

**Ophthalmology**

Code: 104669  
ECTS Credits: 3

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OT	5	A

**Contact**

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**Use of Languages**

Principal working language: spanish (spa)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

**Other comments on languages**

The subject will be taught in Castilian and Catalan, but there are contents in English .

**Teachers**

Marta Leiva Repiso

**Prerequisites**

There are no mandatory prerequisites, but it is absolutely advisable that the student has sufficient knowledge of anatomy, physiology, pharmacology, histology and surgery.

On the other hand, it is also recommended that the student have the basic clinical knowledge that has been taught in the following core subjects: Small Animals' Medicine and Surgery I and II, and Progress in Equine Medicine and Surgery.

**Objectives and Contextualisation**

Ophthalmology is an optional subject of fifth grade, very important in the training of students who wish to acquire knowledge and skills to work in small animals' clinics. On the other hand, part of the knowledge can also be applied, as a basis, to equine' medicine and surgery and exotics animals.

It is intimately related to internal medicine, neurology, dermatology, image, and emergency medicine. It is a theoretical-practical subject.

The main training objectives of the subject include:

- To know the ophthalmology's most frequent diseases and pathological processes in small animals (dogs & cats).
- Learn the handling of pet animals that suffer from these processes or diseases
- Be able to develop a list of differential diagnoses for a pet with certain clinical signs

- Know the diagnostic methods applied in ophthalmology, and how to interpret them
- Know the medical and surgical treatments of the most frequent ophthalmological diseases
- Know the most frequent ophthalmological' surgical techniques applicable in small animals, their indications and prognosis.
- Know the prognoses and see the follow-up of the most frequent ophthalmological diseases in small animals.
- To know the systemic diseases with ocular signs, more frequently seen in small animals.

## Competences

- Analyse, synthesise and resolve problems and make decisions.
- Apply scientific method to professional practice, including medicine
- Attend to emergencies and perform first aid in veterinary science.
- Collect, preserve and issue all types of samples with the corresponding report.
- Demonstrate knowledge and understanding of the general bases of medical and surgical treatments.
- Demonstrate knowledge of the rights and duties of the veterinarian, with a special focus on ethical principles
- Diagnose different individual and collective animal diseases, and know about prevention measures, with emphasis on zoonoses and notifiable disease.
- Diagnose the most common diseases using different general and instrumental techniques.
- Make clinical records and accurate and complete clinical exploration of animals.
- 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.
- Recognise when euthanasia is necessary and perform it humanely by employing the appropriate method.
- Safely perform sedations and regional and general anaesthesia, and evaluate and control the pain.
- Treat and handle animals in a safe and humanitarian manner, and instruct other people to properly employ these techniques.

## Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Apply and interpret control and surveillance systems in ICU, hospitalisation and surgery, specifically in complex interventions on animals with serious disorders of the general state or interventions in neurology, ophthalmology, traumatology and orthopaedics or special surgery.
3. Apply scientific method to professional practice, including medicine
4. Apply the concepts acquired for recognition and manipulation of instruments, manipulation of tissues, haemostasis, drainage and sutures, as well as helping effectively in surgical interventions recognising the typical instruments of surgical specialities (traumatology and orthopaedics, thoracic surgery, ophthalmology, neurology, exotic...).
5. Defend the ethical values that determine the decision making in diagnostic procedures, medical or surgical treatment or any medical procedure, subject to the rights of animals and their owners.
6. Define the problems found in physical examinations or clinical record of an animal, and produce a list of problems, differential diagnosis and the diagnostic protocol in all clinical specialities and for different species.
7. Demonstrate knowledge of the general principles of the medical and surgical treatments of ophthalmological disorders of small, equine and exotic animals.
8. Fill in anamnesis and exploration records in all clinical specialities.
9. Hold animals when performing examinations, caring or taking samples in a way that causes the minimum possible stress and be able to explain to other people how to do the same.

