

**Domestic Animal Medicine and Surgery II**

Code: 102621  
ECTS Credits: 7

| Degree                      | Type | Year | Semester |
|-----------------------------|------|------|----------|
| 2502445 Veterinary Medicine | OB   | 4    | A        |

**Contact**

Name: Félix Angel García Arnas

Email: felix.garcia@uab.cat

**Use of Languages**

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: No

Some groups entirely in Spanish: No

**Teachers**

Jordi Alberola Domingo

Yvonne Espada Gerlach

Lluís Ferrer Caubet

Jordi Franch Serracanta

Félix Angel García Arnas

Josep Pastor Milán

Maria Teresa Peña Giménez

Rosa Maria Rabanal Prados

Teresa Rigau Mas

Rafael Ruíz de Gopegui Fernández

Sònia Añor Torres

María Carmen Diaz-Bertrana Sanchez

Josep de la Fuente Laborda

Jaume Martorell Monserrat

Marcos Raposo Galván

Laura Ordeix Esteve

Maria Montserrat Rivera del Alamo

Carlos Torrente Artero

Marta Leiva Repiso

Anna Maria Andaluz Martinez

Marta Planellas Bachs

Rosa Novellas Torroja

Luis Bosch Lozano

Pedro Fontecha Umaña

## Prerequisites

Students must have passed the 3rd year course "Surgery and Anesthesiology".

It is convenient that students have attended the courses Pathology, Exploratory Methods, Pharmacology, and Reproduction, as well as the lectures during the first semester of the 4th-grade course "Small Animal Medicine and Surgery I".

## Objectives and Contextualisation

Small Animal Medicine and Surgery II is a compulsory course of fourth grade, and it comprises all the practical activities related to the theory contents of the course "Small Animal Medicine and Surgery I".

This course introduces the student to the basis of the diseases of small animals, their treatment -medical or surgical-, the follow-up and prognosis, and to the management of critical patients. It also introduces students to the basics of clinical reproduction in small animals.

The main formative goals of the course are that students:

- Will be able to recognize and diagnose different lesions or clinical signs and their relationship with pathological processes.
- Will elaborate differential diagnosis lists based on the clinical signs and lesions observed in the animals.
- Will be able to elaborate a therapeutic plan, medical or surgical, for each clinical case.
- Will know the surgical techniques most commonly used in Veterinary Medicine.
- Will acquire the ability to recognize reproductive diseases, those derived from delivery and puerperium, and their treatment.
- Will know the basis of clinical pharmacology and its application in each case.
- Will know the basis of cytologic diagnosis and its application in small animal medicine.

## Competences

- Analyse, synthesise and resolve problems and make decisions.
- Apply scientific method to professional practice, including medicine
- Apply the basic cures that guarantee the correct function of the reproduction cycle and the resolution of obstetric problems.
- Assess and undertake epidemiological studies and therapeutic and preventive programs in accordance with the standards of animal welfare, animal health and public health.
- 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.
- Have basic knowledge of the profession, and in particular of the organisation and functions of professional practice.
- Make clinical records and accurate and complete clinical exploration of animals.
- Perform a necropsy, including a record of the injuries found, sample taking and storage and posterior transport.
- 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.

- Properly apply the principles of sterilisation of surgical equipment and the principles of surgical asepsis.
- Recognise ethical obligations in the exercise of responsibilities in terms of the profession and society.
- 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.

