



SUBJECT DATASHEET

I. SUBJECT DESCRIPTION

1. GENERAL DATA

1.1. Subject name (in Hungarian, in English)

Environmental Technology I. (PhD) • Environmental Technology I. (PhD)

1.2. Neptun code

BMEGEÁT4A32

1.3. Type

study unit with contact hours

1.4. Course types and number of hours (weekly / semester)

course type	number of hours (weekly)	nature (connected / stand-alone)
lecture (theory)	2	-
exercise	-	-
laboratory exercise	-	-

1.5. Type of assessments (quality evaluation)

exam

1.6. ECTS

3

1.7. Subject coordinator

name: Dr. Suda Jenő Miklós (71958230447)
post: adjunct
contact: suda@ara.bme.hu

1.8. Host organization

Department of Fluid Mechanics (<http://www.ara.bme.hu>)

1.9. Course homepage

<http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A32/>

1.10. Course language

hungarian

1.11. Primary curriculum type

komplex vizsga tárgycsoport PhD tárgy

1.12. Direct prerequisites

Strong prerequisite:	-
Weak prerequisite:	-
Parallel prerequisite:	-
Milestone prerequisite:	-
Excluding condition:	-

(the subject cannot be taken if you have previously completed any of the following subjects or groups of subjects)

2. AIMS AND ACHIEVEMENTS

2.1. Aim

The aim of the teaching of the subject is to deepen the knowledge of PhD students in environmental technology, as well as to fill the gaps in the narrower topic related to their special field of research. Furthermore, the aim is to acquaint students with the general characteristics of the field of environmental technology, local and global processes and problems, issues of general environmental regulation, the results of international movements and non-governmental organizations, and international conferences. Students will be introduced to the general characteristics of the biosphere, environment, biodiversity, pollutant spread, pollutants, pollution, protection, prevention, sustainable development, global warming, and more. topics. During the semester, students must solve an individual task related to their doctoral topic and help them present their results.

2.2. Learning outcomes

Competences that can be acquired by completing the course:

A. Knowledge

- Knows the general characteristics of the biosphere and environment and the basic issues of environmental protection.
- The student is informed about the general characteristics of pollutant spread (types of sources, emission, spread, immission, transformation).
- Informed about BAT, uniform pollution prevention and control.
- The student has comprehensive knowledge in the fields of environmental protection, prevention and reduction of pollutant emissions.
- The student has comprehensive knowledge of direct and indirect greenhouse gases, greenhouse gas, global warming.
- The student knows the most important activities, results, failures and objectives of civic movements and international conferences.
- The student is aware of the issues of biodiversity and humanity's sense of responsibility for future generations.
- The student is familiar with the key issues of sustainable development, the Kyoto Protocol, the ecological footprint and the biological capacity of the earth.
- The student is aware of the issues of energy use, energy sources, fossil and renewable energy sources.
- The student is aware of the defining characteristics of the atmosphere and climate, climate change in terms of environmental technology.

B. Ability

- The student uses the related concepts of the subject and the research topic area.
- The student Analyzes the available domestic and international literature sources in the field.
- The student interprets the concepts of regulation specific to the topic area.
- The student is able to identify environmental and technical issues related to the subject and research topic.

- The student identifies the parameters characteristic of the field and the field of research related to the research topic, their theoretical and practical modification possibilities.
- The student is able to comprehensively analyze the role, activities and main results of non-governmental organizations and international conferences.
- The student is able to make decisions based on the importance of biodiversity and the sense of responsibility that humanity has for future generations.
- The student analyzes the key environmental issues of sustainable development and ecological footprint.
- The student comprehensively analyzes the key issues of environmentally beneficial energy management.
- The student outlines the atmosphere and climate, respectively. properties and characteristics important for the subject of climate change.

C. Attitude

- The student constantly monitors his work, results and conclusions.
- The student expands the knowledge of the subject by continuously acquiring knowledge.
- The student is open to the use of information technology tools.
- The student seeks to learn about and routinely use the tools needed to solve environmental problems.
- The student develops your ability to provide accurate and error-free problem solving, engineering precision and accuracy.
- The student strives for demanding engineering work and makes a decision based on careful consideration.
- The student monitors changes in the social, economic and political system.
- The student publishes the results in accordance with the professional rules.
- The student publishes its opinions and views without offending others.

D. Independence and responsibility

- The student collaborates with the instructor and fellow students to expand knowledge.
- The student accepts well-founded professional and other critical remarks.
- In some situations, as part of a team, the student works with your fellow students to solve tasks.
- With the knowledge, the student makes a responsible, informed decision based on well-founded analyzes.
- The student feels a responsibility for the sustainable use of the environment and for present and future generations.
- The student is committed to the principles and methods of systematic thinking and problem solving.

2.3. Teaching methodology

In the lectures of the subject held at a given time on a pre-arranged weekly basis, the parts of the curriculum related to the individual research topic of the students are presented in the framework of a consultation, which helps to acquire the parts of the curriculum independently. During the semester, students are given an individual task that belongs to the subject of the subject and is also related to their research topic, which they have to solve during the semester and report on the result. During the solution of individual tasks, within the framework of the lectures or beyond that, consultation is possible.

