



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Toxicology [S2Bioinf2>TOXIC]

Course

Field of study

Bioinformatics

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

dr inż. Emilia Konował

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Lecturers

Prerequisites

A student starting this subject should have a 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 for the student to become familiar with the basic principles of: hazard and risk assessment of various types of chemical compounds, quantitative assessment of the toxicity of chemical substances using various techniques and test methods, as well as learning about the mechanisms of toxicity, metabolism of toxic substances in living organisms, and acquiring knowledge of the toxicology of selected groups of chemical substances.

Course-related learning outcomes

Knowledge:

1. Student knows and understands complex physico-chemical and biochemical processes, including the principles of appropriate selection of materials, raw materials, apparatus and equipment for their implementation and characterisation of products;
2. Student knows and understands the social, economic and legal conditions of his/her activity and the

need to take them into account in practice, including intellectual and industrial property issues, threats to society and ethical dilemmas;

3. Student knows and understands the principles of occupational health and safety and ergonomics .

Skills:

1. Student can fluently use and integrate, evaluate, critically analyse, synthesise and creatively interpret information from literature and electronic sources in Polish and English.

Social competences:

1. Student is prepared to be a lifelong learner, to inspire and organise the learning process of others, including seeking expert advice, critically evaluating the content gathered;

2. Student is prepared to carry out professional duties responsibly, taking into account the ethos of the profession, and to observe and act in accordance with the principles of professional ethics;

3. Student is prepared to take responsibility for assessing risks arising from the research techniques used and for creating safe working conditions.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Form of assessment: Graded credit. Formative assessment: class activity (20 marks). Summative assessment: Written examination (80 marks) including open and closed questions from all the material discussed (2 open questions and approximately 50 single-choice questions). The student can achieve a total of 100 points. Pass mark: 51% of the maximum score. The topics on which the assessment is based are taught in class and are also made available to students via the University's eLearning system.

Programme content

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Course topics

1. Toxicology - historical background, scope and developments.
2. Poisons, poisoning and their causes - definition of poisons, doses, types of poisoning, causes and structure of poisoning.
3. Study of the toxicity of chemical compounds - division of toxicity, mutagenicity, teratogenicity, carcinogenicity, effects on reproduction and offspring.
4. Biological and physicochemical factors affecting the toxicity of xenobiotics.
5. Adsorption, distribution, biotransformation and excretion of poisons.
6. Toxic effects 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

Classic lecture supported by multimedia techniques combined with discussion.

Bibliography

Basic:

1. Hodgson E., A textbook of modern toxicology, Wiley, 2010, 4th Edition

2. Stine Karen E. Brown Thomas M., Principles of Toxicology, Paperbackshop Uk Import, 2000, 3rd Edition

3. James Robert C., Principles of Toxicology: Environmental and Industrial Applications, Wiley, 2022

Additional:

1. Timbrell J., Barile F.A., Introduction to toxicology, Taylor & Francis Ltd., 2023, 4th Edition

Breakdown of average student's workload

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