



SUBJECT DATASHEET

Sustainable Environmental and Natural Resource Management

BMEGT42MN20

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name

Sustainable Environmental and Natural Resource Management

ID (subject code)

BMEGT42MN20

Type of subject

contact lessons

Course types and lessons

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

Type of assessment

exam grade

Number of credits

3

Subject Coordinator

| <i>Name</i> | <i>Position</i> | <i>Contact details</i> |
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| Dr. Horváth György Ádám | senior lecturer | horvath.gyorgy@gtk.bme.hu |
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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: **Master of Science Degree Program in Engineering Management**

Subject Role: **Compulsory**

Recommended semester: **0**

Programme: **MSc in Engineering Management**

Subject Role: **Compulsory**

Recommended semester: **0**

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

Approved by the Faculty Board of Faculty of Economic and Social Sciences, Decree No: 580672/5/2023 registration number. Valid from: 25.10.2023.

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 students strive to understand the working mechanisms of complex government systems,
5. The student strives to understand the nature and problems associated with environmental and natural resources in the interest of securing the commonwealth of society,
6. 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 take responsibility for the analyses, conclusions, decisions made.
3. The students are able to perform tasks individually and with responsibility as a member of a project team.
4. The students are able to apply system-oriented thinking.
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

- Bartus Gábor - Szalai Ákos: Környezet, jog, gazdaságtan. Budapest: Pázmány Press, 2014.
- Szlávik János (szerk.): Fenntartható környezet- és erőforrás-gazdálkodás. Környezetvédelmi kiskönyvtár 14. Complex kiadó, Budapest, 2005.
- Tietenberg, Tom – Lewis, Lynne: Environmental & Natural Resource Economics. 11th Edition. Pearson, 2018.
- 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 learning objectives detailed in 2.2 will be assessed by means of 1. Two summative assessments during the semester (2 mid-term assessments); 2. An optional formative assessment (individual homework assignment) during the semester to establish the level of analytical, evaluational and planning skills. 3. As well as – in absence of a proposed grade – a written exam in the exam period.

Performance assessment methods

A. Assessments to be completed during the semester: 1. Summative assessments: the written evaluation (mid-term exam) is a timed analytical-evaluative work, assessing the student's knowledge and competences in a complex form. This written assessment aims to determine the level of knowledge of the basics, in particular, conceptual knowledge and the extent and limitations to its practical applicability. The part of the course material covered by each summative assessment will be determined as appropriate by the course lecturer. Students have 120 minutes to complete this in-class work. 2. Formative assessment (homework exercise): a complex assessment tool covering knowledge, competence, attitude, autonomy and responsibility, in the form of a written research paper (essay), the preparation and theme of which needs to be approved by the lecturer until a given deadline during the semester. This is preferably individual work, however, more in-depth analyses may be attempted in teams of no more than three students. Particulars of this homework exercise (including topics, requirements, deadline, evaluation methods) will be announced by the lecturer. B. Assessments during the exam period: There is a possibility to acquire a proposed grade based on the performance in the summative (and possible formative) assessments. If a proposed grade is not acquired, a written exam needs to be completed during the exam period. The part of the course material covered will be determined as appropriate by the course lecturer.

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

- 1st summative assessment (mid-term exam): 50
- 2nd summative assessment (mid-term exam): 50
- Voluntary formative assessment (essay): 20
- Total: 120

Percentage of exam elements within the rating

- Written exam: 100

Conditions for obtaining a signature, validity of the signature

Successful completion of the two summative assessments. The acquired signature is valid for the period specified in the current C

Issuing grades

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| 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, each of the two summative assessments can be retaken, repeated or completed late. 2) The summative assessments can be retaken, repeated or completed late for the first time during the late completion period free of charge. In the event of a correction, the new result always overwrites the old one. 3) If the student is unable to obtain a grade other than 'Fail' even with the retake, repeat and late completion possibilities according to point 1), they may make a second attempt to successfully complete the course after paying the fee specified in the regulations. 4) Due to the optional nature of the formative assessment, a retake or repeat is not possible, however, after notifying the instructor in advance and with the instructor's permission a late completion of the task is. The deadline for late completion is determined by the instructor.

Coursework required for the completion of the subject

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| participation in contact classes | 28 |
| preparation for lectures | 12 |
| preparation for summative assessments | 20 |
| participation in summative assessments | 8 |
| autonomous reading | 10 |
| preparation for written exam | 12 |
| total | 90 |

Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 09.10.2023.

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

Subject includes the topics detailed in the course syllabus to ensure learning outcomes listed under 2.2. to be achieved. The schedule of topics in the course curriculum in each semester may be affected by the calendar and other constraints.

- 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 Replenishable 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

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Approval and validity of subject requirements