## Learning Outcomes

1. Administer fluid in emergency situations.
2. Analyse, synthesise and resolve problems and make decisions.
3. Apply scientific method to professional practice, including medicine
4. Apply the concepts acquired in terms of the recognition and handling of instruments, manipulation of tissues, haemostasis, drainage and sutures.
5. Apply to clinical practice the knowledge acquired from the subjects of Pathology and General Surgery.
6. Conduct a complete physical examination and detect disorders.
7. Conduct triage in an emergency.
8. Construct a basic emergency biochemical test and defend the interpretation
9. Correct and prevent disorders of the locomotor apparatus and of other sporadic diseases.
10. Correct, regulate and prevent the most frequent metabolic and nutritional diseases.
11. Define the problems found in physical examinations or in the clinical history of an animal.
12. Describe the etiology, etiopathogeny, diagnosis and treatment of the most frequent medical and surgical diseases in small, equine and livestock animals.
13. Describe the suitable methods of euthanasia for the different species of animal and applicable standards.
14. Diagnose and solve obstetric and post- delivery problems.
15. Dispense and administer fluid to hospitalised animals.
16. Identify and prevent problems related with handling of animals that negatively affect their health.
17. Identify and recognise the medical and surgical problems associated to the male and female reproduction apparatus in different animal species.
18. Identify congenital and acquired diseases that affect the proper absorption of foods.
19. Identify damaged organs or tissue and take samples for later study.
20. Identify disorders of the locomotor apparatus and especially those of members and hooves.
21. Identify neurological diseases and the most relevant ones that can sporadically affect the proper systemic functions of animals.
22. Identify the ethical values that govern the behavior of veterinarians in clinical practice to animals, their owners and referring veterinarians if any.
23. Identify the guidelines for vaccination and deworming applied to small animals, horses and exotic animals.
24. Identify the most frequent metabolic disorders.
25. Identify whether the quality of life of affected animals is good enough and, if it is not, identify euthanasia as an alternative humanitarian procedure.
26. Identify, treat and prevent problems that alter lactation and the functionality of the mammary gland.
27. Identify, treat and prevent the causes of infertility in male and females.
28. Identify, treat and prevent the causes that lead to anoestrus and alter normal cyclicity.
29. Identify, treat and prevent the problems that affect neonates.
30. Interpret and administer guidelines for the treatment of hospitalised animals.
31. Interpret basic pathological X-rays and echographies.
32. Monitor animals during surgical and/or anaesthetic recovery.
33. Objectively evaluate pain in sick animals.
34. Obtain blood and urine samples and process them for dispatch to a laboratory.
35. Perform a hemogram with emergency teams and defend the interpretation.
36. Perform an ovariohysterectomy and a castration of a male.
37. Perform cytology (surface masses, skin, ears...), fixation and staining, and defend the interpretation.
38. Practise positioning and perform X-rays in clinical cases.
39. Prepare an animal for an echography.
40. Produce a differential diagnosis and its diagnostic plan using the available complementary techniques.
41. Produce an anamnesis report in a real practical context.
42. Properly apply hormonal treatments to the regulation and normalisation of reproduction.

43. Properly apply to the operating theatre the concepts of asepsis-antisepsis, preparation of surgery and preparation of the surgical patient.
44. Properly calculate medicine doses.
45. Properly fill in application forms for biopathological and histopathological analyses of samples from pets.
46. Recognise pathological changes in X-rays and echographies of simple cases and interpret them properly.
47. Recognise personal limitations and know when to ask for professional advice and help.
48. Recognise the limitations of medicine and the general state of sick animals.
49. Recognise when a necropsy should be recommended in different species.
50. Recognize ethical values for decision-making in medical or surgical treatment or any clinical procedure within existing rights of animals and their owners.
51. Work with chemotherapy agents.

## **Content**

The learning process of the contents of the course is made through an integrative approach that includes assistance to practical activities (Clinical Rotations) in different Services/ Areas: Servei de Medicina Interna.

Soft Tissue Surgery Service.

Orthopedics Service.

Exotic Animals Medicine and Surgery Service.

Neurology Service.

Ophthalmology service.

Dermatology Service.

Reproduction and Obstetrics Service.

Intensive Care and Emergency Unit.

Diagnostic Imaging Service.

Pathology Service.

Clinical Pharmacology and Therapeutics Unit.

Most of the activities of the course will take place in the Hospital Clínic Veterinari (FHCV).

Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents.

## **Methodology**

Teaching will take place in the Veterinary Teaching Hospital, in special labs, and in some lecture theaters. The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Practical teaching:

Practical sessions are aimed to apply the knowledge that students have gained in the theory lectures of the course "MICAC I", as well as to develop the abilities to be able to: administer medications to small animal patients, obtain and process blood samples, assist in surgeries, etc.

The 122 hours are distributed as follows:

## Medicine Block

- 20hs of clinical appointments in groups of 5 students.
- Students will assist with the regular appointments or emergencies that will arrive at the Hospital during 5 days. Students will stay with the responsible clinician each week and they will be able (with the clinician's assistance) to take the clinical history, perform the physical examination of patients, elaborate a differential diagnosis, and propose a diagnostic or therapeutic plan. The patient's owners will be present at the appointments.

## ICU Block:

- 20hs in the ICU of the Veterinary Teaching Hospital in groups of 5 students.
- Students will perform the follow-up of hospitalized patients from all specialties (surgery, orthopedics, ophthalmology, neurology, internal medicine) and of all emergencies that might arrive and need critical care. Students will stay with the ICU clinician responsible for the Service each week, and they will discuss together the differentials, treatments, and care of all patients during the 5 days of the rotation. There will be 1h hour dedicated exclusively to neurology patients every day.

