

## I. Subject Specification

### 1. Basic Data

#### 1.1 Title

Integrated Water Management

#### 1.2 Code

BMEEOVVMX61

#### 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

3

#### 1.7 Coordinator

name	Dr. Farkas-Karay Gyöngyi
academic rank	Assistant professor
email	<a href="mailto:karay.gyongyi@emk.bme.hu">karay.gyongyi@emk.bme.hu</a>

#### 1.8 Department

Department of Hydraulic and Water Resources Engineering

#### 1.9 Website

<https://epito.bme.hu/BMEEOVVMX61>

<https://fiek2.mywire.org/course/view.php?id=3476>

#### 1.10 Language of instruction

hungarian

## 1.11 Curriculum requirements

Optional in the Infrastructure Engineering (MSc) programme

## 1.12 Prerequisites

Recommended prerequisites:

- Vízkészletgazdálkodás (BMEEOVVAI43)
- Vízgyűjtőgazdálkodás (BMEEOVVA-F2)

## 1.13 Effective date

1 September 2022

## 2. Objectives and learning outcomes

### 2.1 Objectives

The course is a combination of Planning in Water Management and Economics of Water Management. To integrate the environmental, economic and social aspects in operational Water Management and its design is of utmost importance, thus the reason for the combination of the two former subjects. The lectures concentrate mostly on providing Master Degree level information on targeting sustainable water managerial aims. The students will study the basic principles and methods of integrated water management, the roles of economic analysis of water uses and the risks related to mitigate the harmful impacts of waters. During the semester several best practices will be used as illustrations to the lecture materials. Following a short [introduction](#) of the basic terms and theories of the integrated water managerial practices, the needs for the integrated approach, examples will be discussed concerning water managerial planning aiming at reaching economic and social goals. Emphasis will be on cost-recovery and cost-benefit methods.

### 2.2 Learning outcomes

Upon successful completion of this subject, the student:

#### A. Knowledge

1. Basic terms of integrated water management and water economics and basic knowledge about their application possibilities.
2. Information about the important national and international challenges and good practices to tackle them.
3. Basic knowledge about the water management practices in compliance with the Water Framework Directive (WFD).
4. Information about methods for water economics..

#### B. Skills

1. Will be able to execute water management planning tasks with integrated approach, taking into consideration the sustainable goals and the national and international best practices.
2. Will be able to participate in water management planning tasks according to WFD.
3. Will be able to contribute to economic analyses as well as to cost-recovery, cost effective and cost-benefit analyses.
4. Will be able to communicate in orderly fashion both orally and in written presentations.

#### C. Attitudes

1. Will cooperate with the lecturers during the course.
2. Continuously search for new information.
3. Will be open to apply new technologies and equipment.
4. Will aspire to solve tasks precisely and accurately.
5. Will actively participate on the interactive lectures.

## D. Autonomy and Responsibility

1. Independently will solve the planning tasks and seek solutions for problems.
2. Will be open to learn from objective criticism.
3. Will be methodological in problem solving.

## 2.3 Methods

Lectures about the theoretical material, practices, opportunities in group discussions, individual tasks to be solved, consultations, communication orally and written form.

## 2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	The basis of the integrated water management. Why is it "integrated" and why "water catchment"?
2.	Integrated water management vs. EU Water Framework Directive.
3.	Water safety.
4.	Tony Allan's virtual water concept.
5.	International water resources management.
6.	Sustainable waterway planning.
7.	Sustainable hydropower development.
8.	Microeconomy short overview.
9.	Economic aspects of Water Framework Directive.
10.	Environmental economy.
11.	Regional policies – strategic planning. Water management objectives.
12.	Regional policies – strategic planning and implementation.
13.	Water management projects – financial and economic analysis.
14.	Case studies.

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. Global Water Partnership. Integrated water resources management in Central and eastern Europe. Technical Focus Paper 2015.

### b) Letölthető anyagok:

1. presentation of the lectures

## 2.6 Other information

Participation in the contact classes and in the field trip is obligatory.

## 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:

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 tests and homework project (HW) assignments.

## 3.2 Assessment methods

<b>Evaluation form</b>	<b>Abbreviation</b>	<b>Assessed learning outcomes</b>
Midterm test	T	A.1-A.4; B.1-B.4; C.1, C.2
Homework	HW	A.2, A.3; B.1-B.2; 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

<b>Abbreviation</b>	<b>Score</b>
T	50%
HW	50%
<b>Sum</b>	<b>100%</b>

## 3.4 Requirements and validity of signature

No signature can be achieved.

## 3.5 Grading system

<b>Grade</b>	<b>Points (P)</b>
excellent (5)	$85 \leq P$
good (4)	$72 \leq P < 85\%$
satisfactory (3)	$60 \leq P < 72\%$
passed (2)	$50 \leq P < 60\%$
failed (1)	$P < 50\%$

## 3.6 Retake and repeat

Student fulfilled the attendance requirements, completed the midterm test with results  $\geq 50\%$  and submitted the homework with results  $\geq 50\%$ , the semester grade is calculated with the score specified in clause 3.3. above.

## 3.7 Estimated workload

<b>Activity</b>	<b>Hours/semester</b>
contact hours	$14 \times 3 = 42$
preparation for the test	$1 \times 16 = 16$
preparation of the homework	$1 \times 24 = 24$
home studying of the written material	8
<b>Sum</b>	<b>90</b>

3.8 Effective date

1 September 2022

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