2.4. Support materials

a) Textbooks

Dr. István Barótfi (editor): Environmental Technology, Agricultural Publisher, Budapest, 2000. ISBN: 963 9239 50 X

Dr. Attila Kerényi: General Environmental Protection, Mozaik Oktatási Stúdió Kft, 2006. ISBN: 9789636971885

Dr. Ernő Mészáros: Fundamentals of Environmental Science, Akadémiai Kiadó, 2002. ISBN: 963 05 7879 8

b) Lecture notes

Mihály Parti: Environmental Management Systems Part I (lecture note, www.ara.bme.hu), Budapest, 2020

c) Online materials

<http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A32/>

2.5. Validity of the course description

Start of validity:	2020. February 15.
End of validity:	2024. December 31.

II. SUBJECT REQUIREMENT

3. ACHIEVEMENT CONTROL AND EVALUATION

3.1 General rules

During the semester, the student solves an independent task closely related to his / her own doctoral research topic. During the semester, the theoretical lectures give each student the theoretical knowledge and methodology needed to solve the problem. Students work independently on their own assignments, and the lecturer is regularly consulted as they progress. At the end of the semester, students present the results in front of each other and prepare a documentation. At the end of the semester, the result of the oral exam consists of the completion of the semester assignment and the quality of the presentation.

3.2 Assessment methods

A. Detailed description of mid-term assessments

Mid-term assessment

type: formative assessment, project-based, complex

count: 1

purpose, To be developed during the semester, a project task related to PhD research, which helps to deepen the

description: acquisition of the curriculum through theoretical and practical calculations and derivations. The aim of the partial achievement is to examine the existence of knowledge, ability, attitude, and learning outcomes belonging to the autonomy and responsibility competence group. Upon successful completion of the task, the student stabilizes the knowledge acquired in the lectures.

B. Detailed description of assessments performed during the examination period (if relevant)

Elements of the exam:

1. written partial exam

obligation: mandatory (partial) exam unit, failing the unit results in fail (1) exam result

In the written exam, the speaker gives three questions to be explained from the curriculum, which the students develop over a given period of 120 minutes. In order to develop the written examination

description:task, the students taking the written examination may not use any aids not permitted by the instructor during the written examination and may write their answers only on the official examination sheet issued by the department.

2. oral partial exam

obligation: mandatory (partial) exam unit, failing the unit results in fail (1) exam result

description:In the oral exam, the speaker asks three questions from the curriculum, which the students answer in detail at the board after a few minutes of reflection time. In order to develop the oral examination question, the students taking the oral examination may not use any aids not permitted by the instructor during the oral examination. Students can take the oral exam after a successful written exam.

3. practical partial exam

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4. inclusion of mid-term results

obligation: mandatory (partial) exam unit, failing the unit results in fail (1) exam result

description: The result of the mid-year task is included in the exam ticket. Elaboration of the task and its presentation in the form of a presentation is a prerequisite for admission to the exam. The elaboration of the mid-year task and its presentation in the form of a presentation is a precondition for being eligible for the exam, so it is one of the preconditions for a successful exam. Beyond these, there is no other way to credit the mid-year assignment result to an exam ticket.

3.3 The weight of mid-term assessments in signing or in final grading

identifier	weight
Mid-term assessment	100 %

The condition for signing is that the score obtained in the mid-year assessments is at least **40%**.

3.4 The weight of partial exams in grade (if relevant)

type	weight
written partial exam	50 %
oral partial exam	25 %
practical partial exam	0 %
inclusion of mid-term results	25 %

3.5 Determination of the grade

grade • [ECTS]	the grade expressed in percents
very good(5) • Excellent [A]	above 95%
very good(5) • Very Good [B]	85% .. 95%
good(4) • Good [C]	70% .. 85%
satisfactory(3) • Satisfactory [D]	55% .. 70%
sufficient(2) • Pass [E]	40% .. 55%
insufficient(1) • Fail [F]	below 40%

The lower limit specified for each grade already belongs to that grade.

3.6 Attendance and participation requirements

Must be present at at least **70%** (rounded down) of lectures.

3.7 Special rules for improving, retaken and replacement

The special rules for improving, retaken and replacement shall be interpreted and applied in conjunction with the general rules of the CoS (TVSZ).

Can the submitted and accepted partial performance assessments be resubmitted until the end of the replacement period in order to achieve better results?

yes

Taking into account the previous result in case of improvement, retaken-improvement:

new result overrides previous result

The way of retaking or improving a partial assessment for the first time:

partial assesment(s) in this group can be improved or repeated once up to the end of the repeat period

3.8 Study work required to complete the course

Activity	hours / semester
participation in contact classes	28
elaboration of a partial assessment task	30
exam preparation	21
additional time required to complete the subject	11
summary	90

3.9. Validity of subject requirements

Start of validity:	2020. February 15.
End of validity:	2024. December 31.

4. ADDITIONAL INFORMATION

4.1 Primary course

The primary (main) course of the subject in which it is advertised and to which the competencies are related:
mechanical_engineering_sciences_PhD_programme

4.2 Link to the purpose and (special) compensations of the Regulation KKK

This course aims to improve the following competencies defined in the Regulation KKK>

- a) knowledge
- b) ability
- c) attitude
- d) independence and responsibility

4.3 Prerequisites for completing the course

Knowledge type competencies

(a set of prior knowledge, the existence of which is not obligatory, but greatly facilitates the successful completion of the subject)	BSc and MSc level basic knowledge of environmental engineering.
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Ability type competencies

(a set of prior abilities and skills, the existence of which is not obligatory, but greatly contributes to the successful completion of the subject)	Independent, creative engineering problem-solving ability, ability to recognize and analyze the essential connections between complex flow phenomena and flow engineering processes
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