10. Identify ophthalmological disorders that require urgent treatment.
11. Identify the available laboratory methods to perform hemograms and determine biochemical parameters, advantages and disadvantages of different systems, and recognise the derived complications of treatment and/or obtainment of a sample.
12. Identify the conditions in which euthanasia is the only possible option, or the most suitable, depending on the general state of the sick animal and appropriately propose this to the owners.
13. Identify, treat and prevent the main eye diseases of small, equine and exotic animals.
14. Perform differential diagnoses and diagnostic plans, taking into account the available complementary techniques applied to all clinical specialities and different species.
15. Plan the most suitable anaesthetic protocol depending on the animal species and the general state of the patient, as well as the type of intervention required.
16. Properly apply knowledge acquired on sedation and pain therapy to interventions in the nervous system, ophthalmology, traumatology and orthopaedics, and special surgery.
17. Properly calculate the doses of medicine for different animal species. Know the limitations of some drugs depending on the species or even the breed, as well as the specific contraindications.
18. Properly use a direct and indirect ophthalmoscope and the Schiötz tonometer.
19. Realise complete basic examinations in different clinical specialities (dermatology, neurology, ophthalmology, traumatology and orthopaedics...).
20. Recognise personal limitations and know when to ask for professional advice and help.
21. Recognise the adverse effects that different medications can cause and observe established pharmacovigilance legislation
22. Recognise the disorders that require urgent assistance and know how to prioritise them by severity.
23. Recognise the main problems that will require emergency surgery.
24. Recognise the moment when a case needs to be passed to a specialist for diagnosis and/or treatment, and if required, or not, an urgent examination.
25. Show responsibility regarding the need to perform necessary complementary tests on the patient and know how to evaluate the meaning and integrate it in the evolution of hospitalised patients of different species.

## Content

Lessons (13 hours)

Topic 1. OCULAR ADNEXA: EYELIDS I. Anatomical and functional review. Functional anomalies.

Topic 2. OCULAR ADNEXA: EYELIDS II. Blepharitis. Eyelid surgery. Wounds. Tumors.

Topic 3. OCULAR ADNEXA: CONJUNCTIVA. Anatomical and functional review. Conjunctivitis. Tumors.

Topic 4. OCULAR ADNEXA: THIRD EYELID. Anatomical and functional review. Cherry eye. Eversion. Inflammations. Tumors.

Topic 5. OCULAR ADNEXA: LACHRIMAL APPARATUS. Tear film composition. Dacryocystitis. Tear secretion deficits.

Topic 6. CORNEA I. Anatomical and functional review. Congenital anomalies. Non-ulcerative keratitis.

Topic 7. CORNEA II. Ulcerative keratitis. Tumors. Protective bandages of the cornea.

Topic 8. UVEA. Anatomical and functional review. I. Congenital diseases. Uveitis. Tumors.

Topic 9. LENS. Anatomical and functional review. I. Lenticular sclerosis. Cataracts. Lens luxation.

Topic 10. GLAUCOMA. Aqueous humor production and drainage. Pathogenesis. Symptomatology. Diagnosis. Medical and surgical treatment.

Topic 11. ORBIT AND GLOBUS. Trauma. Eye Prolapse. Panophthalmia. Retrobulbar Abscess. Orbital cellulitis. Tumors.

Topic 12. RETINA. Anatomical and functional review. Congenital and acquired diseases.

Topic 13. OCULAR SIGNS OF SYSTEMIC DISEASES

Laboratories (18 hours)

- PLC (2 hours): Advanced ophthalmological examination practice. Deepen the ophthalmological examination technique, and apply it to both, biological models and the dog, using the most appropriate protocol in each case.

- PAUL (2 hours): Ophthalmologic surgeries. Videos of the most common ophthalmology surgeries.

- Seminario 1 (2 hours): Differential diagnosis of the red eye in dogs and cats. This seminar integrates the theoretical knowledge of the whole subject.

- Seminario 2 (2 hours): Ophthalmic diseases' images interpretation I. Images and clinical cases. Through the case method and from the clinical signs of the patients, students must establish the differential diagnosis, propose the diagnostic protocol to reach the definitive diagnosis, prescribe the treatment and issue the prognosis.

- Seminario 3 (2 hours): Ophthalmic diseases' images interpretation II. Images and clinical cases. Through the case method and from the clinical signs of the patients, students must establish the differential diagnosis, propose the diagnostic protocol to reach the definitive diagnosis, prescribe the treatment and issue the prognosis.

- PCAs (8 hours) Clinical practices: These practices will be carried out at the FHCV, on the days and times that will be published at the beginning of the subject, and to which the student must sign up.

## **Methodology**

### Theoretical lessons (13 hours)

- Learning in this subject will be theoretical and practical. Masterclasses will be held in which the student is intended to interact with the teacher, and visualize the images that allow the understanding of the diseases and clinical signs of the specialty. This will provide the bases that students should expand with reading and consulting the appropriate bibliography. The masterclasses will be taught with the help of powerpoint schemes.

