UAB
Universitat Autònoma de Barcelona

Pharmacology

Code: 102665
ECTS Credits: 9

2024/2025

Degree	Type	Year
2502445 Veterinary Medicine	OB	3

Contact

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

PHYSIOLOGY (general concepts on organs and systems functioning)

BIOCHEMISTRY (molecular mechanisms of the basic functions of the organism)

Objectives and Contextualisation

Contextualisation. Third year studies degree (first semester and first half of second semester).

General objectives: Provide the student with the fundamental concepts in the field of pharmacology. Studying drugs, their mechanism of action and their effects, as the basics of therapeutic pharmacology

Educational Objectives: Acquisition of the basic principles of pharmacokinetics (drug delivery, absorption, distribution, metabolism and excretion), and pharmacodynamics (mechanism of action), interactions and

adverse drug reactions, underlying the rational and appropriate use of drugs in the different fields of applied pharmacology.

Competences

- Apply scientific method to professional practice, including medicine
- Comunicar la informació obtinguda durant l'exercici professional de manera fluïda, oralment i per escrit, amb altres col·legues, autoritats i la societat en general.
- Demonstrate knowledge and understanding of the general bases of medical and surgical treatments.
- Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
- Perform basic analytical techniques and interpret the clinical, biological and chemical results, and interpret the results of tests generated by other laboratories.
- Perform the most common medical and surgical treatments of animals.
- Prescribe and dispense medicines correctly and responsibly in accordance with legislation, and ensure that the medicines and waste are stored and eliminated properly.
- Safely perform sedations and regional and general anaesthesia, and evaluate and control the pain.

Learning Outcomes

1. Apply scientific method to professional practice, including medicine
2. Apply the methodology for pharmacokinetic and pharmacodynamic analysis of molecules and defend the results.
3. Communicate information obtained during professional exercise in a fluid manner, orally and in writing, with other colleagues, authorities and society in general.
4. Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
5. Explain and analyse the molecular and cellular action mechanism of drugs and its effect.
6. Explain and analyse the phases of the transport of drugs through the organism, i.e. drug kinetics.
7. Explain and defend the pharmacology of the agents that act in different systems, organs and apparatus.
8. Explain the drugs that act in the central and peripheral nervous system.
9. Identify adverse effects and interactions of drugs and analyse the benefit-risk quotient in the administration of drugs.
10. Identify and interpret the phases of drug development and know the bodies involved in their development and authorisation.
11. Identify aspects of pharmaceutical technology that are relevant to the stability of medicines.

Content

THEORETICAL / PRACTICAL PROGRAM / EXAMS *

THEORY

Introduction to Pharmacology

I. Pharmacokinetics
ADME processes. Drug administration and absorption. Distribution of drugs in the body. Biotransformation of drugs. Drug excretion. Pharmacokinetics.

II. Pharmacodynamics
General principles of drug action. Pharmacological targets: receptors. Type of receptors. Channel-coupled receptors, G protein-coupled receptors, which control gene transcription. Regulation of the receptors: up- and

down-regulation. Other pharmacological targets. Antibodies as selective drugs.

III. Factors that limit drug efficacy
Drug interactions. Adverse drug reactions.

IV. Drugs acting on the Autonomous/peripheral Nervous System
General aspects of the pharmacology of the peripheral nervous system. Pharmacology of the cholinergic transmission. Pharmacology of noradrenergic transmission. Pharmacology of the motor plaque.

V. Systemic pharmacology
Drugs that act on the cardiovascular system. Drugs that act on the respiratory system. Drugs that act on hemostasis. Pharmacology of the digestive system. Drugs with diuretic action. Pharmacological regulation of the endocrine system.

VI. Pharmacology of the Central Nervous System

Central nervous system: general considerations. Analgesics. Sedative and tranquilizer agents. Antidepressants, Antiepileptic and anticonvulsant drugs. Anesthetic drugs.

VII. Anti-inflammatory, anti-allergic and immunomodulatory drugs
Steroids. Non-steroidal anti-inflammatory drugs (NSAIDs). Antihistamine drugs Immunomodulatory drugs. Others agents acting on the immune system.

VIII. Anti-infective drugs
General principles of the pharmacology of antimicrobials. Betalactamics: Penicillins and Cephalosporins. . Aminoglycosides and Polypeptides. Quinolones Sulfamides. Tetracyclines and Phenolic. Macrolides and Lincosamines. Antimicotic and antivirals. Antiparasitic agents: Anthelmintics, Ectoparasitic and Antiprotozoa.

IX. Anticancer drugs
Cytotoxic agents and other anticancer.

X. Others
Sources for obtaining new drugs

- PRACTICAL SESSIONS
Analitical method (experimental lab). Absorption of drugs (experimental lab). Protein binding (experimental lab). Drug excretion (experimental lab). Pharmaceutical Forms and Formulation (experimental lab). Pharmacokinetic cases (classroom). Journal club (classroom). Drug Discovery (seminar). Case study 1 (classroom). Neuromuscular Junction (computer science). Case 2 (classroom). Organ bath: cholinergic drugs (experimental lab). Case 3 (classroom). Cardiolab (computer simulator). How to write a scientific article (classroom).