## Surgery block:

- 25hs of surgical practice in groups of 5 students.
- Students will scrub in most of the surgeries performed and will assist the surgeon in performing each surgical procedure. Students are expected to assist during 5 consecutive days. In these practical sessions, students must have already acquired the concepts and abilities taught in the General Surgery course (to scrub and put surgical gloves and gowns on, to identify surgical instruments, to know the aseptic techniques, etc.).
- 4hs of Ovariohysterectomy (OHE) and castration in live cats, in groups of 5 students. Students will perform the surgical procedures in male or female shelter cats.
- 2hs of Exploratory Laparotomy performed in a cadaver, in groups of 10 students.

## Therapeutics Block:

- 16hs of seminars in groups of 40-50 students.
- 1 hour of clinical case presentations, with special attention to the therapeutic aspects of each case, in groups of 4-5 students.

## Pathology-Cytology Block:

- 2hs of wet lab practice ("Sample taking for Diagnosis") in groups of 10 students.
- 4hs of microscopic interpretation of cytology specimens, in groups of 20 students (microscopy lab). The students may bring with them samples obtained at the Dermatology Service for examination. They will also examine other cytologic specimens (skin, lymph node, bone marrow) of selected cases.

## Diagnostic Imaging Block:

- 10hs of clinical rotation at the Diagnostic Imaging Service of the Teaching Hospital in groups of 10 students. In this rotation, students will actively participate in animal positioning and image processing and interpretation in all the diagnostic imaging modalities (radiology, ultrasound, MRI, CT), and will discuss the differentials for all images with the clinicians on clinics during the rotation.

## Reproduction Block:

- 5hs of clinical rotation in groups of 5 students.
- 1,5 h Seminar Pregnancy and Delivery
- 2hs Seminar Newborn animals

Dermatology Block: students will assist with the dermatology appointments for 4hours one day in groups of 5 students. During this 4 h, students are expected to obtain samples for cytologic diagnosis in the Anatomic Pathology practice.

Exotic Pet Block: students will assist with the reviews of hospitalized patients or first appointments of the Exotic Pets Service for 3 hours during 1 day.

Specialties Block (Neurology, Ophthalmology, Orthopedics): students will assist with one of the three specialty appointments, so that each student will perform 3h of one of the three specialties. Groups of 5 students.

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.

## Activities

| Title   | Hours | ECTS | Learning Outcomes   |
|---|-------|------|---|
| Type: Directed                                      |       |      |   |
| Dermatology   | 4     | 0.16 | 2, 5, 3, 11, 12, 19, 16, 41   |
| Diagnostic Imaging                                  | 10    | 0.4  | 2, 5, 3, 14, 40, 19, 21, 31, 34, 38, 39, 46, 47, 49   |
| Exotic Pet Medicine                                 | 3     | 0.12 | 2, 5, 3, 11, 7, 40, 16, 25, 30, 34, 45, 6, 41, 47   |
| General and Internal Medicine                       | 40    | 1.6  | 1, 2, 5, 3, 44, 8, 11, 13, 12, 15, 7, 40, 35, 24, 18, 21, 23, 25, 30, 34, 45, 6, 41, 48, 47, 51         |
| Pathologic Anatomy                                  | 6     | 0.24 | 2, 3, 37, 19, 45, 49  |
| Reproduction  | 8.5   | 0.34 | 2, 5, 42, 3, 10, 14, 37, 16, 17, 29, 26, 28, 27   |
| Specialties (Neurology, Ophthalmology, Orthopedics) | 3     | 0.12 | 2, 5, 3, 11, 40, 16, 21, 25, 46, 47   |
| Surgery   | 31    | 1.24 | 2, 5, 43, 3, 4, 12, 36, 17, 25, 47, 49  |
| Therapeutics  | 17    | 0.68 | 2, 3, 44, 12  |
| Type: Autonomous                                    |       |      |   |
| Self study  | 52.5  | 2.1  | 5, 44, 9, 11, 13, 12, 14, 40, 24, 16, 17, 20, 18, 21, 23, 29, 26, 28, 27, 30, 31, 34, 45, 6, 41, 46, 49 |

## Assessment

Evaluation of clinical rotations in the Hospital and of Clinical Cases Seminars:

Assistance to all practical sessions and rotations IS COMPULSORY. Assistance to all the programmed activities is an essential requirement to pass the course. Lack of assistance will need to be justified and then made up for in another session.

In order to pass the clinical rotations and seminar sessions, all students must obtain a score of 5 in each one of them.

