



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Environmental Biology I [N1IŚrod2>BŚI]

### Course

Field of study

Environmental Engineering

Year/Semester

1/1

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

part-time

Requirements

compulsory

### Number of hours

Lecture

20

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2,00

### Coordinators

dr Beata Mądrecka-Witkowska

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### Lecturers

### Prerequisites

1. Knowledge: Basic knowledge of the biology and ecology of the range of material from high school. 2. Skills: Ability to use literature and self-education, making observations, drawing conclusions, working in a group. 3. Social competencies: Awareness of the need to learn, able to work in a group.

### Course objective

Familiarize students with the basic knowledge about the occurrence and use of microorganisms in the environment. Familiarize students with the problems of ecology, environmental contamination and preventing degradation.

### Course-related learning outcomes

Knowledge:

1. Student knows the classification, systematic position, structure and characteristics of organisms.
2. Has basic knowledge of ecology.
3. Has ordered knowledge of ecology, knows the ecological laws (Liebig and Shelford), elements of the biosphere, population characteristics and has knowledge of development trends in the field of the role of microorganisms in wastewater treatment and air microbiology.

#### Skills:

1. Student is able to carry out experiments, including measurements in the field of selected elements of air protection systems and microbiological contamination of the environment.
2. Can see the aspects of applying the principles of sustainable development.
3. Is able to identify simple engineering tasks of selected water, sewage and air disinfection systems.

#### Social competences:

1. Student is aware of the effects of engineering activities and its impact on the natural environment.
2. Is aware of the social role of the graduate and is prepared to provide information in a commonly understandable way.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

#### Lecture:

#### Examination test.

For each answer you can get 0-1 points. Approximately 45-50% of the maximum points must be obtained. Detailed information on scoring and rating scale are given before crediting.

### Programme content

The course content includes the following issues.

1. The place of environmental biology in environmental engineering.
2. Taxonomy of living organisms.
3. Basics of environmental microbiology.
4. Basics of hydrobiology.
5. Main concepts and laws used in ecology.
6. Anthropogenic transformations of the natural environment and their effects.

### Course topics

#### Lecture:

Ecology of organisms, populations, biocenosis, ecosystem and topography. Characteristic of ecological systems and factors. Influence of anthropopression on environmental. Threats of ecological balance and standards and environmental tidiness. Methods of researches and valorisation of environmental. Structure and working of ecosystem. Sources and flow of energy. Structure of organisms. Profile of Procaryota and Eucaryota. Basic information on botanic, zoology, morphology and physiology of organisms and microorganisms. The role of microorganisms in wastewater treatment and air microbiology.

### Teaching methods

Information lecture, lecture with multimedia presentation, problem lecture.

### Bibliography

#### Basic:

1. Michałkiewicz M., Fiszler M. Biologia sanitarna - ćwiczenia laboratoryjne. Skrypt Politechniki Poznańskiej, 2007
2. Lampert W., Sommer U. Ekologia wód śródlądowych. Warszawa, PWB, 2001.
3. Kunicki-Goldfinger W. Życie bakterii. Wydawnictwo Naukowe PWN, 2001
4. Kunicki-Goldfinger W., Frejlik S. Podstawy mikrobiologii i immunologii. PWN W-wa.

#### Additional:

1. Singleton P. Bakterie w biologii, biotechnologii i medycynie. PWN, 2000.
2. Nicklin J., Graeme-Cook K., Paget T., Killington R.A. Mikrobiologia - krótkie wykłady. PWN, 2000.
3. Zaremba M.L., Borowski J. Mikrobiologia lekarska. PZWL, 2001.
4. Pond E.H., Clark T.F. Mikrobiologia i biochemia gleb. Wyd. UMCS, 2000.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	20	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00