

UNIVERSITY OF ZAGREB  
FACULTY OF VETERINARY MEDICINE  
Heinzelova 55  
Tel. 01/2390163  
Division: Veterinary Public Health and Food Safety  
Department / Clinic: Pharmacology & Toxicology  
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Register no.:  
File no.:  
Zagreb, 04/09/2018

### **COURSE SYLLABUS**

Course name: Pharmacology

Academic year 2018-19

Course leader: Prof. Frane Božić, PhD

Teachers: Prof. Frane Božić, PhD; assoc. prof. Jelena Šuran, PhD

First day of classes: 29/10/2018

Last day of classes: 22/1/2019

Timetable for LECTURES academic year 2018-2019

LECTURES				
Date	Methodological unit	Teacher	Location / time	Literature
29/10/2018	Introduction to Pharmacology	Prof. Frane Božić	15-17 h <b>LECTURE</b> , lecture room, Department of Physiology and Radiobiology	Course materials (LMS)
30/10/2018	Pharmacodynamics	Prof. Frane Božić	9-11 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
5/11/2018	Pharmacokinetics Drug residues	Assoc. prof. Jelena Šuran	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
6/11/2018	Autonomic pharmacology	Prof. Frane Božić	13-15 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
8/11/2018	Drugs acting on the Central Nervous System	Prof. Frane Božić	14-16 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
15/11/2018	General anaesthesia	Prof. Frane Božić	13-15 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
19/11/2018	Sedatives and Tranquilizers	Prof. Frane Božić	8-10 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
28/11/2018	Opioid Analgesic Drugs	Prof. Frane Božić	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
29/11/2018	Local Anesthetics	Prof. Frane Božić	12-14 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
30/11/2018	Muscle relaxants, neuromuscular blocking agents	Prof. Frane Božić	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
3/12/2018	Analgesics, Antiinflammatory, Antipyretic Drugs	Prof. Frane Božić	8-10 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
5/12/2018	Drugs acting on the Cardiovascular System	Prof. Frane Božić	12-14 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
7/12/2018	Drugs affecting Renal Function and Fluid-Electrolyte Balance; Hormones Affecting Reproduction	Assoc. prof. Jelena Šuran	12-14 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
12/12/2018	Drugs for treating Gastrointestinal Diseases & Respiratory System	Assoc. prof. Jelena Šuran	12-14 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
13/12/2018	Chemotherapy of Microbial Diseases; $\beta$ -lactam Antibiotics	Prof. Frane Božić	11-13 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)

14/12/2018	Aminoglycoside Antibiotics	Prof. Frane Božić	8-10 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
7/1/2019	Macrolides, lincosamides, tetracyclines	Assoc. prof. Jelena Šuran	14-16 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
10/1/2019	Fluoroquinolones, Sulphonamides	Assoc. prof. Jelena Šuran	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
11/1/2019	Antifungal and Antiviral Drugs	Assoc. prof. Jelena Šuran	12-14 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
15/1/2019	Chemotherapy of Parasitic Diseases; Antinematodes, Anticestodes	Prof. Frane Božić	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
17/1/2019	Antitrematodal Drugs Antiprotozoan Drugs	Prof. Frane Božić	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
21/1/2019	Ectoparasiticides	Assoc. prof. Jelena Šuran	10-12 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
22/1/2019	Chemotherapy of Neoplastic Diseases	Assoc. prof. Jelena Šuran	10-11 h <b>LECTURE</b> , lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)

Timetable for SEMINARS academic year 2018-2019

SEMINARS					
Date	Methodological unit	Teacher	Group	Location / time	Literature
18/1/2019	Drug allergies	Prof. Frane Božić	1	10-12 h seminar, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
21/1/2019	Intramammary formulations for bovine mastitis treatment	Assoc. prof. Jelena Šuran	1	8-10 h seminar, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
22/1/2019	Pharmacovigilance	Assoc. prof. Jelena Šuran	1	11-12 h seminar, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)

## Timetable for PRACTICALS academic year 2018-2019

PRACTICALS						
Date	Methodological unit	Teacher	Type of practical	Group	Location / time	Literature
31/10/2018	Principles of Pharmaceutics and Veterinary Dosage Forms	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
13/11/2018	Drug nomenclature, ATC classification	Assoc. prof. Jelena Šuran	Practicum	1	13-15 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
14/11/2018	Evidence-based Pharmacotherapy	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
16/11/2018	Drug research and development 1	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
23/11/2018	Drug research and development 2	Assoc. prof. Jelena Šuran	Practicum	1	14-16 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
28/11/2018	1 <sup>st</sup> colloquium Drug prescriptions	Assoc. prof. Jelena Šuran	Practicum	1	12-14 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
5/12/2018	Solid drug formulations	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, lecture room, Department of Veterinary Pathology	Course materials (LMS)
6/12/2018	Liquid drug formulations	Assoc. prof. Jelena Šuran	Practicum	1	13-15 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
11/12/2018	Semisolid drug formulations (ointments and pastes)	Assoc. prof. Jelena Šuran	Practicum	1	11-13 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
12/12/2018	2 <sup>nd</sup> colloquium Drug dosing and prescribing	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)