Specific and Transverse Competencies will be evaluated through specific forms for Hospital Teaching, that will be common to all the course blocks, and that will evaluate:

- Punctuality
- Initiative

- Knowledge and application of this knowledge to clinical situations
- Ability to obtain a clinical history, oral communication skills in different situations and with different people (colloquial vs. professional language)
- Ability to perform a physical examination of patients, sample taking, drug administration
- Team workability and cooperation
- Self-learning, eagerness to improve/learn
- Clinical judgment, common sense

In addition, in some blocks there will be written evaluation tests that will be scored over 10:

- Pathology-Cytology Block: at the end of the last session, there will be a written short answer test about the techniques of sample taking, microscopic interpretation, and so on.
- Exotic Pet Medicine, Imaging and Reproduction Blocks: there will be a short questionnaire after the seminars.
- Therapeutics Block: Multiple choice test.

The final score will be the ponderated mean of all scores from all blocks. The specific percentage of the total score for each block will be:

- Medicine: 30% (15% appointments, 15% ICU).
- Surgery: 15% cirurgies i 5% pràctica ovariohisterectomies
- Therapeutics: 15%
- Anatomic Pathology: 5%
- Dermatology: 4%
- Diagnostic Imaging: 10%
- Reproduction: 10%
- Specialties 3%
- Exotic Pets: 3%

To pass the course, each student must obtain a minimum global score of 5 in ALL blocks. Students who fail to pass one block or part will have a second chance test. If after the second chance tests, one student still has a "fail" in one or in more blocks, they will get a "fail" for the whole course. At the end of the academic year, a global score of the course for each student will be published.

Student assessments may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

## Assessment Activities

| Title               | Weighting | Hours | ECTS | Learning Outcomes                                   |
|---------------------|-----------|-------|------|---|
| Dermatology         | 4%        | 0     | 0    | 5, 3, 11, 40, 37, 19, 16                            |
| Diagnostic Imaging  | 10%       | 0     | 0    | 2, 5, 3, 14, 40, 19, 21, 31, 34, 38, 39, 46, 47, 49 |
| Exotic Pet Medicine | 3%        | 0     | 0    | 2, 5, 3, 11, 7, 25, 47                              |

|   |     |   |   |   |
|---|-----|---|---|---|
| Medicine (ICU)                                      | 15% | 0 | 0 | 1, 2, 3, 44, 12, 15, 7, 16, 30, 34, 45  |
| Medicine Appointments                               | 15% | 0 | 0 | 1, 2, 5, 3, 44, 8, 11, 13, 12, 15, 7, 40, 35, 24, 22, 18, 21, 23, 25, 30, 34, 45, 6, 41, 48, 50, 47, 51 |
| Ovariohysterectomy                                  | 5%  | 0 | 0 | 4, 36   |
| Pathologic Anatomy                                  | 5%  | 0 | 0 | 2, 3, 37, 19, 45, 49  |
| Reproduction  | 10% | 0 | 0 | 2, 5, 42, 3, 10, 14, 37, 16, 17, 29, 26, 28, 27   |
| Specialties (Neurology, Ophthalmology, Orthopedics) | 3%  | 0 | 0 | 3, 11, 12, 40, 16, 31   |
| Surgery   | 15% | 0 | 0 | 2, 5, 43, 3, 4, 9, 10, 12, 36, 17, 20, 25, 32, 47, 49, 33   |
| Therapeutics  | 15% | 0 | 0 | 2, 3, 44, 12  |

## Bibliography

### Medicine

- Birchard SJ, Sherding RG (2006). Saunders manual of Small Animal Practice. 3rd ed. Ed. W.B. Saunders Company, Philadelphia (EE.UU.)
- Ettinger, S.J. i Feldman, E.C. (2010). Textbook of veterinary internal medicine. Diseases of the dog and cat. 7th edition. WB Saunders Co, Philadelphia.
- Morgan, R.V. (2007). Handbook of small animal practice. 7th edition. WB Saunders Co, Philadelphia.
- King LE (2004). Textbook of Respiratory Diseases in Dogs and Cats. W.B. Saunders, Philadelphia (EE.UU.)
- Nelson RW, Couto CG (2014). Small Animal Internal Medicine. 5th ed. Mosby, St. Louis (EE.UU.)
- Feldman, EC, Nelson RW. (2014). Canine and feline endocrinology. 4<sup>th</sup> ed. Elsevier.
- Withrow SJ i Vail DM. (2013). Withrow and MacEwen's Small Animal Clinical Oncology. Elsevier.

