

Toxicology

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
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Division of Veterinary Public Health and Food Safety
Unit of Pharmacology and Toxicology
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Register No of the organisational unit:

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COURSE SYLLABUS

Course name: Toxicology
Academic year 2023/2024

Course leader: Full Prof. Andreja Prevendar Crnić

Deputy course leader: Full Prof. Ksenija Vlahović

Teachers:

Full Prof. Andreja Prevendar Crnić, DVM, PhD

Teaching assistant Ena Oster, DVM

Teaching assistant Nikola Čudina, DVM

Associate teachers:

Dr Maja Lang Balijs, DVM PhD

First day of classes: 13/3/2024

Last day of classes: 4/6/2024

Activities - Toxicology (1/3)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
13/03/2024	14:30	16:00	p01 Introduction to veterinary toxicology	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
15/03/2024	14:00	15:30	p02 Pesticides	8E-1, 8E-2, 8E-3, P_farmakologija		1:30	Prevendar Crnic A.	P_fiziologija
21/03/2024	10:15	11:45	v01 Introduction, procedures with a poisoned animal	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
21/03/2024	14:00	15:30	p03 Pyrethrin and pyrethroids	8E-1, 8E-2, 8E-3, P_farmakologija		1:30	Prevendar Crnic A.	P_farmakologija
22/03/2024	9:30	11:00	v01 Introduction, procedures with a poisoned animal	8E-3		1:30	Oster E.	P_farmakologija
26/03/2024	10:30	12:00	p04 Anticoagulants	8E-1, 8E-2, 8E-3, P_farmakologija		1:30	Prevendar Crnic A.	P_farmakologija
27/03/2024	8:00	9:30	p05 Heavy metals I	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
27/03/2024	9:45	11:15	v02 DG, Mechanisms of tox. action, therapy	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
27/03/2024	12:00	13:30	v02 DG, Mechanisms of tox. action, therapy	8E-3		1:30	Oster E.	P_farmakologija
02/04/2024	10:00	11:30	v03 Laboratory analytics I	8E-3		1:30	Cudina N.	P_farmakologija
02/04/2024	12:00	13:30	v03 Laboratory analytics I	8E-1, 8E-2		1:30	Cudina N.	P_farmakologija
03/04/2024	9:15	10:45	v04 Case reports I - pesticides	8E-1, 8E-2		1:30	Cudina N.	P_farmakologija
08/04/2024	14:30	16:00	v04 Case reports I - pesticides	8E-3		1:30	Cudina N.	P_farmakologija
11/04/2024	7:30	9:00	p06 Heavy metals II	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
15/04/2024	8:30	10:00	v05 Case reports II - metals	8E-1, 8E-2		1:30	Cudina N.	P_farmakologija
15/04/2024	12:15	13:45	v05 Case reports II - metals	8E-3		1:30	Cudina N.	P_farmakologija

Activities - Toxicology (2/3)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
16/04/2024	14:15	15:45	v07 Ecotoxicology	8E-1, 8E-2		1:30	Cudina N.	P_farmakologija
18/04/2024	8:00	9:30	v06 Laboratory analytics II	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
18/04/2024	12:00	13:30	p07 Mycotoxinoses I	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_fiziologija
18/04/2024	14:00	15:30	v06 Laboratory analytics II	8E-3		1:30	Oster E.	P_farmakologija
19/04/2024	8:00	9:30	v07 Ecotoxicology	8E-3		1:30	Cudina N.	P_farmakologija
22/04/2024	14:30	16:00	p08 Mycotoxinoses II	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
22/04/2024	16:00	17:30	v08 Toxicoses of fish and birds	8E-1, 8E-2, 8E-3		1:30	Oster E., Cudina N.	P_farmakologija, P_fiziologija
07/05/2024	14:15	15:45	v09 Intoxication of pets with drugs	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
08/05/2024	7:30	9:00	p09 Fluorine, cyanides, and cyanogen plants	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
09/05/2024	10:00	11:30	p10 Poisoning with nitrogenous compounds	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
09/05/2024	14:15	15:45	v09 Intoxication of pets with drugs	8E-3		1:30	Oster E.	P_farmakologija
14/05/2024	14:45	16:15	p11 Substances from the immediate environment	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_farmakologija
16/05/2024	13:00	14:30	v10 Organotoxicology	8E-1, 8E-2, P_farmakologija		1:30	Cudina N.	P_farmakologija
17/05/2024	8:00	9:30	v10 Organotoxicology	8E-3, P_farmakologija		1:30	Cudina N.	P_farmakologija
20/05/2024	10:30	12:00	v11 Case reports pets I	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
21/05/2024	8:15	9:45	v11 Case reports pets I	8E-3		1:30	Oster E.	P_farmakologija

