

## Urban Environmental Protection

Code: MK5TKOVK3TX17-EN

ECTS Credit Points: 3

Evaluation: exam

Year, Semester: 1<sup>st</sup> year, 1<sup>st</sup> semester

Its prerequisite(s): -

Further courses are built on it: No

Number of teaching hours/week (lecture + practice): 2 + 0

### Topics:

This series of lectures is based on the topics of urban environmental issues. Characterization of environmental elements. The impact of urbanization on the urban environment and urban metabolism. Green chemistry, chemicals in the environment: their fate and transport. Transport processes in the environment. Air pollution sources in urban environment. Basic atmospheric phenomena. Air pollution modelling. Urban air quality, monitoring and biomonitoring network. Impacts of air pollution. Policies and legislation. Water resource systems. Aquatic chemistry. Water quality control. Water and wastewater treatment technology. The importance of soil, soil origin and development. Soil conservation, erosion, deflation. Characteristics of urban soils. Definitions of waste, waste arising. Methods of characterizing municipal solid waste. The variability of municipal solid waste generation. History of waste treatment and disposal. Waste recycling, economic considerations. Introduction to waste management. Fundamentals of noise and vibration, noise propagation, noise pollution and noise measurements.

### Literature:

Required:

- Andrew Farmer: Handbook of Environmental Protection and Enforcement: Principles and Practice (Hardcover), 294 pages, 2007, ISBN-13: 978-1844073092
- Mukesh Doble: Green Chemistry and Engineering (Hardcover), 381 pages, 2007, ISBN-13: 978-0123725325
- Jerry A. Nathanson, Richard A. Schneider: Basic Environmental Technology: Water Supply, Waste Management and Pollution Control. Prentice Hall (6th Edition, 2015), 456 pages, ISBN-13: 9780132840149

Recommended:

- Trevor Letcher, Daniel Vallero: Waste: A Handbook for Management. Academic Press (1st edition, 2011), 604 pages, ISBN 9780123814753

### Schedule

#### 1<sup>st</sup> week Registration week

#### 2<sup>nd</sup> week:

**Lecture:** The basic concepts of environmental protection and management. Characterization of environmental elements.

#### 4<sup>th</sup> week:

**Lecture:** Transport processes in the environment.

#### 3<sup>rd</sup> week:

**Lecture:** The impact of urbanization on the urban environment and urban metabolism. Green chemistry, chemicals in the environment: their fate and transport. Environmental analysis.

#### 5<sup>th</sup> week:

**Lecture:** Air pollution sources in urban environment. Basic atmospheric phenomena.

**6<sup>th</sup> week:**

**Lecture:** Air pollution modelling. Urban air quality, monitoring and biomonitoring network. Impacts of air pollution.

**8<sup>th</sup> week: 1<sup>st</sup> drawing week****9<sup>th</sup> week:**

**Lecture:** Water quality control. Water and wastewater treatment technology.

**11<sup>th</sup> week:**

**Lecture:** The importance of soil, soil origin and development. Soil conservation, erosion, deflation. Characteristics of urban soils.

**13<sup>th</sup> week:**

**Lecture:** Fundamentals of noise and vibration, noise propagation, noise pollution and noise measurements.

**15<sup>th</sup> week: 2<sup>nd</sup> drawing week****7<sup>th</sup> week:**

**Lecture:** Water resource systems. Aquatic chemistry.

**10<sup>th</sup> week:**

**Lecture:** Protection of Nature and Landscape.

**12<sup>th</sup> week:**

**Lecture:** Definitions of waste, characteristics of municipal solid waste streams. The variability of municipal solid waste generation. Basics of waste treatment and disposal. Introduction to waste management.

**14<sup>th</sup> week:**

**Lecture:** Visit to the Local waste water treatment plant.

**Requirements****A, for a signature:**

Attendance at lectures is recommended, but not compulsory. Active participation is requested and evaluated by the teacher in every class. There are no tests during the semester.

**B, for a grade:**

The course ends in a written exam covering the whole semester material and the students get a grade on the base of its result. The minimum requirement for the end-term test is 60%.

The grade for the tests is given according to the following (score/grade):

0 – 59: fail (1); 60 – 69 points: pass (2); 70 – 79 points: satisfactory (3); 80 – 89 points: good (4); 90 – 100 points: excellent (5)

If the score of the end-term test is below 60, the student will be allowed to write it again and improve their grades.