Urban Environment - BMEEOVKAI42

I. Tantárgyleírás

1. Alapadatok

1.1 Tantárgy neve

Urban Environment

1.2 Azonosító (tantárgykód)

BMEEOVKAI42

1.3 Tantárgy jellege

Kontaktórás tanegység

1.4 Óraszámok

Típus	Óraszám / (nap)
Előadás (elmélet)	2
Konzultáció	1

1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa

Félévközi érdemjegy

1.6 Kreditszám

3

1.7 Tárgyfelelős

név	Dr. Kardos Máté Krisztián
beosztás	Adjunktus
email	kardos.mate@emk.bme.hu

1.8 Tantárgyat gondozó oktatási szervezeti egység

Vízi Közmű és Környezetmérnöki Tanszék

1.9 A tantárgy weblapja

https://epito.bme.hu/BMEEOVKAI42
https://edu.epito.bme.hu/course/view.php?id=3582

1.10 Az oktatás nyelve

angol

Urban Environment - BMEEOVKAI42

1.11 Tantárgy típusa

Kötelező az építőmérnöki (BSc) szak Infrastruktúra-építőmérnöki ágazatán

1.12 Előkövetelmények

Strong prerequisites:

- Basics of Environmental Engineering (BMEEOVKAT41)

1.13 Tantárgyleírás érvényessége

2022. szeptember 1.

2. Célkitűzések és tanulási eredmények

2.1 Célkitűzések

The aim of the course is to introduce civil engineering students to the typical environmental and public health problems of urbanized areas. It discusses the role of the city in the development of environmental problems, as well as the root causes of the effects on air, soil, water and wildlife caused by the environmental load from the operation of the settlements, and the interventions - mainly civil engineering - to eliminate them.
Students get to know the concepts related to air pollution, highlighting the role of traffic and the formation of odors in sewer networks. Students will learn about the process of contamination of rainwater flowing from the surface of urban areas. Students gain insight into the methods of eliminating typical urban soil pollution and preventing the spread of pollution, as well as the basics of protection against noise, vibration and radiation.

2.2 Tanulási eredmények

A tantárgy sikeres teljesítése utána a hallgató

A. Tudás

1. Understands the basics of interactions between settlements and their environment.
2. He is aware of the hydrological characteristics of settlements and the system of civil engineering solutions for public health infrastructure.
3. He knows the air pollution problems of the settlements and the possibilities of mitigating them.
4. Knows the composition, sources, regional and periodic changes, medium and long-term effects and mitigation options of the pollution of the settlement surface.
5. Knows the types and generation of municipal waste and is aware of the basics of waste management tools.
6. You are aware of the possible sources of soil pollution in settlements, as well as the basics of pollution detection, monitoring and cleaning options.
7. You know the typical noise sources of settlements, the permissible noise levels and the methods of noise measurement. He is knowledgeable about active and passive defense solutions and noise protection plans.

B. Képesség

1. Able to recognize and see through the environmental protection aspects that arise during civil engineering work in the settlement environment.

C. Attitűd

1. He cooperates with the instructor and his group mates during the expansion of knowledge.
2. He expands his knowledge by continuously acquiring knowledge, and for this he even looks for answers to his questions from web sources in addition to the mandatory course materials.

D. Önállóság és felelősség

1. He uses the systematic approach in his thinking.
2. As a civil engineer, he feels a responsibility to work on the creation of more environmentally friendly settlements.