### Surgery

- Bojrab MJ (1998). Current Techniques in Small Animal Surgery. 4th Ed. William and Wilkins. Baltimore
- Brinker WO, Piermattei DL, Flo GL. (2006) Handbook of Small Animal Orthopedics & Fracture Treatment. 3rd Ed. WB Saunders Co. Philadelphia. 3a edición.
- Harari J. (2004). Small Animal Surgery Secrets. Second edition. Ed. Hanley & Belfus. Philadelphia, Pennsylvania. Hedlund C., Taoada J. (2002). Clinical Atlas of Ear, Nose, Throat, and Tracheobronchial Diseases in Dogs and Cats. Ed. Schlütersche. Hannover
- Fossum TW. (2007) Small Animal Surgery. 3a ed. Mosby, St. Louis.
- Ruberte J, Sautet J, Navarro M, Carretero A, Pons J. (1995) Atlas de Anatomía del perro y del gato. Ed. Multimédica. S.Cugat del Vallés. Barcelona.
- Slatter DH. Textbook of small animal surgery. 3a ed. Saunders, Philadelphia. 2003.

### Anatomic Pathology and Dermatology

- Hlinica K. (2011). Small Animal Dermatology. Saunders-Elsevier, ST Louis - Missouri(o <http://www.sciencedirect.com/science/book/9781416056638>)
- Jubb K., Kennedy P., Palmer N. (2007) Pathology of Domestic Animals (3 vol.) 5th ed. E.G. Maxie Ed.. Academic Press
- ZACHARY JF and McGAVIN, MD (2012). Pathologic Basis of Veterinary Disease, 5th ed. MosbyElsevier, St Louis
- Meuten D.J., Ed. (2002) Tumors in domestic animals 4th ed. Iowa State Press. Blackwell Publishing Co



## Reproduction

- Pathways to pregnancy and parturition. 2003. Senger PhL. Pullman. Current Conceptions.
- Veterinary reproduction and obstetrics. 2009. Noakes DE, Parkinson TJ and England GCW., Saunders, 9a ed. Canine and feline endocrinology and reproduction. 2004. Feldman and Nelson. 3rd ed. W.B. Saunders Company. Canine and feline theriogenology. Johnston, Root Kustritz, Olson. 2001. Saunders Neonatología y pediatría canina y felina. 2004. A. Prats. Interamericana.
- Current Therapy in Theriogenology 2. 1986. Morrow. Saunders.

## Imaging Diagnosis

- Agut A. Diagnóstico por imagen en pequeños animales. Multimédica Ediciones Veterinarias, Barcelona, 2014
- Barr F, Gaschen L. BSAVA Manual of canine and feline ultrasonography. BSAVA Gloucester, 2011
- Burk, R.L. Small animal radiology and ultrasonography [Recurs electrònic] : a diagnostic atlas and text. St.Louis : Saunders, 2003
- Capello V, Angela M. Lennox ; with William R. Widmer. Clinical radiology of exotic companion mammals / Ames, Iowa. Wiley-Blackwell, 2008
- Dennis R. [et al.] Handbook of small animal radiology and ultrasound [Recurs electrònic] : techniques and differential diagnoses 2010
- Gavin PR, Bagley RS. Practical small animal MRI. Iowa Wiley-Blackwell, 2009
- Holloway A, McConnell JF BSAVA Manual of canine and feline radiography and radiology. BSAVA Gloucester, 2013
- Kealy, J.K.: Diagnostic radiology and ultrasonography of the dog and cat. Elsevier. St Louis Mo, 2005
- Mattoon JS, Nyland TG. Small animal diagnostic ultrasound [Recurs electrònic] 3rd ed. St Louis. WB Saunders, 2015
- O'Brien, Robert T. Thoracic radiology for the small animal practitioner Teton NewMedia, cop. 2001
- Schwarz T, Saunders J. Veterinary computed tomography West Sussex. Wiley-Blackwell. 2011. Thrall, D.E.: Textbook of veterinary diagnostic radiology. 6th ed. Elsevier Saunders. St Louis Mo, 2013

## Therapeutics

- Allen DG. Handbook of Veterinary Drugs. Lippincott Williams & Wilkins
- Kirk's Current Veterinary Therapy. (col·lecció)
- The Veterinary Clinics of North America - Small Animal Practice (col·lecció).
- Plumb DC. Plumb's Veterinary Drug Handbook. Wiley-Blackwell

## Exotic Pet Medicine

- Ferrets, rabbits and rodents: clinical medicine and surgery. Ed: Quesenberry, Carpenter. 2012

## Software

Specific software is not needed.