UNIVERSITY OF WARMIA AND MAZURY
Faculty of Agriculture and Forestry

86S1-TOKSYK **TOXICOLOGY** **ECTS: 3.0**

HOURS PER SEMESTER/WEEK: LECTURES: 30/2; CLASSES: 30/2
FIELD OF THE STUDY: Chemistry
Level of study: First-cycle (Bachelor's degree) program

Course status: obligatory *
Year of the study: III

COURSE CONTENTS
LECTURES: History of toxicology, a basic definition used in toxicology. Factors determining the toxicity of xenobiotic compounds. The reaction of living organisms to the action of toxic compounds. Poison absorption pathways. Metabolic processes of the human body disrupted by toxins. Metabolic reactions of xenobiotic compounds. Toxicity of the selected elements, inorganic and organic compounds. Natural toxins. Toxicity of addictive substances. Food toxicity. Methods of toxicological and ecotoxicological evaluation of chemical compounds. Legal norms on toxicology.

CLASSES: Toxicological evaluation of substances and chemical products. Detection and determination of poisons by classical and instrumental methods. Determination of the toxicity indicators.

EDUCATIONAL PURPOSE: To provide knowledge of the basic forms used in toxicology, poison's classification, toxic mechanisms, and fate in the body. Provide knowledge in the area of toxicity of chemical elements and compounds. To develop the skills to work with chemical compounds with safety rules and occupational health. To develop the ability to use the literature describing the toxicity of compounds. To develop the ability to choose the proper chemical transformation of compounds to change their toxicity. To provide the knowledge about toxic effects of addictive substances and about natural toxins. To develop communication and teamwork skills.

LEARNING OUTCOMES
Knowledge. The student knows the basic definitions used in toxicology. He knows how toxins are metabolized and then excreted from the human body. The student understands how chemical compounds' structure and physicochemical properties affect their toxicity. He knows the reactions of living organisms to toxic substances. The student knows the toxicity of selected elements, organic and inorganic compounds.
Skills. The student can search the literature for information on the toxicity of compounds. He explains how toxins can affect the basic metabolic processes of living organisms. The students indicate how toxins substances are absorbed and can suggest metabolic transformations for specific toxic compounds and then how to eliminate them from the body. The student selects an appropriate chemical transformation that alters the compound's toxicity.
Social competences. The student evaluates objectively the contribution of one's own work and that of others in the joint research and report preparation. He applies the health and safety rules in a lab.

TEACHING FORMS AND METHODS
Lectures. Information lecture, Lecture with a multimedia presentation of selected issues.
Classes. Discussion, Case study, Laboratory methods, Demonstration and observation, Work in groups.

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES
Lectures. written test - credit with a grade.
Classes. written test - credit with grade.

BASIC LITERATURE
1) S.E. Manahan, Toxicological Chemistry and Biochemistry, 2002

ADDITIONAL LITERATURE
1) C.D. Klaassen, Casarett & Doull's Toxicology: Basic Science of Poisons, 2018

THE TEACHER/TEACHERS CONDUCTING THE CLASSES:
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* note: optional course availability depends on Polish students' choice!