INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Physiology II			Field of study	Biology and Biochemistry		
Bachelor in	Veterinary Nursing			School	School of Agriculture		
Academic Year	2019/2020	Year of study	1	Level	1-1	ECTS credits	6.0
Type	Semestral	Semester	2	Code	9085-408-1203-00-19		

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 - Tutorial; O - Other

Name(s) of lecturer(s): Teresa Maria Montenegro Araújo A. Correia

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. To understand the physiological function of the "animal machine" in its different aspects, in mammals, birds, reptiles and fish. Differences, advantages and disadvantages among the species considered.
2. Understanding and intervention in order to alleviate the heat stress on animals.

Prerequisites

Before the course unit the learner is expected to be able to:
1. Knowledge of anatomy.
2. Knowledge of biochemistry.
3. Knowledge of physiology

Course contents

Nervous system, mechanisms of action. The blood its components and functions. Circulatory system. The lymphatic system. Respiratory system (mammals and birds) . Digestive system (mongastric, poligastric and birds). Urinary system. Mammary gland and biossynthesis of milk. Heat stress.

Course contents (extended version)

1. Neurvous system
   - Brain and main parts: cerebral hemispheres, thalamus, hypotalamus and limbic system.
   - Central and somatic neuvous system. Spinal cord and neurvous. Protection and coating.
   - Autonomic nervous system, structure and function. Autonomous motor pathways. Sympathetic division.
   - Neurotransmitters
   - Sensory organs. Smell, sight, touch, hearing and balance.
2. Blood
   - Blood cells, plasma and electrolites
   - Blood groups of conpanian animals and others
   - Blood clotting
   - Anemia types and diagnostic methods. Myelogram
3. Cardiovascular systeam
   - Dimension, sharp and function of the heart in mammals, birds and fish.
   - General proppreties of cardiac muscle. Cardiac cycle and heat sounds. Cardiac output.
   - Blood veins and microcirculation. Lynfathic system. Pression flow regulation
   - Fctors that regulate blood output: hormones, vascular resistence and extrínsec regulation
   - Electrocardiogram, P, QRS, T and U waves. Derivations
   - Cardiac dysfunction: hypertension, fibrillation, thachycardic and heart block
4. Respiratory system
   - The airways. Structure and function of lungs in several species.
   - Mecanic of respiration. the respiratory mussels. Respiration types. Transportation and gas exchanges
   - Nervous and chemical regulation of respiration
   - Study melhods, auscultations and registation intrapleural pressure
5. Urinary system
   - Structure and function of the kidney. The nephon as fuctional unit.
   - Filtration, tubular reabsorption and tubular excretion.
   - Renal circulation. Nervous and hormonal control of renal function.
   - Mechanisms of urine concentration. composition and urine output. Clearance and tubular threshold.
   - Glomerulonephritis, cystitis, nphrotic syndrome and other kidney infections.
6. Physiology of the mammary gland.
   - Structure of the mammary gland in different animal species. Mammary gland development.
   - Biosynthesis and storage of milk. Ejection of milk. Colostrum, composition and functions.
   - Mastitis, and cancer.
7. Thermoregulatory heat.
   - Heat exchange with the environment. Production and heat transfer.
   - Temperature regulation and integrated responses.
8. Practical part
   - Different parts of a neurological exam.
   - Hemolysis of red blood cells. Determination of blood compatibility.
   - Blood coagulation. CBC. Heart rate, arterial pulse and blood pressure.
   - Obtaining an electrocardiogram. Echocardiography and laparoscopy.
   - Chemical and physical analysis of urine.
   - Hormonal assay by RIA

Recommended reading

1. HILL, R. W. , WYSE, G. A. , ANDERSON, M. , 2012. Animal Physiology. 3ª Edição, Sinaver, EUA.
2. HARVEY, J. W. , 2012. Veterinary Hematology. A Diagnostic guide Color Atlas. University of Florida, FL, EUA.
3. MOYES, d. ; SCHULTE, M. P. , 2016. Principals of Animal Fisiology. Pearson Education. India
4. REECE, W. et al. 2015. Dukes' Physiology of Domestic Animals. 13ª edição, Wiley-Blackwell, NY, EUA.
5. SWENSON, D. V. M. , MELVIN, J. , 1984. Fisiologia dos Animais Domésticos. Guanabara, Rio de Janeiro, Brasil.

Teaching and learning methods

Teaching of theoretical and practical instruction, including practice in laboratory and field. Encouraging the continued study and deeper on the subjects offered in

Teaching and learning methods

lecture classes. Resources: audiovisual, multimedia, computer, online library, laboratory equipment, live animals in the ESAB and dead animals from the slaughterhouse.

Assessment methods

1. Continuous: 70% (Reg. Exa.+Rest. Exam)+30% P.WorK - (Regular, Student Worker) (Final, Supplementary)
   - Intermediate Written Test - 50% (Minimum score of 8. 5 values.)
   - Final Written Exam - 50% (Minimum score of 9. 5 values.)
   - Practical Work - 30% (Minimum score of 9. 5 values.)
2. Final exam - (Regular, Student Worker) (Final, Supplementary, Special)

Language of instruction

Portuguese

Electronic validation

Teresa Maria Montenegro Araújo A. Correia	Ramiro Corujeira Valentim	Hélder Miranda Pires Quintas	Alfredo Jorge Costa Teixeira
11-11-2019	11-11-2019	12-11-2019	12-11-2019