Appendix number 1.5 to The Rector UR Resolution No. 12/2019

SYLLABUS

concerning the cycle of education 2021-2027

(date range)

1.1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE

Subject / Module	**Toxicology**
Course code / module *	**Tx/C**
Faculty of (name of the leading direction)	**Medical College of Rzeszów University**
Department Name	**Medical College of Rzeszów University**
Field of study	**medical direction**
Level of education	**uniform master's studies**
Profile	**practical**
Form of study	**stationary / extramural**
Year and semester	**year III, semester V**
Type of course	**obligatory**
Coordinator	**Dr hab. Jan Rutowski**
First and Last Name of the Teacher	**Prof. dr hab. n. med. Piotr Tutka and other academic employees employed in the Department of Experimental and Clinical Pharmacology**

* - According to the resolutions of the Faculty of Medicine

1.2. Forms of classes, number of hours and ECTS

Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Self-learning	**Number of points ECTS**
15	15	-	-	-	-	-	-	2

1.3. The form of class activities

☒classes are in the traditional form

☐classes are implemented using methods and techniques of distance learning

1.4. Examination Forms / module (exam, **credit with grade** or credit without grade)

2. REQUIREMENTS

Basics of knowledge in the field of physiology, biochemistry, pathophysiology, disaster medicine and first aid. Knowledge, skills and competences of the above subjects according to the program of studies of the first, second and third year.

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

3.1. Objectives of this course/module

C1	Understanding the toxic factors and determining the negative effects of their impact on the body
C2	Understanding the basic concepts of general toxicology and understanding the mechanism of action of various toxic agents
C3	To develop the ability to assess the toxicological danger and to interpret the results of toxicological tests
C4	Acquiring the ability to diagnose and treat the most common poisonings and their prevention

3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

EK (the effect of education)	The content of the learning effect defined for the subject (module)	Reference to directional effects (KEK)
EK_01	knows the basic concepts of general toxicology	C.W42
EK_02	knows the symptoms of the most common acute poisoning, including alcohol, drugs, psychoactive substances, heavy metals and selected drug groups	C.W44
EK_03	knows the basic principles of diagnostic procedures in poisoning	C.W45
EK_04	is able to estimate the toxicological hazard in specific age groups and in conditions of liver and kidney failure as well as prevent drug poisoning	C.U18
EK_05	interprets the results of toxicological tests	C.U19
EK_06	recognizes the state after consumption of alcohol, drugs and other stimulants	E.U15
EK_07	can implement the basic therapeutic procedures in acute poisoning	E.U33
EK_08	monitors the status of a patient poisoned with specific chemical substances or medications	E.U34

3.3 CONTENT CURRICULUM (filled by the coordinator)

A. Lectures

Course contents
1. Introduction to toxicology. Epidemiology of acute poisoning in Poland. Organization of toxicological information and toxicological centers. Mechanisms of toxic effects of xenobiotics. 2. Toksykometria. 3. General principles of diagnosis and treatment in acute poisoning. First aid.

4. Forensic toxicology. 5. Nicotine addiction syndrome part AND. 6. Nicotine addiction syndrome part II. 7. Alcohol poisoning, part AND. 8. Alcohol poisoning, part II. 9. Poisoning with drugs that inhibit the central nervous system. 10. Poisoning with drugs that stimulate the central nervous system. Boosters. 11. Poisoning with other medicines. 12. Poisoning with pesticides, nitrogen compounds. Toxicology of plastics. Detergents. 13. Poisons of natural origin. Jady animals. Mushroom poisoning. 14. Heavy metal poisoning. Carbon monoxide poisoning. 15. The effect of ionizing radiation. Combat toxic agents.

B. **Exercises**

Course contents
1. Introduction to toxicology. Epidemiology of acute poisoning in Poland. Organization of toxicological information and toxicological centers. Mechanisms of toxic effects of xenobiotics. 2. Toksykometria. 3. General principles of diagnosis and treatment in acute poisoning. First aid. 4. Forensic toxicology. 5. Nicotine addiction syndrome part AND. 6. Nicotine addiction syndrome part II. 7. Alcohol poisoning, part AND. 8. Alcohol poisoning, part II. 9. Poisoning with drugs that inhibit the central nervous system. 10. Poisoning with drugs that stimulate the central nervous system. Boosters. 11. Poisoning with other medicines. 12. Poisoning with pesticides, nitrogen compounds. Toxicology of plastics. Detergents. 13. Poisons of natural origin. Jady animals. Mushroom poisoning. 14. Heavy metal poisoning. Carbon monoxide poisoning. 15. The effect of ionizing radiation. Combat toxic agents.

3.4 TEACHING METHODS

Lecture: Problem and information lecture with multimedia presentation

Exercises: Solving tasks and clinical problems. Discussion. Analysis of clinical cases. Working with a database. Preparation of multimedia presentations. Participation in scientific research projects.
Student's own work: Literature analysis. Preparing a presentation. Independent investigation of knowledge.

