



# **SUBJECT DATASHEET**

## **Sustainable Environmental and Natural Resource Management**

### **BMEGT42MN30**

# I. SUBJECT DESCRIPTION

## 1. SUBJECT DATA

### Subject name

Sustainable Environmental and Natural Resource Management

### ID (subject code)

BMEGT42MN30

### Type of subject

contact lessons

### Course types and lessons

<i>Type</i>	<i>Lessons</i>
Lecture	2
Practice	0
Laboratory	0

### Type of assessment

mid-term grade

### Number of credits

3

### Subject Coordinator

<i>Name</i>	<i>Position</i>	<i>Contact details</i>
Dr. Horváth György Ádám	Senior Lecturer	horvath.gyorgy@gtk.bme.hu

### Educational organisational unit for the subject

Department of Environmental Economics and Sustainability

### Subject website

<https://edu.gtk.bme.hu>

### Language of the subject

magyar - HU, angol - EN

### Curricular role of the subject, recommended number of terms

Programme: **MSc in Engineering Management**

Subject Role: **Compulsory**

Recommended semester: **2**

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Programme: **Master of Science Degree Program in Engineering Management**

Subject Role: **Compulsory**

Recommended semester: **2**

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### Direct prerequisites

**Strong** None

**Weak** mikro- és makroökonómia - környezetgazdaságtan, micro- and macroeconomics - environmental econo

**Parallel** None

**Exclusion** TVSZ szerint bármely más tárgykódon meghirdetett, szabadon választhatóként felvett, hasonló tematikájú tárgy korábbi teljesítése esetén. / According to the CoS any other course with a similar syllabus not listed here.

### Validity of the Subject Description

## 2. OBJECTIVES AND LEARNING OUTCOMES

### Objectives

The course unit aims to introduce students to the fundamental environmental and natural resource based problems that our contemporary society must face. Starting out from the economic basics, through a review of case studies to future-conscious decisions, students will gain an insight into environmental and natural resource economics. It is the objective of the course to empower students to understand the global events related to sustainable development and climate change, and to afford them the capability of taking fair, balanced and socially beneficial decisions.

### Academic results

#### Knowledge

1. The student understands the importance of the economic approach in the transition to sustainable development.
2. The student is aware of the decision-making approach in economics.
3. The student has a basic knowledge of environmental valuations and its primary methods.
4. The student understands static and dynamic efficiency, and the decision-making it supports.
5. The student is aware of the problem of time frames in the decision making process. In particular, the student is acutely aware of the consequences of very long time frames.
6. The student understands the basic interrelations of resource management, fundamental problems and possible solutions. They are aware of the role and availability of substitutes, and the cost factor.
7. They understand the necessity of an energy transformation, its drivers, opportunities and limitations.
8. They are aware of the necessity of recycling, and are informed about the opportunities and limitations in the recyclability of certain substances and materials.
9. They understand the particularities of the fundamental resources necessary for the sustenance of human existence, such as water, air, soil and agricultural land.
10. The student understands the opportunities and contemporary challenges in food production, fishing and hunting, agricultural production and forestry, including local and global trends.
11. They comprehend the economics of pollution control, including that of local and regional, diffused, global and mobile sources, and possess an essential toolkit for their management.
12. The student understands the problems arising from the production, handling and storage of wastes, including harmless, toxic and nuclear wastes, and their economic, social and environmental implications to the present and future.
13. The student understands the basic environmental processes behind climate change, its phenomena and consequences, and the institutions and objectives humanity has established for its mitigation.
14. The student understands the objectives of humankind for the 21st century, the main shapers of sustainable development, issues of population and population growth conflicts, and the trajectories of mankind's future.

#### Skills

1. The student is sensitive towards and is capable of solidarity with future generations, and is capable of taking future-conscious, fair and equitable decisions.
2. The student is capable of drawing up economic, social and environmental plans for the future, and is competent at assessing these.
3. They are capable of assessing decisions taken from an economic, social and environmental aspect, bearing in mind the impacts on future generations.
4. They are able to manage resources sustainably.
5. They are competent in recognising problems arising from pollution, and are capable of finding appropriate solutions.
6. The student comprehends the basics of climate change, and is capable of taking decisions accordingly.
7. They are capable of foreseeing the challenges of the 21st century, and are capable of taking preventative, preservative or regenerative measures.

#### Attitude

1. The students collaborate/cooperate with the lecturer and fellow students on acquiring knowledge
2. The students expand their knowledge by continuous learning
3. The students are open to use IT solutions
4. The student strives to understand the nature and problems associated with environmental and natural resources in the interest of securing the commonwealth of society
5. The student exercises due empathy and interest towards other members of society, and shall act respectfully and cautiously in the shared interest of society.

