INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Veterinary Diagnostic Techniques			Field of study	Veterinary Technology		
Bachelor in	Veterinary Nursing			School	School of Agriculture		
Academic Year	2020/2021	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	2	Code	9085-671-2205-00-20		

Workload (hours)	162	Contact hours	T	TP	PL	TC	S	E	OT	O
			30	-	30	-	-	-	20	-

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

Name(s) of lecturer(s): Hélder Miranda Pires Quintas, Joaquina Teresa Gaudêncio Dias, Manuel Ricardo Costa Calhelha

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Provide knowledge of different diagnostic methods / techniques based on DNA technology.
2. Know the advantages and limitations presented by different techniques, as well as their levels of sensitivity, specificity and main applications.
3. Know the most important applications for animal cell culture.
4. Perform correctly the main procedures used in animal cell culture.

Prerequisites

Before the course unit the learner is expected to be able to:
The students should have previous knowledge of biochemistry, physiology, histology and genetics.

Course contents

Radiology. Computed Axial Tomography. Magnetic resonance. Ultrasound. Echocardiography. Scintigraphy. Electrocardiograms. Molecular techniques of diagnosis. Pathogen detection techniques. Molecular typing. Automation and sequencing platforms of the new generation. Animal cell culture applications.

Course contents (extended version)

1. Molecular diagnostic methods
   - A-TECHNIQUES OF MOLECULAR BIOLOGY
   - Isolation and purification of nucleic acids. Electrophoresis.
   - B- Molecular diagnostic techniques
   - PCR based methods. The polymerase chain reaction (PCR). Principles .
   - Variants. Advantages and limitations. RAPDs. Multiplex PCR. rep-PCR. PCR-RFLP. ARDRA
   - Methods based on the use of restriction enzymes
   - DNA Hybridization
   - DNA sequencing. Manual and automatic sequencing.
2. Culture of animal cells: basic technique.
   - Animal cell biology
   - Equipment, consumables and reagents used in animal cell culture
   - Culture and subculture of animal cells: isolation, primary cultures and cell lines
   - Characterization and stipulation of cell lines
   - Animal cell culture applications

Recommended reading

1. Aiello, S. , Moses, M. , 2016. The Merck Veterinary Manual. 11ª edição, Merck - Elsevier Health Sciences.
2. Barthold et al. , 2011. Fenner's Veterinary Virology. 4ª edição, Elsevier, Academic Press, EUA, 534 pp.
3. Freshney, R. , 2016. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications. 7ª edição, John Wiley & Sons Inc, NY, EUA, 728 p.
4. Johnson, A. , 2014. Small Animal Pathology for Veterinary Technicians. John Wiley & Sons Inc NY, EUA, 240 pp.
5. Quinn, P. , Markey, B. , Carter, M. , Donnelly W. , Leonard, F. , 2011. Veterinary Microbiology and Microbial Diseases. Wiley-Blackwell, NJ, EUA, 928 pp.

Teaching and learning methods

Lectures will be support by media and multimedia resources. Practical classes will engage direct working with animals and laboratory practices. 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 supervision of a tutor.

Assessment methods

1. Coursework - (Regular) (Final, Supplementary, Special)
   - Intermediate Written Test - 50% (1st written exam)
   - Intermediate Written Test - 25% (2nd written exam)
   - Intermediate Written Test - 25% (3th written exam)
2. final written exam - (Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 100% (Final written exam)

Language of instruction

Portuguese

Electronic validation

Hélder Miranda Pires Quintas, Joaquina Teresa Gaudêncio Dias	Álvaro Luís Pegado Lemos Mendonça	Hélder Miranda Pires Quintas	Ramiro Corujeira Valentim
03-11-2020	04-11-2020	04-11-2020	09-11-2020