4 METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes

EK_01-EK_03	Test pass.	Lecture, Exercises
EK_04-EK_08	Assessment of preparation and active participation in exercises. Practical pass.	Exercises

4.2 Conditions for completing the course (evaluation criteria)

The condition for passing the subject is:

The condition for passing the subject is to attend classes and lectures and to demonstrate knowledge and skills at least at a sufficient level in the scope of the binding material. **The final grade** in the subject will be **the average of the grade obtained from the exercises and the final grade**. If the grade point average is 3.25, 3.75, 4.25 or 4.75, the final grade will decide about the final grade. A student who does not receive at least a satisfactory grade from the final pass will not get a credit from the subject (unsatisfactory grade).

5a. The grade from the exercises will be the average of the partial grades with the individual elements of the exercise classes. During the semester during the course each student can get a maximum of **14 points** for learning knowledge and the ability to solve problem tasks related to diagnosis and treatment of poisoning and for activity and involvement in discussion and resolution of cases, including:

- 10 points from 2 practice tests (2 x 5 points) (each test contains 20 single-choice questions) assessed according to the scale:

0-6 correct answers - "-2" (minus two) points

7 correct answers - 0 points

8 correct answers - 1 point

9 correct answers - 2 points

10-11 correct answers - 3 points

12-13 correct answers - 3.5 points

14-15 correct answers - 4 points

16-17 correct answers - 4.5 points

18-20 correct answers - 5 points

Unjustified absence during the test is tantamount to rating -2. (minus two).

- 3 points from an oral or written answer (the material from the current and previous exercise is valid). A student may be asked once or more times - then the number of points will be the average of points from all grades obtained) according to the scale: 0, 1, 1.5, 2, 2.5 and 3 points. A student may be unprepared for classes once during the semester - he must inform the teacher about this before starting the exercise.

- **1 point** for activity during classes (eg participation in discussions, preparation of the presentation) according to the scale: 0, 0.5, 1 point. The student can prepare a presentation (a mini-lecture lasting 10-12 minutes) from the subject agreed with the teacher.

The condition for passing the semester is obtaining a **minimum of 5 points** out of 14 possible to obtain. Students who do not get the required 5 points can not take final exams. These students must pass all material in the form of a test, from which they must obtain at least 60%

of correct answers. Exit from the final grade with a very good grade (5,0) from the subject can be obtained by students who obtained 12 or more points during the semester.

The evaluation of the exercises will be issued according to the scale:

5.0-7.0 points - sufficient (3,0)

7.5-8.5 points - fairly good (3.5)

9.0-10.0 points - good (4.0)

10.5-11.5 points - over good (4.5)

over 12.0 points - very good (5)

5b. The final pass mark will be an assessment of the test checking the knowledge and skills acquired during lectures, exercises and self-education. The test will take place after the end of the semester. It will have the character of a one-choice test, it will consist of 40 questions and last 45 minutes. The criterion for passing the test will be giving correct answers to at least 60% of questions. Students who will receive 10.5-11.5 points during the semester. they will receive a "bonus" in the form of 5% additional points (correct answers) added to the final number of points obtained at the final test, but on the condition that they scored at least 60% of correct answers at the final pass.

For each correct answer to the test question, the student receives 1 point. The test will be assessed according to the scale:

less than 24 correct answers - insufficient (2)

24-27 correct answers - sufficient (3,0)

28-30 correct answers - quite good (3.5)

31-33 correct answers - good (4.0)

34-36 correct answers - over good (4.5)

37-40 correct answers - very good (5)

The correction will take place in the form of a test in the correction session.

5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	Hours / student work
Hours of classes according to plan with the teacher	30
Preparation for classes	30
Participation in the consultations	
The time to write a paper / essay	
Preparation for tests	
Participation in colloquia	
Other (e-learning)	

SUM OF HOURS	60
TOTAL NUMBER OF ECTS	**2**

6. TRAINING PRACTICES IN THE SUBJECT / MODUL

Number of hours	-
Rules and forms of apprenticeship	-

6. LITERATURE

READING:

1.Seńczuk W. (red.:) Toksykologia współczesna. PZWL, Warszawa 2012.

Additional literature:

1.Mutschler E., Geisslinger G., Kroemer H.K, Ruth P.. Schafer-Korting M. (red.wyd. polskiego Buczko W.), Farmakologia i toksykologia, 2013.

2. Manahan S.E. Toksykologia środowiska, aspekty chemiczne i biologiczne, PWN, 2013.

3. Pach J. Zarys toksykologii klinicznej. Wydawnictwo UJ. Kraków, 2009.

4. Panasiuk L., Szponar E., Szponar J.. Ostre zatrucia. PZWL. Warszawa, 2010.

Acceptance Unit Manager or authorized person