Annex No. 1.5 to the Rector's Order of the UR No. 7/2023

SYLLABUS

Concerning the cycle of education **2024- 2030**

Academic year 2025/2026

1. **BASIC INFORMATION CONCERNING THIS SUBJECT**

Subject name	**Toxicology**
Course code *	**Tx**
Faculty (name of the leading direction)	**Faculty of Medicine, University of Rzeszow**
Department name	**Laboratory of Innovative Toxicological Research and Analyzes**
Field of study	**Medicine**
Level of education	**Uniform master studies**
Profile	**General academic**
Form of study	**Stationary / non-stationary**
Year and semester	**Year II, semester 4**
Type of course	**Obligatory**
Language of instruction	**English**
Coordinator	**Assoc. Prof. Kamil Jurowski, MD, PhD, University of Rzeszów**
Name(s) of the instructor(s)	**Assoc. Prof. Kamil Jurowski, MD, PhD, University of Rzeszów and Team**

** - according to the resolutions of the Faculty of Medicine*

1.2. Forms of classes, number of hours and ECTS points

Semester (no.)	Lectures	Classes	Laboratories	Practical classes	Seminars	Others	Number of points ECTS
4	12	15	-	-	-	-	**2**

1.2. The form of class activities

☒ Classes are conducted in a traditional format
☒ Classes are implemented using methods and techniques of distance learning

1.3. Examination Forms: (exam, credit with grade or credit without grade)

2. BASIC REQUIREMENTS

General and Medical Chemistry, Biochemistry, Molecular Biology, Physiology (1st semester).

3. OBJECTIVES, LEARNING OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

3.1. Objectives of this course

C1	Understanding the basic concepts of general toxicology.
C2	Learning about the factors that influence the toxicity of chemical substances.
C3	Understanding the mechanisms of poisoning with drugs and psychoactive substances, as well as the issue of drug addiction.
C4	Identifying toxidromes and symptoms of the most common acute poisonings by selected groups of drugs, alcohols, psychoactive substances, mushrooms, and heavy metals.
C5	Mastering the basic principles of diagnostic and therapeutic management (first aid, antidotes) in cases of poisoning.
C6	Ability to search for reliable information about medicinal products, with particular emphasis on the characteristics of medicinal products (SmPC) and databases related to adverse drug reactions.
C7	Assessing toxicological risk in different age groups and in conditions of liver and kidney failure, as well as preventing drug poisoning (toxicovigilance).
C8	Ability to search for toxicological data in databases and other sources in case of lack of knowledge.
C9	Mastering the basics of toxicological diagnostics, including principles of sampling, preparation, and examination of materials for toxicological testing (both ante-mortem and post-mortem).

3.2. Outcomes for the course

EK (the effect of education)	The content of the learning effect defined for the subject	Relation to the degree programme outcomes
EK_01	Basic concepts of general toxicology	C.W34.
EK_02	Factors influencing the toxicity of chemical substances.	C.W13
EK_03	Poisoning with drugs and psychoactive substances, and the issue of drug addiction.	C.W35.
EK_04	Toxidromes and symptoms of the most common acute poisonings by selected groups of drugs, alcohols, other psychoactive substances, mushrooms, and heavy metals.	C.W36.

EK_05	Basic principles of diagnostic and therapeutic management in cases of poisoning.	C.W37.
EK_06	Searching for reliable information about medicinal products, with a particular emphasis on the characteristics of medicinal products (SmPC) and databases on adverse drug reactions.	C.U12.
EK_07	Assessing toxicological risks in specific age groups and in conditions of liver and kidney failure, as well as preventing drug poisonings (toxicovigilance).	C.U13, K.08, K.O11
EK_08	Ability to search for toxicological data in databases and other sources when knowledge is lacking.	K.05, K.07
EK_09	Basics of toxicological diagnostics: principles of sampling, preparation, and examination of materials for toxicological testing (both ante-mortem and post-mortem).	GW.19

3.3. Programme content

A. Lectures

Course contents
Definitions and basic toxicological concepts. Basic mechanisms of toxicity and routes of exposure to toxic substances. Factors influencing toxicity (e.g., dose, route of administration, health status, age). Dose-response relationships and the concept of toxicity thresholds. Bioavailability and the fate of xenobiotics in the body (absorption, distribution, metabolism, accumulation, elimination). Classification of psychoactive substances and potentially toxic drugs. Symptoms and management of poisonings with drugs, alcohol, and narcotics. The issue of drug addiction and its impact on public health. Toxidromes: characteristics and recognition of poisoning symptoms. Poisoning diagnostics: laboratory and clinical methods. Cases of poisonings with mushrooms, heavy metals, and other substances. Basic principles of poisoning treatment: decontamination, administration of antidotes, symptomatic treatment. Specialized detoxification methods: hemoperfusion, hemodialysis. Algorithms for managing emergency poisonings. Assessing toxicological risks in different populations (e.g., children, the elderly, individuals with liver and kidney failure). Toxicovigilance: preventing poisonings and monitoring adverse drug reactions. Practical skills in searching for toxicological information in available databases and other sources.

B. Classes, laboratories, seminars, practical classes

Analysis of case studies of poisoning with various substances to recognize symptoms and develop treatment strategies. Identifying poisonous plants and recognizing their toxic parts. Understanding the mechanisms of action of animal venoms and the principles of management in cases of bites or stings. Application of venom extractors in first aid. Identification and analysis of exhibits of poisonous mushrooms and discussion of their effects on the body. Simulation of the effects of alcohol consumption using drunk goggles to understand its impact on perception and coordination. Simulation of the impact of psychoactive substances on the body using drug goggles to learn to recognize symptoms of poisoning.

3.4. Didactic methods

Lecture: a problem-solving lecture/a lecture supported by a multimedia presentation/ distance learning
Classes: practical project/ group work (problem solving, case study, discussion)/didactic games/ distance learning

4. ASSESSMENT METHODS AND CRITERIA

4.1 Methods of assessing learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, colloquium, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes)
EK-01 – EK-09	Test / Colloquium	L
EK-01 – EK-09	Test / Colloquium	C

4.2. Course completion requirements (evaluation criteria)

Lecture Midterm exam (colloquium) – single-choice test, minimum passing threshold of 60%, 50-100 questions. Possible test questions of the Lawson type, with complex questions containing multiple statements but only one correct combination of answers.

Classes

Midterm exam – single-choice test, minimum passing threshold of 60%, 50-100 questions. Possible test questions of the Lawson type, with complex questions containing multiple statements but only one correct combination of answers.

Attendance at all forms of classes, including lectures, is mandatory.

5. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE THE INTENDED LEARNING OUTCOMES IN HOURS AND ECTS CREDITS

Form of activity	Average number of hours required to complete the activity
Contact hours according to the study schedule	27
Other activities involving academic staff (participation in consultations, exams)	3
Non-contact hours – student's independent work (preparation for classes, exam, etc.)	10
SUM OF HOURS	40
TOTAL NUMBER OF ECTS	**3**

** Please note that 1 ECTS point corresponds to 25–30 hours of total student workload.*

6. PRACTICAL TRAINING IN THIS SUBJECT

Number of hours	-
Rules and forms of internships	-

7. LITERATURE - indicated by the lecturer during the classes

Approved by the Head of the Department or an authorised person