INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Complementary Methods of Diagnosis			Field of study	Veterinary Technology								
Bachelor in	Veterinary Nursing			School	School of Agriculture								
Academic Year	2019/2020	Year of study	3	Level	1-3	ECTS credits	7.0						
Type	Semestral	Semester	1	Code	9085-408-3102-00-19								
Workload (hours)	189	Contact hours	T 30	TP -	PL 45	TC -	S -	E -	OT 20	O -			

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Hélder Miranda Pires Quintas

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Learn the fundaments of diagnosis auxiliary methods: radiography, ultrasonography, alternative imaging technologies and electrocardiography. Be aware of their potentials and risks.
2. Understanding the principles of the various hematology tests and methods.
3. Be able to collecting blood samples and bone marrow samples in veterinary species and perform the most important heamatology methods used in veterinary clinics.

Prerequisites

Before the course unit the learner is expected to be able to:
1. The students should have previous knowledge of anatomy, physiology, histology and anatomo-pathology.
2. Pharmacology, anesthesiology, animal welfare, animal reproduction and obstetrics;
3. biophysics and biochemistry;
4. Infectious and parasitary diseases.

Course contents

I – Radiography and alternative imaging radiography II – Ultrasonography III - Electrocardiography IV – Heamatology and hemostasis.

Course contents (extended version)

1. Radiography
   - The principles of physics used in radiography
   - X- ray production
   - Radiation safety
   - Radiographic quality, image receptors and film processing
   - Radiographic technique evaluation
   - Developing a technique chart
   - Technical artifacts
   - General principles of positioning
   - Alternative imaging radiography
2. Ultrasonography: principles and technique
3. Electrocardiography: principles and technique
4. Heamatology and hemostasis
   - Collecting blood samples
   - Collecting of bone marrow samples
   - Heamatology tests and methods

Recommended reading

1. Brown, M. , Brown, L. , 2013. Lavin's Radiography for Veterinary Technicians. 5ª edição, Saunders, St, Louis, EUA, 560 pp.
2. Marolf, A. , 2016. Diagnostic Radiology, an Issue of Veterinary Clinics of North America: Small Animal Practice. Elsevier - Health Sciences Division, Filadélfia, EUA, 608 pp.
3. Holtgrew-bohling, K. , 2016. Large Animal Clinical Procedures for Veterinary Techicians. Mosby Elsevier - Health Sciences Division, 704 pp.
4. Mattoon, J. , Nyland, T. , 2015. Small Animal Diagnostic Ultrasound. Saunders Elsevier - Health Sciences Division, Filadélfia, EUA, 680 pp.
5. Ynaraja, E, Montoya, A. 2013. Manual de Electrocardiografia Clinica Canina. Servet, Saragoça, Espanha, 290 pp.

Teaching and learning methods

Lectures will be support by media and multimedia resources. Practical classes will engage direct working with animals. Everyone is expected to contribute actively to discussions. Non present hours will involve training in a working environment. Graduate students are expected to work largely on their own initiative although with the close support and super-vision of a tutor.

Assessment methods

1. Test (25%)+Restrict Exam(25%)+ Practical Exam(50%) - (Regular, Student Worker) (Final)
2. Theoretical part (50%) + Practical part (50%) - (Student Worker) (Final)
3. Theoretical part (50%) + Practical part (50%) - (Regular, Student Worker) (Final, Supplementary, Special)

Language of instruction

Portuguese

Electronic validation

Hélder Miranda Pires Quintas	Álvaro Luís Pegado Lemos Mendonça	Hélder Miranda Pires Quintas	Alfredo Jorge Costa Teixeira
06-11-2019	09-11-2019	10-11-2019	11-11-2019