2.3 Oktatási módszertan

- Lectures with theoretical knowledge
- Written and oral communication
- Use of IT tools and techniques
- Personal consultation

2.4 Részletes tárgyprogram

Week	**Topic**
1.	**Introduction**: description of the structure and requirements of the subject. Conceptual definitions. Characteristics of the urban environment, general causes of environmental problems caused by the city.
2.	**Settlement structure** and environmental protection. Steps in the development of settlements. Typical settlement structures. The concept of "green belt".
3.	**Air pollution** in settlements. Pollutants, emission sources and environmental effects. Measures to improve urban air quality.
4.	**Hydrological characteristics** of the settlements. Collection, drainage and treatment of rainwater falling on the settlement. Blue-green infrastructures at the service of the population of the settlement. Effects of climate change.
5.	Collection, drainage and cleaning of urban **wastewater**. Sewage odor problems. Engineering methods to avoid and reduce odor emissions. The basic schemes and steps of wastewater treatment, the most important artefacts.
6.	Composition and sources of contamination of the **settlement surface**. Qualitative and quantitative characterization of pollutants emitted during road and rail transport. Possible prevention (developments in vehicle technology, alternative drive modes) and mitigation (rainwater treatment) of pollution emitted by traffic.
7.	Territorial and seasonal changes in the pollution of the **settlement surface**: characteristics and description of the accumulation of pollutants during dry periods and

	their washing away during rainfall events. Medium and long-term effects.
8.	**Partial summary**
9.	**Noise and vibration**. Typical sources of noise in the settlement. Methods of noise measurement. Permissible noise levels. Active and passive defense solutions, noise protection plans.
10.	**Waste management** in settlements. The concept, types, generation and quantity of waste. Toolbox for municipal waste management. Prevention, utilization, use, treatment and final disposal. Additional activities (collection, selective collection, transport).
11.	**Mobility** and sustainability. Development of sustainable urban mobility plans (SUMP) in Hungary. Smart cities.
12.	Urban **soil pollution**. Sources, detection, monitoring. Characteristics of the spread of soil pollution, methods of preventing the spread. Soil cleaning methods.
13.	Summary.
14.	Midterm test.

A félév közbeni munkaszüneti napok miatt a program csak tájékoztató jellegű, a pontos időpontokat a tárgy honlapján elérhető "Részletes féléves ütemterv" tartalmazza.

2.5 Tanulástámogató anyagok

Downloadable: presentation slides.

2.6 Egyéb tudnivalók

2.7 Konzultációs lehetőségek

During the consultation hours of the lecturers announced on the department's website, in the lecturers' room or at a time agreed in advance with the lecturer. Special appointments can be requested via e-mail from the lecturers: kardos.mate@emk.bme.hu, acs.tamas@emk.bme.hu, varga.laura@emk.bme.hu.

Jelen TAD az alábbi félévre érvényes:

Inactive courses

II. Tárgykövetelmények

3. A tanulmányi teljesítmény ellenőrzése és értékelése

3.1 Általános szabályok

The assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via one written test.

3.2 Teljesítményértékelési módszerek

Evaluation form	Abbreviation	Assessed learning outcomes
Midterm test	MT	A.1-A.7; B.1; C.1-C.2; D.1-D.2

A szorgalmi időszakban tartott értékelések pontos idejét, a házi feladatok ki- és beadási határidejét a "Részletes féléves ütemterv" tartalmazza, mely elérhető a tárgy honlapján.

3.3 Teljesítményértékelések részaránya a minősítésben

Jele	Részarány
MT	100%
Sum	**100%**

Criterion for completion of the subject is to collect at least 50% of the total points of the written test (WT1).

3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége

It is not possible to obtain a signature in this subject.

3.5 Érdemjegy megállapítása

If the student satisfies the attendance criteria, his/her mark will be determined as follows.

Grade	Points (P)
excellent (5)	80%<=P
good (4)	70%<=P<80%
satisfactory (3)	60%<=P<70%
passed (2)	50%<=P<60%
failed (1)	P<50%

The final grade is calculated based on the written midterm test (MT)

3.6 Javítás és pótlás

The midterm test can be repeated – once without paying a fee – at a previously determined date given in the course schedule. If the first repetition is also unsatisfactory (failed), then the test can be repeated once more, during the repetition week, by paying a fee.

3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka

Activity	Hours/semester
participation at the lectures	14×2=28

preparation for the courses	14×1=14
home studying of the written material	18
preparation for the test	30
Sum	**90**

3.8 A tárgykövetelmények érvényessége

2022. szeptember 1.

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Inactive courses