- EXAMS
3 mid-term exams and one remedial exam

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer simulation	4	0.16	2, 4, 5, 7, 10
Discussion of articles	2	0.08	1, 3, 5, 7, 9, 10

Discussion of cases	6	0.24	2, 3, 4, 8, 6, 10
Practical classes	12	0.48	1, 2, 5, 6, 11
Seminars	6	0.24	2, 5, 6, 9, 10
Theoretical Classes (Magistral)	50	2	4, 8, 5, 6, 7, 9, 10
Type: Autonomous			
Preparation work / article / simulations	30	1.2	2, 3, 4, 8, 5, 9, 10
Study	103	4.12	8, 5, 6, 7, 9, 10

- Theory classes

- Seminars: The objective is to reinforce some of the concepts that have been developed in theory classes, through practical exercises.

- Practical classes: these are carried out in the experimental laboratory. Students organize themselves to develop the practical experiences where the students learn how to manipulate and administrate the animals under the professor supervision.

- Computer simulations: Here students carry out virtual experiments through Pharmacology programs aimed at reinforcing certain concepts explained in the theoretical program.

- Self-learning: discussion of cases and articles. Students will have to solve on their own account certain cases proposed by the teaching staff, and that they will have to develop in group. A discussion will be made in common. The work groups will be of maximum 4 students and a minimum of 3. In the case of the discussion of articles, the students will have to prepare the oral presentation on different articles proposed by teachers (group work). The work groups will be of maximum 4 students and a minimum of 3.

The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health or University authorities.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
3 Exams	80%	6	0.24	1, 2, 3, 4, 8, 5, 6, 7, 11, 9, 10
Cases (3) (evaluated during session)	4	0	0	1, 2, 3, 4, 8, 5, 6, 7, 11, 9, 10
Drug discovery	4	2	0.08	10

Exam recovery	80%	2	0.08	1, 2, 3, 4, 8, 5, 6, 7, 11, 9, 10
Presentation and discussion article (1) (evaluated during the session)	4	0	0	1, 2, 3, 4, 8, 5, 6, 7, 11, 9, 10
Self learning activity: Neuromuscular junction	4	2	0.08	8, 5
Writing (scientific paper)	4	0	0	1, 3, 4, 7

The assessment system consists of tests related to the theoretical / practical part of the program (lectures, seminars and practices) and self-study (cases, works and discussion of articles). Attendance to the practical program is mandatory. If a student misses more than one practice without justification, the practical program will be suspended and they will have to repeat it.

Theoretical-practical evaluation:

1. 3 exams with different evaluable activities
2. 6 Team / individual projects.

This subject does not provide for the single assessment system

* Final note:

1. 80% corresponding to the average mark of 3 exams + 20% to the average mark of the works.
2. In order to be able to make the average between the three partials, the student must pass the three partials with at least a 4
3. In order to pass, the average of the three partials must be at least a 5
4. To pass the subject, the final grade, calculated as point 1, must be at least 5

Remedial final exams

The remedial exams consist of an independent test for each partial. Students who have failed a partial with less than a 4, that the average of the three partials is lower than 5, or who want to improve the grade of one of the three exams, they can present themselves in the part that suits them.

Not assessable

In the event that a student has not taken any of the partial exams, or any make-up exams, the subject will be considered non-evaluable

Characteristics:

If the mark obtained in the examination of recovery is inferior to the note of the partial one that was tried to surpass, will take into account the highest note.

REPEATERS

The notes of the teamwork are kept for repeatingstudents. In the event that a repeating student wants to improve the grade of any of the teamwork, he can notify the teaching team to include it in the list of students for the specific practice.

Student's assessment may experiences ome modifications depending on the restrictions to face-to-face activities enforced by health or Universityauthorities

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- RANG ANDDALE. Pharmacology, 9 Ed (2019)

- RIVIERE, JE, PAPICH, MG. *Veterinary Pharmacology and Therapeutics* 9 Ed (2009)

- Flashcards de Farmacologia bàsica. Com accedir-hi: entrar a la web de la biblioteca: https://www.uab.cat/biblioteques/ Després a revistes digitals i finalment posar: Flashcards de Farmacologia básica (hi ha tb una entrada de Flashcards de Rang&Dales)

ALTRES FONTS ONLINE

https://pubmed.ncbi.nlm.nih.gov/

World Wide Science.org

Springer Link

Ref seek

BASE (Bielefeld Academia Search Engine)

ScienceResearch.com

Software

Neuromuscular Pharmacology. Sheffield BioScience programs. 2 Woodgates Mount, North Ferriby, UK (2020).

Cardilab. Biosoft (UK and USA) info@biosoft.com www.biosoft.com (2000)

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan/Spanish	annual	morning-mixed
(PAUL) Classroom practices	2	Catalan/Spanish	annual	morning-mixed
(PAUL) Classroom practices	3	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	1	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	2	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	3	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	4	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	5	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	6	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	1	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	2	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	3	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	4	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	5	Catalan/Spanish	annual	morning-mixed
(SEM) Seminars	6	Catalan/Spanish	annual	morning-mixed
(TE) Theory	1	Catalan/Spanish	annual	afternoon
(TE) Theory	2	Catalan/Spanish	annual	afternoon