- In some of these classes, small tests will be carried out that will allow the student to know the evolution of their learning. Class attendance will be taken into account in the final grade.

### Practical sessions (18 Hours)

- The practical part consists of seminars, special laboratory practices, and clinical practices. Attendance at all seminars, practices and training activities is mandatory. In the seminars, through the case method and from the clinical signs of the patients, students must establish the differential diagnosis, propose the diagnostic protocol to reach the definitive diagnosis, prescribe the treatment and emit the prognosis.

- 2 hours PLC: Advanced ophthalmological examination practice. Deepen the ophthalmological examination technique and apply it to both biological and dog models, using the most appropriate protocol in each case.

- 2 hours PAUL: Videos of the most common ophthalmology surgeries.

### Seminars

- 4 hours (2 seminars) Images and clinical cases. Through the case method and from the clinical signs of the patients, students must establish the differential diagnosis, propose the diagnostic protocol to reach the

definitive diagnosis, prescribe the treatment and issue the prognosis.

- 2 hours Seminar: Red eye differential diagnosis. This seminar integrates the theoretical knowledge of the whole subject.

### Practices

- 8 hours of Clinical Practices. These practices will be carried out at the FHCV (Hospital Clínic Veterinarià Foundation), on the days and times that will be published at the beginning of the subject and to which the student must sign up. In these practices, students will attend consultations of patients with ophthalmic diseases. They will have the opportunity to participate in observing the actions of the clinicians, as well as conducting discussion sessions in very small groups.

Due to the importance of the theoretical contents of this subject, the presentations will be accompanied, in many occasions, by images and videos. The use of these images and videos for purposes other than studying the subject, as well as the recording of the classes or practices or the total or partial cession thereof, are expressly prohibited and protected by the intellectual property law.

### **Activities**

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Advanced ophthalmological examination practice	18	0.72	8, 19, 18
Clinical practices	8	0.32	1, 3, 2, 5, 6, 7, 14, 10, 13, 8, 19, 24, 9, 18
Seminars (images, clinical cases, red eye and videos of surgeries)	10	0.4	3, 5, 6, 7, 25, 14, 10, 13, 24
Theoretical classes	13	0.52	3, 6, 7, 14, 10, 13, 24, 22
Type: Autonomous			
Study	15	0.6	

### **Assessment**

The theoretical exam will be done, basically, in the form of short questions or "fill spaces". Some case resolution questions, fill out graphs, schematics or drawings, and some type-test questions may occur. The exam will have to be approved with 50% of the points (5 out of 10) to be able to do half with the rest of the subject's assessments.

The evaluation of the practical program will be developed throughout all the time that the clinical practices and other programmed activities last. The students will be evaluated to determine if they have achieved the learning objectives and the competences assigned to the subject in the syllabus.

In the slide exam (written), the learning of the differential eye diagnosis of the red eye, and the seminars for the interpretation of ophthalmological illnesses, will be evaluated. The images will be accompanied by specific questions that may include listing clinical signs, listing diagnoses, making differentials, proposing or recognizing treatments, recognizing structures and diagnostic tests, etc. In some cases, the questions related to the images can be formulated as a test. The minimum mark to pass will be 5 (out of 10) and will not be done with the other parts of the subject below this note.

Evaluation of the practices. The student will be evaluated during the period of clinical laboratory practices or

clinical practices, taking into account the following general criteria:

- Basic knowledge (CT7)
- Interpersonal relations (CT4)
- Learning / initiative / motivation
- Attitude / clinical behavior

The ophthalmology service will use a rubric for PCAs, focused on evaluating the aforementioned general criteria. It will be important how the student completes the exploration sheet, the list of differentials, the theoretical knowledge to answer the teacher's questions, the presentation of the clinical cases assigned to him/her, etc. The evolution of the student will be taken into account throughout the clinical practices. The final grade will be weighted by 10, with a 5 being required to pass and not doing the average with the remaining notes below that value.

5% of the mark will be of continuous evaluation and includes aspects such as class attendance, behavior/participation in practices, performance in the practice of clinical laboratory (Advanced ophthalmologic exploration), results of kahoots ... etc. In the practice of the clinical laboratory will take into account the ability of the student to carry out the exploration, as well as the knowledge about ophthalmology exploration acquired in MICAC II.