Activities - Toxicology (3/3)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
23/05/2024	8:30	10:00	p12 Antitoxin production	8E-1, 8E-2, 8E-3, P_farmakologija		1:30	Prevendar Crnic A.	P_farmakologija
23/05/2024	14:00	15:30	s01 Snake, tick and spider bites	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_fiziologija
24/05/2024	11:30	13:00	v12 Case reports pets II	8E-1, 8E-2		1:30	Oster E.	P_farmakologija
24/05/2024	13:00	14:30	v12 Case reports pets II	8E-3		1:30	Oster E.	P_farmakologija
28/05/2024	16:00	17:30	s02 Hymenopera bites and nanoparticles	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_fiziologija
04/06/2024	13:45	15:15	s03 Polychlorinateds biphenyls, dioxins	8E-1, 8E-2, 8E-3		1:30	Prevendar Crnic A.	P_fiziologija
			Toxicology			0:30		P_farmakologija
Total: 39						57:30		

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STUDENT OBLIGATIONS

Lecture attendance	24 HOURS 3 – 6 points 1 double period is worth 0.5 point (1 period = 0,25 point) In order to gain minimal 3 points a student must attend 6 lectures out of 12
Seminars attendance	6 HOURS 4 – 6 points 1 double period is worth 2 point (1 period = 1 point) In order to gain minimal 4 points a student must attend 2 seminars out of 3
Practicals attendance	24 HOURS 4 – 6 points 1 double period is worth 0.5 point (1 period = 0.25 point) In order to gain minimal 4 points a student must attend 9 exercises out of 12
Active participation in seminars and practicals	5 – 10 POINTS Participation at seminars will be evaluated during the presentation of seminar works with 2.5 – 5 points. Participation at exercises will be evaluated with short oral tests with 2.5- 5 points.
Final exam	WRITTEN AND ORAL 24 – 40 POINTS In order to take the final exam a student must gain minimal 18 points from attending and participation at lectures, exercises and seminars, and minimal 20 points from continuous knowledge checking. During the written exam of the essay type with 5 questions and the oral exam, the student must collect at least 24 points.
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine (2022). Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. Regulations On Intergraduate And Graduate Studies, Article 41: a student can justifiably be absent from up to 50% of the lectures; 30% of the seminars and 30% of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	20 – 32 points 2 colloquia: I. COLLOQUIUM: Verification of the knowledge acquired during the Exercises in toxicology, and general toxicological terminology 16/5/2024, 17/5/2024. during exercises (max. 20 points, min. 12 points) II. COLLOQUIUM: Verification of knowledge acquired during the Toxicology Seminar 4/6/2024. during the seminar (max. 12 points, min. 8 points) CORRECTIVE ASSESSMENT, by agreement
Final exams (dates)	26/6/2024; 4/7/2024; 11/7/2024; 12/9/2024; 18/9/2024
Form of final exam	WRITTEN AND ORAL

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LITERATURE

Obligatory literature	1. Gupta, R.C. (2018): Veterinary Toxicology: Basic and Clinical Principles. 3 rd ed., Elsevier, Academic Press, London, San Diego, Cambridge, Oxford. 2. Baesley, V. (1999): Veterinary toxicology. IVIS, Ithaca, New York. (available at http://www.ivis.org/library.asp) 3. Osweiler, G. D. (1996): Toxicology. Williams & Wilkins, Philadelphia. 4. Poppenga, R. H., S. M. Gwaltney-Brant (2011): Small Animal Toxicology Essentials. Wiley-Blackwell, Chichester. 5. PP presentations of lectures, exercises and laboratory work
Optional literature	

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	With the knowledge gained at the Toxicology course students will be able to recognize animal poisoning, conduct stabilization, differential diagnosis, and treatment of poisoned patients, assess the success of treatment, and provide for possible wider harmful effects of poisoning (ecotoxicology). Proper sampling and sending materials for toxicological analysis; evaluation of chemical-toxicological test results in case of residues. Within the laboratory exercises for proving toxins in biological samples, students will acquire basic knowledge and skills in analytical toxicology (qualitative and semi-qualitative tests). During the processing of clinical poisoning cases with discussion, students are introduced to clinical toxicology and practice. They will also be able to identify possible sources of pet poisoning among things from their immediate living environment. In addition to poisoning domestic animals and pets, students will gain basic knowledge in the toxicology of birds and fish.
Learning outcomes	After completing the course material and passing the Toxicology exam, the student should know: - recognize poisoning - undertake therapeutic measures - evaluate the success of the therapeutic measures - evaluate possible hazardous consequences produced by the poisoning - identify possible sources of pet poisoning among things from their immediate living environment - professional sampling and transport materials for toxicological analysis - evaluation of the results of chemical toxicological tests in the case of residues according to legislation - identify fish and avian poisoning, and poisoning with venoms and toxins of animals

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GRADING SCHEME

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-76	2 (D,E)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Course leader



Head of organizational unit:



Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course