

Información del Plan Docente

Academic Year	2017/18
Faculty / School	105 - Facultad de Veterinaria
Degree	451 - Degree in Veterinary Science
ECTS	6.0
Year	3
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information**1.1.Introduction****1.2.Recommendations to take this course****1.3.Context and importance of this course in the degree****1.4.Activities and key dates****2.Learning goals****2.1.Learning goals****2.2.Importance of learning goals****3.Aims of the course and competences****3.1.Aims of the course****3.2.Competences****4.Assessment (1st and 2nd call)****4.1.Assessment tasks (description of tasks, marking system and assessment criteria)****5.Methodology, learning tasks, syllabus and resources****5.1.Methodological overview**

The methodology followed in this course is oriented towards achievement of the learning objectives.

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2 - Practical sessions.

Students will carry out experiments at Toxicology lab. A detailed protocol and all necessary reagents as well as the biosecurity measures to be followed, will be provided to students.

3 - Professional seminars related to the field of Veterinary Toxicology.

Seminar topics should be proposed and chosen by students.

A repository of the lecture notes used in class, the course syllabus, practical sessions handouts, as well as other course-specific learning materials will be available via Moodle platform ADD (Universidad de Zaragoza)

5.2.Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (4.4 ECTS): 44 hours.
- Practical sessions (1.4 ECTS): 14 hours.
- Seminar (0.2 ECTS): 2 hours.

5.3.Syllabus

Lectures

I. General Toxicology

1. Introduction
2. Experimental Toxicology
3. Toxicokinetics
4. Biotransformation
5. Toxicodynamics
6. Mutagenesis- Carcinogenesis -Teratogenesis
7. Endocrine disruption
8. Analytical Toxicology
9. Risk assessment
10. Treatment of poisoning

II. Industrial Toxicants

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1. Persistent contaminants
2. Corrosive substances
3. Alcohols and glycols
4. Petroleum

III. Pesticides

1. Introduction
2. Organochlorines and pyrethrins
3. Insecticides
4. Acaricides
5. Rodenticides
6. Avicides
7. Molluscicides
8. Herbicides y fungicides

IV. Feed and water Contaminants:

1. Urea
2. Water
3. Teobromine
4. Mycotoxins

V. Poisonous Plants:

1. Introduction
2. Hepatotoxic plants
3. Lectines y leguminismos
4. Cyanogenic plants
5. Oxalates-containing plants
6. Nitrate and nitrite accumulating plants

VI. Drugs of Abuse

1. CNS depressants
2. Stimulants
3. Hallucinogens

VII. Metals:

1. Introduction
2. Copper-Molybdenum
3. Lead
4. Mercury
5. Arsenic
6. Cadmium

VIII. Poisonous and Venomous Organisms :

1. Bacterial toxins
2. Zootoxins

Practical sessions

Session 1: *In vitro* Toxicity , cell culture. 3h. Place: Toxicology Lab

Session 2: Calculations in Toxicology problems.

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Session 3: Poisonous and Venomous animals identification. Case studies 2h. Place: Toxicology Lab

Session 4: Neurotoxicants: AChE inhibitors. 3h. Place: Toxicology Lab

Session 5: Methemoglobinemia. Nitrite measurement. 3h. Place: Toxicology Lab

5.4.Course planning and calendar

Available at the following website (<https://veterinaria.unizar.es/>) updated every academic year

5.5.Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- [BB] Encyclopedia of toxicology /editor in chief Philip Wexler . 2n ed. Oxford: Elsevier, cop. 2005 [Para acceder al texto completo mirar URL]
- [BB] Repetto Jiménez, Manuel. Toxicología fundamental / Manuel Repetto Jiménez, Guillermo Repetto Kuhn . 4ª ed. Madrid : Díaz de Santos, D.L. 2009
- [BB] Roder, Joseph D.. Manual de toxicología veterinaria / Joseph D. Roder ; [traducción y revisión : Rosa Oliver] . St. Cugat del Vallés, Barcelona : Multimédica, D. L. 2002
- [BB] The Merck veterinary manual / editor in chief, Susan E. Aiello ; executive editor, Michael A. Moses . 11th ed. Kenilworth : Merck & Co., 2016
- [BB] Veterinary toxicology : basic and clinical principles / edited by Ramesh C. Gupta . 2nd ed. Amsterdam : Elsevier, 2012
- [BC] Casarett and Doull's toxicology : the basic science of poisons / editor, Curtis D. Klaassen . 8th ed. New York [etc.] : McGraw-Hill, cop. 2013
- [BC] Haschek, Wanda M.. Fundamentals of toxicologic pathology [Recurso electrónico] /Wanda Haschek, Matthew Wallig, Colin Rousseaux. . 2nd ed. London : Academic, 2009. [Para acceder al texto completo mirar URL]
- [BC] Principles and methods of toxicology / [edited by] A. Wallace Hayes . 5th ed. Boca Raton [etc.] : CRC Press, cop. 2008
- [BC] Toxicology : principles and applications / [edited by] Raymond J.M. Niesink, John de Vries, Manfred A. Hollinger. Boca Raton [etc.] : CRC Press, cop. 1996

Listado de URL

- Agency for Toxic Substances & Disease Registry [<http://www.atsdr.cdc.gov/>]
- Buscador de información toxicológica y ambiental [<http://busca-tox.com/>]
- Chemical Safety Information from Intergovernmental Organizations [<http://www.inchem.org/>]
- Encyclopedia of toxicology [<http://www.sciencedirect.com/science/referenceworks/9780123694003>]
- Haschek, Wanda M.. Fundamentals of toxicologic pathology [Recurso electrónico] [<http://www.sciencedirect.com/science/book/9780123704696>]
- Integrated Risk Information System (IRIS) [<http://www.epa.gov/iris/>]
- Programa de información y formación en Toxicología clínica [<http://wzar.unizar.es/stc/toxicologianet/index.htm>]
- Toxipedia (free toxicology encyclopedia) [<http://toxipedia.org/>]
- Toxnet (Toxicology Data Network) [<http://toxnet.nlm.nih.gov/>]
- Various types of pesticide toxicology and environmental chemistry information [<http://extoxnet.orst.edu/>]
- Veterinary toxicology [Recurso electrónico] : basic and clinical principles /edited by Ramesh C. Gupta. [<http://www.sciencedirect.com/science/book/9780123704672>]