#### Independence and responsibility

1. The students are able to work individually: selecting methods and techniques; organizing, planning, coordinating work; collecting, organizing, analysing, evaluating data; developing in general and professionally.
2. The students are able to apply system-oriented thinking.
3. The students are able to take responsibility for the analyses, conclusions, decisions made.
4. The students are able to perform tasks individually and with responsibility as a member of a project team.
5. The student aims to overcome all and any shortcomings in any adjoining disciplines and knowledge areas, including natural sciences, philosophy or social and economic studies.

### Teaching methodology

Lectures, problem discussions and case studies. Oral and written communication, use of IT, optional individual and group assignments and planning.

**Materials supporting learning**

- Tankönyvek, jegyzetek, letölthető anyagok – Textbooks, other material:
- Bartus Gábor - Szalai Ákos: Környezet, jog, gazdaságtan. Budapest: Pázmány Press, 2014.
- Szilávik János (szerk.): Fenntartható környezet- és erőforrás-gazdálkodás. Környezetvédelmi kiskönyvtár 14. Complex kiadó, Budapest, 2005.
- Tietenberg, Tom – Lewis, Lynne: Environmental & Natural Resource Economics. 10th Edition. Pearson, 2014
- Phaneuf, D. J. – Requate, T.: A course in environmental economics. Theory, Policy and Practice. Cambridge University Press, 2017.
- Folyóiratcikkek és további, folyamatosan kiadott oktatástámogató anyagok
- A detailed and up-to-date list is provided during classes.

# II. SUBJECT REQUIREMENTS

## TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

### General Rules

The basis for the evaluation of the learning outcomes stated in point 2.2 is the partial performance evaluations (handing in 2 assignments) used to measure the competencies acquired during the semester.

### Performance assessment methods

Detailed description of the evaluation of learning outcomes carried out during the study period: 1. Formative assessment: a complex, written evaluation method of the subject's knowledge and ability-type competence elements in the form of an independent assignment task (management summary). The task to be submitted focuses on the assessment of the acquired basic knowledge, especially on conceptual

knowledge, basic relations and their practical application. The course material on which the evaluation is based on is determined by the lecturer of the subject, the available working time is 90 minutes. 2. Formative assessment: a complex, written evaluation method of the subject's knowledge and ability-type competence elements in the form of a independent assignment task (case study) to be developed.

The subject of the case study must be discussed with and approved by the instructor in advance (topic selection). The essay focuses on the assessment of the acquired basic knowledge, especially on conceptual knowledge, basic relations and their practical application. The course material on which the evaluation is based on is determined by the lecturer of the subject. The deadline for the submission of the task is determined by the instructor.

### Percentage of performance assessments, conducted during the study period, within the rating

- 1st formative assessment (managements summary): 30
- 2nd formative assessment (case study): 70
- total: 100

### Percentage of exam elements within the rating

### Conditions for obtaining a signature, validity of the signature

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### Issuing grades

Excellent	95
Very good	87-94
Good	75-86
Satisfactory	62-74
Pass	50-61
Fail	0-49

### Retake and late completion

1) Pursuant to the current CoS, in the case of formative assessments, if the assignment was submitted on time, it is possible to repeat or retake it before the end of the late completion period, if the original task has already been accepted by the instructor. 2) Formative assessments can be submitted late, subject to payment of the special procedure fee specified in the regulations. The latest date for late submission is the last day of the late completion period. 3) Taking into account the above, in the case of the first formative assessment (executive summary), late completion/repeat is possible, in the case of the second formative assessment (case study), only late submission is possible, late completion/repeat is not possible.

### Coursework required for the completion of the subject

participation	28
preparation for lectures	12
preparation for the first formative assessment	10
preparation of the second formative assessment	10
development of the second formative assessment	30
total	90

### Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 04.03.2024.

# III. COURSE CURRICULUM

## THEMATIC UNITS AND FURTHER DETAILS

### Topics covered during the term

In order to achieve the learning outcomes set out at point 2.2, the subject consists of the following thematic blocks. In the syllabi of the courses announced in each semester, these topics are scheduled according to the calendar and other conditions.

- 1 Visions of the future. The economic approach in managing resources. Evaluating trade-offs, cost-benefit analyses and decision-making tools.
- 2 Valuing the environment: economic reasons and methods. Dynamic efficiency and sustainable development.
- 3 Depletable resource allocation. Energy: from depletables to renewables. Recyclable resources.
- 4 Replenishible but depletable resources. Economic questions of land use.
- 5 Agriculture and food security. Forests.
- 6 Common-pool resources.
- 7 Economics of pollution control.
- 8 Stationary source air pollution. Mobile source air pollution.
- 9 Climate change. Water pollution. Toxic substances and environmental justice.
- 10 The quest for sustainable development. Population and development. Visions of the future revisited.
- 11 Visions of the future. The economic approach in managing resources. Evaluating trade-offs, cost-benefit analyses and decision-making tools.
- 12 Valuing the environment: economic reasons and methods. Dynamic efficiency and sustainable development.

### Additional lecturers

Dr. Valkó László címzetes egyetemi tanár/ honorary professor valko.laszlo@gtk.bme.hu

### Approval and validity of subject requirements