13/12/2018	Drug dosing and prescribing	Assoc. prof. Jelena Šuran	Practicum	1	9-11 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
14/12/2018	Drug dosing and prescribing	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
8/1/2019	Drug dosing and prescribing 3 rd colloquium	Assoc. prof. Jelena Šuran	Practicum	1	16-18 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
10/1/2019	Laboratory animals movies: the action of drugs on nervous system	Assoc. prof. Jelena Šuran	Practicum	1	12-14 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
11/1/2019	Pharmacology problem solving	Assoc. prof. Jelena Šuran	Practicum	1	10-12 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
15/1/2019	Pharmacology problem solving	Assoc. prof. Jelena Šuran	Practicum	1	8-10 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
16/1/2019	Pharmacology problem solving	Assoc. prof. Jelena Šuran	Practicum	1	14-16 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)
22/1/2019	Pharmacology problem solving	Assoc. prof. Jelena Šuran	Practicum	1	12-13 h practicals, lecture room, Department of Pharmacology and Toxicology	Course materials (LMS)

**STUDENT OBLIGATIONS**

Lecture attendance	45 hours (3-6 points) 1 attendance= 0.26 points Minimum required is 3 points (equivalent to 12 lecture attendance from maximum of 23)
Seminars attendance	5 hours (4-6 points) 1 hour of seminar is 1.5 points (1 seminar=2 hours) Minimum required is 4 points (equivalent to 2 seminar attendances from maximum of 3)
Practicals attendance	39 hours (4-6 points) 1 practicals attendance (2 hours) is 0.3 points Minimum required is 4 points (equivalent to 14 practicals attendances from maximum of 20)
Active participation in seminars and practicals	<b>Seminars:</b> oral presentations are evaluated and scored <b>Practicals:</b> Student effort and the engagement during pharmacology problem solving is evaluated and scored
Final exam	Oral exam, lectures Minimum required exam entry are 36 points (from maximum of 60).
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. <b>Article 45:</b> 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)	3 colloquiums: 1) Principles of Pharmaceutics, Drug R&D; 2) Drug Dosage Forms; 3) Drug prescribing
Final exams (dates)	17/11/2018, 8/12/2018, 12/1/2019, 1/2/2019, 15/2/2019
Form of final exam	Oral exam

**LITERATURE**

Obligatory literature	Course materials (lecture handouts and notes) will be provided for every student (LMS)
Optional literature	Riviere, J, M. Papich: Veterinary Pharmacology and Therapeutics 10th edition. Wiley-Blackwell, 2018. Maddison, J., S. Page, D. Church: Small Animal Clinical Pharmacology. Saunders Elsevier, London, 2008.

**OBJECTIVES AND LEARNING OUTCOMES**

Course objectives	Preparing students for veterinary clinics where they can choose appropriate therapy for any disease diagnosed in vet patients as well as correct formulary writing.
Learning outcomes	<p>Students will particularly learn to approach specific species and categories of animals individually, but to treat farm animals as a group, as well. As regard that an animal should be get rid of pain in any moment it suffers, students will learn mechanisms of pain occurrence and its importance as well as the meaning of “multimodal pain therapy” concept.</p> <p>On the basis of knowledge gained upon the completed course and passed the exam “General and special pharmacology” students will be able to understand pharmacological basis of medical effects as well as species, age and other factors impacting on it. Besides, students will gain knowledge of effecting mechanisms of particular drug groups and will be able to chose the most appropriate drug (or drugs) indicated for specific disease or a pathological state. While doing so they will know to apply the drug in its optimal dose according to prescribed dose, while in the case of possible combination of a couple of drugs they will be aware of their mutual effects on each other (desirable or undesirable).</p>



**GRADING SCHEME**

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-68	2 (E)
69-76	2 (D)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Course leader:

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Head of Department/Clinic:

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

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES,  
SEMINARS and PRACTICALS**

<b>Type of activity</b>	<b>Minimum number of points</b>	<b>Maximum number of points</b>
Lectures attendance	<b>3</b>	<b>6</b>
Seminar attendance	<b>4</b>	<b>6</b>
Practicals attendance	<b>4</b>	<b>6</b>
Active participation in seminars and practicals	<b>5</b>	<b>10</b>
Continuous knowledge checking (mid-terms)	<b>20</b>	<b>32</b>
Final exam	<b>24</b>	<b>40</b>
<b>TOTAL</b>	<b>60</b>	<b>100</b>

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES and  
SEMINARS**

<b>Type of activity</b>	<b>Minimum number of points</b>	<b>Maximum number of points</b>
Lecture attendance	<b>3</b>	<b>6</b>
Practicals attendance	<b>8</b>	<b>12</b>
Active participation in practicals	<b>5</b>	<b>10</b>
Continuous knowledge checking (mid-terms)	<b>20</b>	<b>32</b>
Final exam	<b>24</b>	<b>40</b>
<b>TOTAL</b>	<b>60</b>	<b>100</b>

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH SEMINARS and  
EXERCISES**

<b>Type of activity</b>	<b>Minimum number of points</b>	<b>Maximum number of points</b>
Seminar / practicals attendance	<b>11</b>	<b>18</b>
Active participation in seminars and practicals	<b>5</b>	<b>10</b>
Continuous knowledge checking (mid-terms)	<b>20</b>	<b>32</b>
Final exam	<b>24</b>	<b>40</b>
<b>TOTAL</b>	<b>60</b>	<b>100</b>