The student that does less than 50% of the activities evaluable in the subject, will obtain the qualification of NOT EVALUABLE. The activities evaluated in the subject are Theoretical classes, the whole practical program, and the theory and slide examinations.E

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continuous evaluation (Assistance, PLC, Kahoots...)	5%	1	0.04	5, 7, 14, 10, 13, 24, 22, 18
PCAs note	10%	8	0.32	1, 16, 3, 4, 2, 17, 5, 6, 7, 25, 14, 11, 10, 12, 13, 8, 15, 19, 24, 21, 23, 22, 20, 9, 18
Slides exam	35%	1	0.04	1, 3, 6, 7, 25, 14, 10, 13, 19
Theoric exam	50%	1	0.04	5, 7, 14, 10, 13, 24, 22

## Bibliography

### Basic Bibliography

Recommended General books:

- Slatter D. "Fundamentals of Veterinary Ophthalmology" 6th Edition, by Maggs D. , Miller P.& Ofri R. Saunders 2018.(Disponible versió on-line)
- Gelatt, Kirk N. "Essentials of Veterinary Ophthalmology". Third edition. Wiley-Blackwell 2014.

### Surgery

- Gelatt. Kirk N & Gelatt J.P. "Veterinary Ophthalmic Surgery". Saunders 2011

### Atlas

- Gelatt. Kirk N, Plummer C.E. "Color Atlas of Veterinary Ophthalmology". Wiley Backwell, 2017
- Dziezyc J. Millichamp N. J. "Color Atlas of Canine and Feline Ophthalmology" Elsevier Inc. 2004..  
Disponible la versió digital on-line.
- Ketring Kerry L.; Glaze. Mary B. "Atlas of Feline Ophthalmology" Wiley Backwell, 2012

(very good pictures )

- Barnett,K.C.; Sansom J.; Heinrich "Canine Ophthalmology. An Atlas and Text". Elsevier Ltd. England 1ª Ed. 2002
- Barnett,K.C. "Diagnostic Atlas of Veterinary Ophthalmology". 2nd Edition. Mosby 2006.
- Clerc B. "Atlas d'Ophthalmologie du Chien et du Chat". Ed Point Veterinaire. 2005.

#### Further reading

#### General books

- Barnett,K.C.; Sansom J.; Heinrich "Canine Ophthalmology. An Atlas and Text". Elsevier Ltd. England 1ª Ed. 2002
- Barnett,K.C. Diagnostic Atlas of Veterinary Ophthalmology. 2nd Edition. Mosby 2005.
- Clerc B. "Atlas d'Ophthalmologie du Chien et du Chat". Ed Point Veterinaire. 2005.
- Cutler, Tim J. "Updates in Ophthalmology". Veterinary Clinics of North America. Equine Practice. August 2004
- Gelatt. Kirk N "Veterinary Ophthalmology" Firth edition. (2 Volumes) Blackwell publishing. 2013.
- Grahn,B. H., . Cullen C. L. Peiffer,R. L. Veterinary Ophthalmology Essencials. Elsevier.2006
- Martin, Charles L. "Ophthalmic Disease in Veterinary Medicine" de Manson Publishing. 2009
- Simon M Petersen-Jones, Shelia M Crispin. BSAVA Manual of Small Animal Ophthalmology. 2<sup>nd</sup> Edition Blackwell Science.2002.
- Stades,F.C.; Wyman M.; Boevé M.H.; Newmann W. "ophthalmology for the veterinary practitioner". 2nd Edition Schlülersche. 2007.
- Turner S.M. Saunders Solutions in Veterinary Practice: Small Animal Ophthalmology. Saunders. 2008
- Robert L Peiffer, Jr, DVM PhD DipAVCO, and Simon M Petersen-Jones, DVetMed PhD DVOphthal DipECVO MRCVS "Small Animal Ophthalmology" (Fourth Edition) A Problem-Oriented Approach. Elsevier Ltd. 2009.
- Ronald C. Riis, "Small Animal Ophthalmology Secrets". Hanley & Belfus, Inc. 2002.Disponible la versió digital on-line..

#### Journals

- Veterinary Ophthalmology journal. Blackwell Science.

#### webs OF RELATED ASSOCIATIONS WITH VETERINARY OPHTHALMOLOGY

- [www.ECVO.org](http://www.ECVO.org) web of the European College of Veterinary Ophthalmologists
- [www.ACVO.org](http://www.ACVO.org) web of the American College of Veterinary Ophthalmologists
- [www.esvo.org](http://www.esvo.org). web of the European society of veterinary ophthalmology