

# TOXICOLOGY 1

<b>Study program</b>	Veterinary Medicine
<b>Year of study</b>	IV
<b>Semester</b>	VII
<b>Regime of discipline</b>	DOB
<b>Category of discipline</b>	Dsf
<b>Number of lectures hours per week</b>	2
<b>Number of seminar/laboratory/project hours per week</b>	2
<b>Total number of hours according to the curriculum: lectures/seminars/laboratory/project</b>	28/28
<b>Number of transferable credits</b>	4

## SPECIFIC SKILLS

<b>Professional Competence</b>	<ol style="list-style-type: none"> <li>1. The examination, diagnosis, prevention and treatment of poisonings that affect animals (with reference to knowledge accumulation of toxins kinetics in the body - ways of penetration, absorption, diffusion, metabolism, action, elimination, which will permit to understand the aggressiveness of toxic substances and the reasons for "adjusted" therapeutic intervention; diagnosis of poisoning in animals, fighting against poison with maximum speed and efficiency and prevention of it).</li> <li>2. Production approval, marketing and consumption of food, quality control and safety of animal and non-animal food products (refer strictly to slaughter of the poisoned animals and commissioning consumption of animal products from poisoned animals).</li> <li>3. Preparation, conservation, supply and marketing of veterinary medicinal products, diagnostic kits and biocides (used in pharmacology notions of proper and responsible prescribing medicinal products to animals ; the principles of pharmacology in prescribing and administering the most appropriate remedy with individualization of treatment cases / groups of animals ).</li> <li>4. Assurance of expertise and management in protection, welfare, husbandry, care, feeding, breeding and livestock production, and in the environmental protection (with regard to quality and safety fodder).</li> </ol>
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## LEARNING OUTCOMES

<b>Knowledge</b>	Definition of the concepts of toxic substance, toxicity, dose-response. Understanding the pathways of penetration, absorption, distribution, metabolism and elimination of toxicants from the body. Mechanisms of toxic action at the molecular, cellular and organ levels (neurotoxicity, hepatotoxicity, etc.). Knowledge of the main classes of toxicants (drugs, pesticides, heavy metals, solvents, industrial substances). General aspects regarding the diagnosis and treatment of poisonings, as well as the role of toxicological expertise.
<b>Skills</b>	Ability to analyze toxicological data, interpret laboratory results and correlate the clinical picture with the suspected toxicant. Risk assessment in case of exposure to xenobiotics (drugs, environment, industry). Use of basic physical and chemical methods for the identification of toxic substances in biological samples. Application of first aid measures and treatment principles (antidotes).
<b>Responsibility and autonomy</b>	Ability to work in a toxicology laboratory, respecting safety regulations. Searching and using toxicological databases for information. Transmitting specialized information on toxicological risks to the public or specialists.

## COURSE OBJECTIVES

<b>General objective of the course</b>	<p><b>General Toxicology:</b> To acquire the necessary perception and explain the impact of toxic substances on animal body (etiology of poisonings, the factors influencing toxicity, the kinetics of toxic substances in the body, and the mechanism and the mode of action, the overall clinical course and histological changes, general treatment of poisonings) .</p> <p><b>Special Toxicology :</b> Learning the basics of morbid states generated by main groups of toxic and toxins (source/ circumstances of poisoning, toxicity, symptoms, pathological picture, diagnosis, differential diagnosis, treatment, animal protection measures and food safety).</p>
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<b>Specific objectives</b>	Recognize, diagnosis and treatment of major animal poisoning; Establishing the main consumer protection measures in the case of necessary slaughtered animals after different poisoning.
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## COURSE CONTENT

LECTURES	Number of hours
<b>General Toxicology</b> General concepts, definition. Concepts of toxic, toxin, poisoning, toxicosis. Toxicants, etiology of poisonings, the factors influencing toxicity, the kinetics of toxins in the animal organism (penetration, absorption, diffusion, storage, metabolism, excretion) the mode and the mechanism of action, including biochemical lesions, general symptoms and morphological changes, diagnosis of intoxications, general prophylaxis of intoxication.	10
<b>Special Toxicology</b> <b>Poisoning by pesticides:</b> insecticides (organophosphate, carbamate, organochlorines, pyrethroids), fungicide (inorganic, organic, organometallic compounds, dithiocarbamates, based on phenol), herbicides (chlorfenoxiderivate fatty acids, aliphatic chlorinated amides, ureas substituted, benzoic acid derivatives, dithiocarbamates, triazines), rodenticides (anticoagulants, ANTU, metal phosphides, white phosphorus, others), molluscicides.	10
<b>Mycotoxins</b> produced by: <i>Claviceps purpurea</i> , <i>Puccinia</i> spp.; <i>Ustilago</i> spp., <i>Tilletia</i> spp.; <i>Stachybotris alternans</i> , <i>Fusarium</i> spp., <i>Aspergillus</i> spp., <i>Penicillium</i> spp., <i>Pythium</i> spp., <i>Rhizoctonia leguminicola</i> , <i>Phomopsis leptostromiformis</i> and associations of fungi.	8

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SEMINAR/LABORATORY	Number of hours
Topic no. 1 Toxicological expertise	2
Topic no. 2 Rules on harvesting, packaging and shipment of samples for toxicology laboratory	2
Topic no. 3 General measures to combat nonspecific poisoning. The general and specific antidotes.	6
Topic no. 4 Calculations in toxicology	2
Topic no. 5 Pesticides poisonings	14
Topic no. 6 Laboratory diagnostic in mycotoxicosis	2

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### BIBLIOGRAPHY:

- Florin Muselin, Alexandru O. Doma – Veterinary Toxicology. Vol. 1 General toxicology. Ed. Agroprint, Timișoara, 2022
- Alexandra Trif, Florin Muselin – Toxicologie clinica veterinara, Vol.1. Intoxicatiile, Ed. Mirton, 2017
- Alexandra Trif - Toxicologie și toxicoze. Lito USAB, 1993 (+ note curs) + curs virtual (site [www.fmv.t.ro](http://www.fmv.t.ro))
- Crivineanu V., M. Răpeanu, Maria Crivineanu - Toxicologie sanitară veterinară. Ed. Coral Sanivet, București 1996.
- Plumlee H. Konnie – Clinical Veterinary Toxicology, Ed. Mosby, 2004.
- Roder. D. Joseph – Veterinary Toxicology – Ed. Butterworth Heinemann, 2001.
- Gupta C. Ramesh – Veterinary Toxicology. Basic and clinical principles. Ed. ELSEVIER, 2007
- Gfeller W.R., Messonnier P.S. – Small animal toxicology and poisonings. Ed. Mosby, 2004.
- Marinescu Alexandra - Chimizarea și nutriția animalelor. Ed. Ceres, București 1980.

### ASSESSMENT

Activity type	Assessment criteria	Assessment methods	Percentage of final grade
<b>Lectures</b>	Communication of information using scientific language correctly, specialty circulated within the discipline / scientific field concerned; Knowledge of basic concepts and explain their discipline interdependencies between them;	Exam - written assessment, multiple choices (30 questions) – 15 correct answers for the promotion	70
<b>Seminar/laboratory/clinical</b>	Application acquisitions	written assessment - a	30

<b>sessions</b>	providing examples in conducting analyzes in solving exercises and problems, supporting arguments;	ticket with different subjects	
<b>Other activities</b>			

**Course coordinator: Prof. Dr. Florin Muselin**

**Practical activities coordinator L/S/P: Prof. Dr. Florin Muselin**