



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Toxicology

Course

Field of study

Year/Semester

Environmental Protection Technologies

IV/7

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

0

0

Tutorials

Projects/seminars

0

0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab. n. farm. Michał Moritz

Prerequisites

Knowledge in the field of inorganic, organic and physical chemistry gained during the earlier studies. Knowledge concerning the properties and composition of chemical compounds used in various industry branches (chemical, pharmaceutical, metallurgical and textile industry). Basic knowledge in the field of biotechnology and biochemistry.

Course objective

The aim of the lectures is to get knowlegde concerning basic notions and phenomena determining toxic activity of chemical compounds, the toxicity mechanisms and the metabolism of toxic substances in living organisms (human, animals, plants). Comprehension of issues concerning the methods of the assessment of chemical compound toxicity. Comprehension of issues concerning the methods of professional risk (elements of environmental toxicology) and environmental risk assessment. Gaining knowledge concerning the diagnostics of poisoning and the issues conerning the toxicology of chosen groups of chemical compounds (organic solvents, municipal and industrial wastes, addiction drugs, metals, nonmetals and others).

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 maked decisions (K_K02)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam (90 min.) containg open and closed questions (about 7-10 open questions and about 15-20 test questions). 50% of questions have to be answered correctly to pass. The subject matter required for the test will be transmitted to students during the course.

Programme content

(1) Definitions of poisons, types and causes of posioning; biological and physical factors influencing on the toxicity of xenobiotics; the pathways of absorption and elimination of poisons.

(2) Biotransformation reactions; mechanisms of toxic activity; influencing of xenotbiotics and their metabolites in the organism.

(3) Methods of assessment of chemical compound toxicity: severe, under-severe and chronic toxicity, mutagenic, teratogenic and cancerogenic toxicity, influence on reproductive capacity and offspring.

(4) Assessment of the risks in regards to xenobiotics (professional, environmental); methods of assessment of toxic compounds in the air, soil, water and food.

(5) Toxic activity of chosen nonmetals and their compounds.

(6) Toxic activity if chosen metals and their compounds.

(7) Toxicological characteristics of chosen organic compounds including the solvents used in chemical and pharmaceutical industry.

(8) Toxic activity of chosen substances present in solid and liquid wastes (municipal and industrial wastes).

(9) Methods of elimination of poisons present in the environment (phytoremediation).



(10) Toxicology of addition substances and new psychoactive compounds; toxicity of drugs.

(11) Basis 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. E. Mutschler (red.), Farmakologia i Toksykologia, Urban and Partner, Wrocław 2004.
2. P. Graham, Chemia Medyczna, PWN, Warszawa 2019.
3. D. Steinhilber, Chemia Medyczna, MedPharm, Wrocław 2012.

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) ¹	30	1,5

¹ delete or add other activities as appropriate