



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Toxicology

### Course

Field of study

Environmental Protection Technologies

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

IV/7

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Emilia Konował

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Responsible for the course/lecturer:

### Prerequisites

The student starting this subject should have basic knowledge, acquired during the earlier stage of education, in the field of inorganic and organic chemistry and biotechnology, mainly in the area of properties and structure of chemical compounds used in various industries.



## Course objective

The aim of the course is to acquaint the student with the basic principles of assessing the danger and risk of using various types of chemical compounds, learning the mechanisms of toxicity, metabolism of toxic substances in living organisms and acquiring knowledge about the toxicology of selected groups of chemicals and diagnosis of poisoning.

## Course-related learning outcomes

### Knowledge

(1) possessing knowledge in the field of techniques and methods used for characterization and identification of toxic substances, typical environmental pollutants (K\_W09); (2) possessing knowledge needed for understanding the social and aside from-technical conditioning of engineering activity (K\_W14); (3) possessing knowledge about the health risks resulting from utilization of chemicals in various fields of industry (K\_W16)

### Skills

(1) gaining, integrating, reaching the conclusion and providing opinions based on information from the literature, scientific bases and other sources associated to chemical sciences (K\_U01)

### Social competences

(1) understanding the need of improving the skills and raising the professional and personal competences (K\_K01); (2) possessing the consciousness of importance and understanding the aside from technical aspects and results of engineering activity including its influence of environment and connected with this responsibility for made decisions (K\_K02)

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam (90 min.) with open and closed questions (approx. 10 open questions and approx. 30 test questions). Passing threshold: 50% of the maximum number of points. The issues constituting the basis for passing the course will be made available in the university's eLearning system.

## Programme content

1. Toxicology - historical, scope and directions of development.
2. Poisons, poisonings and their causes - definition of poisons, doses, types of poisoning, causes and structure of poisoning.
3. Toxicity testing of chemical compounds - classification of toxicity, mutagenic, teratogenic, carcinogenic, effects on reproduction and offspring.
4. Biological and physicochemical factors influencing the toxicity of xenobiotics.



5. Adsorption, distribution, biotransformation and excretion of toxins. Mechanisms of toxic action.
6. Toxic activity of selected metals and non-metals and their compounds.
7. Toxicity of addictive substances.
8. Food-related toxicological problems.
9. Toxicity of solvents, pesticides and plastics.
10. Environmental and industrial toxicology.
11. Methods of removing poisons occurring in the environment.
12. First aid in acute poisoning and the basics of poisoning treatment.

### Teaching methods

Classical lecture accompanied by the multimedia presentation.

### Bibliography

Basic

1. W. Seńczuk (red.), Toksykologia Współczesna, PZWL, Warszawa 2019.
2. W. Seńczuk (red.), Toksykologia. Podręcznik dla studentów, lekarzy i farmaceutów, PZWL Warszawa 1999.

Additional

1. J. K. Piotrowski (red.), Podstawy toksykologii; kompendium dla studentów szkół wyższych, WNT, Warszawa 2006.
2. E. Bezak-Mazur, Elementy toksykologii środowiskowej, Wydawnictwo Politechniki Śląskiej, Kielce 2001.
3. M. Biziuk (red.), Pestycydy; występowanie, oznaczanie i unieszkodliwianie, WNT, Warszawa 2001.
4. K. Jurowski, W. Piekoszewski (red.), Toksykologia I, PZWL, Warszawa 2020.
5. K. Jurowski, W. Piekoszewski (red.), Toksykologia II, PZWL, Warszawa 2020.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	1,5
Student's own work (literature studies, preparation for exam) <sup>1</sup>	30	1,5

<sup>1</sup> delete or add other activities as appropriate