, A.5-A.6; B.3-B.4; C.1-C.6; D.3
Project work	HF	A.1-A.6; B.1-B.6; C.4-C.6; D.1-D.4
Activity during the classes	A	A.1; B.1-B.3; 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
PREZ1	15
PREZ2	15
HF	60
A	10
Sum	**100%**

3.4 Requirements and validity of signature

No signature can be obtained.

3.5 Grading system

At least 70% of the attendance of lectures and seminars are expected.
In case of fulfilling the attendance requirements and project work assignments with the grade at least „satisfactory", the final grade is the average value of the grade of the presentations and the homework assignments and the class activity weighted according to the clause 3.3.

3.6 Retake and repeat

1. The project work – after the payment of the fee as described in the Regulations – can be submitted with delay until the last day of the supplementary week, until 12:00 a.m..
2. The submitted and accepted homework can be corrected without any fee until the deadline described in the point 1.
3. The two midterm presentations have no minimum requirements, therefore they cannot be retaken.
4. "Class activity" A cannot be repeated, cannot be substituted with other forms of activity.

3.7 Estimated workload

Activity	Hours/semester
Contact hours	14×3=42
Preparation for the classes	6
Preparation for the presentations	2×8=16
Project work	50
Home studying of the written material	6
Sum	**120**

3.8 Effective date

1 September 2021

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2025/2026 semester I