



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Toxicology [S1TOZ1>TOKSYKOL]

### Course

Field of study

Circular System Technologies

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1,00

### Coordinators

dr inż. Emilia Konował

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### Lecturers

### 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. has knowledge of the negative impact of manufacturing and processing technologies on natural environment (k\_w08).
2. knows techniques and methods of monitoring typical chemical environmental pollutants (k\_w09).
3. knows the principles and methodology of economic evaluation of engineering activities to be

undertaken (k\_w16).

Skills:

1. can retrieve information from literature and databases and other sources related to closed-loop technologies, also in a foreign language, integrate and interpret it and draw conclusions and formulate opinions (k\_u01).

Social competences:

1. behaves professionally in all situations, takes responsibility for decisions made in the context of professional duties, acts in accordance with moral principles and principles of professional ethics (k\_k01).  
2. objectively assesses the level of his own knowledge and skills, understands the importance of improving both professional and personal competences in line with changing social conditions and progress in science (k\_k05).

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Stationary exam / on-line exam through e-courses:

Written test (90 min.) with open and closed questions (approx. 10 open questions and approx. 30 test questions, multiple-choice 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.

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	25	1,00
Classes requiring direct contact with the teacher	16	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	9	0,50