



## Toxicology

**ECTS: 4.00**

### SUBJECT MATTER CONTENT

#### LECTURE

General information related to poisons and harmful substances. Mode of poison action on animals. Factors affecting the poisoning. Absorption, distribution, metabolism and excretion of xenobiotics. Characteristics of the most common in clinical practice poisoning in animals (pathogenesis, mechanisms of action, clinical signs, anatomopathological changes, diagnosis, treatment). Poisonings with selected inorganic salts. Poisonings with acids, alkalis and gases. Heavy metals and other elements poisoning. Organic compounds poisoning. Pesticide poisoning. Plant poisoning. Feed poisoning in animals.

#### CLASSES

Principles of general toxicological studies. Cover letter in case of poisoning. Diagnostics of acute and chronic poisoning: collection, shipment and submission of laboratory samples. Analytical methods for the isolation of toxic substances from the biological samples. Instrumental methods in toxicology. Detection of heavy metals as well as other elements by the atomic absorption spectrometry. Poisoning with water soluble inorganic compounds – determination techniques. Toxicity of selected drugs and plant alkaloids and glycosides – extraction from biological samples and identification. Enzymatic indicators in toxicology diagnosis. Pesticide poisoning of animals – extraction and determination. Methods of determination of selected chemical substances potentially toxic to animals e.g. PCBs, PAHs. Detection of gaseous pollutants the ambient air.

#### TEACHING OBJECTIVE

The aim of the course is to provide the student the knowledge of the etiopathogenesis, diagnosis, treatment and prevention of poisoning in animals. Acquainted with modern diagnostic methods and laboratory tests used in Toxicology. Gaining the ability to apply acquired knowledge in the field of veterinary toxicology.

#### DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

**Symbols for outcomes related to the discipline:**

R/WA\_P7S+++

**Symbols for outcomes related to the field of study:**

B.U6. +, K.5+, A.U17. +, B.U2. +, B.W3. +, K.4.+ , A.U2. +, B.U13. +, B.W6. +, B.W4. +, A.U21. +, K.8.+ , A.W21. +

#### LEARNING OUTCOMES:

**Knowledge:**

**Legal acts specifying learning outcomes:**  
**682/2020**  
**Disciplines:** Veterinary science  
**Status of the course:**Obligatoryjny  
**Group of courses:**A - przedmioty podstawowe  
**Code:** ISCED 0841  
**Field of study:**Veterinary Medicine  
**Scope of education:**  
**Profile of education:** General academic  
**Form of studies:** full-time  
**Level of studies:** uniform master's studies  
**Year/semester:** 4/7

**Types of classes:** Lecture, Classes  
**Number of hours in semester:**Lecture: 30.00, Classes: 45.00  
**Language of instruction:**Polish  
**Introductory subject:** Chemistry, biochemistry, pharmacology  
**Prerequisites:** A sufficient level of knowledge gained from the courses and introductory.

**Name of the organisational unit conducting the course:**Katedra Farmakologii i Toksykologii  
**Person responsible for the realization of the course:**dr wet. Dariusz Barski  
**e-mail:** dariusz.barski@uwm.edu.pl

**Additional remarks:**

W1 – The student possesses general knowledge on ethiopathogenesis, diagnostics, treatment and prevention of animal poisons; identifies various poisons and understands the mechanisms of their action as well as their effects on the organism; performs a complete history of poisoned patient and choose the appropriate biological samples for toxicological analysis; is able to correctly interpret the results of laboratory tests.

**Skills:**

U1 – The student is able to differentiate correctly the poisons and knows the mechanisms of action and toxic effects of various xenobiotics; possesses the ability to analyze the circumstances of poisoning and administers appropriate treatment; is capable to diagnose of poisoning (based on clinical findings and lesions); can properly evaluate laboratory tests.

**Social competence:**

K1 – The student is aware of the hazards resulting from the presence and use of various types of chemicals; proceeds according to ethical principles puts the patients' welfare first.

**TEACHING FORMS AND METHODS:**

Lecture(W1;U1;):Informative lectures with a multimedia presentation

Classes(W1;U1;K1;):Information classes with a multimedia presentations; teamwork; discussion; solving tests; seminary talk. Laboratory work. Collection of appropriate biological samplesfor toxicological tests and isolation of poisons from such material. Determination of toxic substances in the samples using appropriate methods.

**FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:**

Lecture (Written exam) - The requirement for passing the exam is to obtain a positive grade for each question. The grade of the exam will be determined by averaging the grades obtained on particular questions. Rules for rounding grades are described below. Student who fails the exam may retake the exam twice. -

Classes (Colloquium test) - Colloquium test - Two written colloquiums will take place during the semester. The grade of the colloquium will be determined by averaging the grades obtained on particular questions. Rules for rounding grades: the average  $\geq 4,76$ : excellent (5,0); the average 4,26 – 4,75: very good (4,5); the average: 3,76 – 4,25: good (4,0); the average 3,26 – 3,75: satisfactory (3,5); the average  $\leq 3,25$ : sufficient (3,0). Student who fails colloquium may retake it only twice. In order to pass the subject it is required to have passed all colloquiums. Final grade for the subject is determined by averaging the grades (including failing grades) obtained on all colloquiums. Rules for rounding of final grade are the same as described above. Failure of any colloquiums constitutes failure of Veterinary Pharmacology II course. Only three absences (justified) in a semester are allowed. -

**BASIC LITERATURE:**

1. Barski D., Spodniewska A., *Toksykologia weterynaryjna - wybrane zagadnienia*, Wyd. UWM Olsztyn, R. 2014
2. Garwacki S., Wiechetek M., *Weterynaryjna toksykologia ogólna*, Wyd. SGGW Warszawa, R. 1994
3. Klaassen C.D., Watkins III J.B.(tłum. Zielińska-Psuja B., Sapota A.), *Podstawy toksykologii*, Wyd. MedPharm Polska, R. 2014
4. Manaham S.E. (tłum. Boczoń W., Koroniak H.), *Toksykologia środowiska. Aspekty chemiczne i biochemiczne*, Wyd. PWN Warszawa, R. 2006
5. Seńczuk W., *Toksykologia współczesna*, Wyd. PZWL Warszawa, R. 2006
6. Starek A., *Toksykologia narządowa*, Wyd. PZWL Warszawa, R. 2007

**SUPPLEMENTARY LITERATURE:**

1. Gupta P.K., *Veterinary Toxicology*, Wyd. Elsevier, New York, R. 2006
2. Klaassen C.D., *Toxicology: the basic science of poisons*, Wyd. Casarett Doull's, R. 2008