

PHYSIOLOGY I

Study programme: MIMV Curricular Year: 2nd Semester: 3rd Compulsory ECTS:4,5

Lecturers: Graça Ferreira-Dias (CCP), António Freitas Duarte (R)

1. Contact Hours: Lectures - 28; Practical – 28

2. Objectives:

Theoretical and practical learning of the different concepts and physiological mechanisms for maintaining homeostasis in domestic animals. Development of the necessary skills for the students to understand, explain, and interpret the knowledge of veterinary physiology, and integrate it with animal production and pathology/clinics courses.

3. Programme:

Neurophysiology: Introduction to the nervous system. Physiology of the muscle and neuromuscular synapse. Concept of reflex and stretch receptors of the skeletal muscle.

Concept of upper and lower neurons and their dysfunction. Control of posture and motion by the brain - Cerebellar functions. Autonomic nervous system.

Endocrinology: The neuroendocrine system. Endocrine glands and their function: The thyroid gland; the adrenal glands; Endocrine pancreas; Calcium and phosphate metabolism.

Gastrointestinal physiology: Regulation of the gastrointestinal function. Movements of the gastrointestinal tract. Secretions of the gastrointestinal tract. Digestion and absorption: non-fermentative processes. Digestion in ruminants: fermentative processes.

Respiratory function: Respiratory system structure and function. Ventilation, diffusion and gas transport to the periphery. Ventilation-perfusion relationships. Mechanics of breathing and control of ventilation.

4. Bibliography:

- Klein B.G. (2020). *Cunningham's Textbook of Veterinary Physiology*. 6th Ed. W. B. Saunders
- Hall J.E. & Hall M.E. (2020). *Guyton and Hall Textbook of Medical Physiology*. 14th Ed. Elsevier.
- Koeppen B.M., Stanton B.A. (2023). *Berne & Levy Physiology*. 8th Ed. Elsevier.
- García-Sacristan A. (2018). *Fisiología Veterinaria*. 2ª Ed. Editorial Tébar Flores. Madrid.
- Zao P., Stabler T.N., Smith L.A., Lokuta A. & Griff E. (2020) *PhysioEx 10.0: Laboratory Simulations in Physiology*, 1st Ed., Pearson.
- Laboratory handouts prepared by the teaching staff.

5. Assessment

Theoretical and practical knowledge will be assessed by either “Traditional Evaluation” or “Continuous Evaluation” (optional to the students). “Traditional Evaluation” – knowledge will be assessed only in the Final Exam.

“Continuous Evaluation”- 30% of the final grade corresponds to the mean obtained on the quizzes performed at the end of each lecture block (neurophysiology, endocrinology, gastrointestinal and respiratory physiology); 70% corresponds to the grade obtained on the Final Exam.