



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Toxicology

### Course

Field of study

Bioinformatics

Area of study (specialization)

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

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

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Emilia Konował

Responsible for the course/lecturer:

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Faculty of Chemical Technology

Berdychowo 4, 60-965 Poznan

### Prerequisites

The student starting this subject should have basic knowledge of chemistry (mainly in the area of properties and structure of chemical compounds) and biology, acquired during the earlier stage of education.

### 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, quantifying the toxicity of chemical substances using various techniques and research methods, 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

##### Student:

- 1) possesses knowledge in the field of techniques and methods used for characterization and identification of toxic substances, typical environmental pollutants (K\_W02);
- (2) possesses knowledge needed for understanding the social and aside from-technical conditioning of engineering activity (K\_W13);
- (3) possesses knowledge about the health risks resulting from utilization of chemicals in various fields of industry (K\_W14)

#### Skills

##### Student:

- (1) gains, integrates, reaches the conclusion and provides opinions based on information from the literature, scientific bases and other sources associated to chemical sciences (K\_U01)

#### Social competences

##### Student:

- (1) understands the need of improving the skills and raising the professional and personal competences (K\_K01);
- (2) possesses 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 maked decisions (K\_K05; K\_K06)

### 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 solvents, pesticides and plastics.
8. Toxicity of addictive substances.
9. Toxicometry and toxicokinetics.
10. Applied toxicology, safety assessment.

### 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	50	2,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes, preparation for tests) <sup>1</sup>	20	0,5

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