Universitat Autònoma de Barcelona

2017/2018

Animal Physiology: Systems

Code: 100993
ECTS Credits: 6

Degree	Type	Year	Semester
2500502 Microbiology	OT	4	0

Contact

Name: Mercè Giralt Carbonell
Email: Merce.Giralt@uab.cat

Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

It is advisable that the student has attained basic skills and knowledge on the structure and organization of anima
It is important that the student has acquired the basic skills and knowledge of the subject Histology and Biochemi

Objectives and Contextualisation

The general objectives of the course are:
- Learn the basics of physiology of different functional systems of the organism animal.
- Acquire a comprehensive and integrated interrelationships of the various body systems.
- Integrate the knowledge of the physiology acquired in other core subjects that deal with the structure and cellu
- To train students to apply knowledge in physiological deduction of the consequences of pathological changes i

Content

PROGRAM THEORY

1-Introduction to Animal Physiology:

- Brief history of animal physiology.

- Basic principles of physiology. Internal environment and homeostasis. Feedback mechanisms (feedback).

Compartments liquid composition. Transport through the membrane. Communication intercellular.

2. Excitability and excitable cells:

- Concept and excitability excitable cells.

- The nervous system: neurons and glia

- Electrical activity in neurons: ion channels. Ionic basis of resting membrane potential and action potentials. Nerv

- Synapse. Basics of Neurochemistry. Neurotransmission.

- Synaptic integration.

3. Nervous System

- Anatomical organization of the nervous system. Development of the nervous system

- Protective Structures of the nervous system: bone structure. Meninges. Cerebrospinal fluid.

BHE.

- Structural central nervous system: cerebral hemispheres: histological structure of the cerebral cortex.

Functional organization of the cortex. Basal ganglia. Hippocampus. Amygdala.

- Functional organization of structures diencephalic, mesencephalic and brainstem.

- Spinal cord

4. Sensory Physiology:

- Sensory receptors. Concept. Type. Transduction mechanisms.

- Somatosensory receptors. Touch and pressure. Thermoreceptors. Nociception. Pathways processing somatose

- Special Senses. Chemoreception: smell and taste.

- Photoreception: the human eye

- Hearing and equilibrium: human ear.

5. The autonomic nervous system

- Sympathetic and parasympathetic

6. Somatic motor system

- Organization cord. Muscle organs and spinal reflexes.

- Organization supramedular. The role of the cerebral cortex, cerebellum and basal ganglia

7. Activation SNC:

- Reticular system. Wakefulness and sleep. Electroencephalogram.

8. Endocrine system

- Hormones. Mechanisms of action. Regulatory systems.

- The pituitary: Neurohypophysis. Neurohypophysis hormones. Adenohypophysis. Adenohypophysis hormones. (

- Adrenal Glands: adrenocortical tissue: Glucocorticoids. Mineralocorticoid. Chromaffin tissue: Catecholamines

- The thyroid gland. Synthesis and function of thyroid hormones.

- Pancreatic hormones. Insulin and glucagon.

- The metabolism of calcium and phosphorus. Parathyroid hormone, vitamin D and calcitonin

9. Muscle Physiology

-Type of muscle tissues: anatomical and functional characteristics.

- Striated skeletal muscle

- Cardiac muscle

- Visceral smooth muscle

10. Circulatory System:

- Elements of blood forms. Hemostasis.

- Concepts of hemodynamics. Functional organization of the circulatory system.

- Functional structure of the heart, electrical and mechanical events during the cardiac cycle. Electrocardiogram.

- Arterial, venous. Blood pressure. Capillary exchange.

- Control of the cardiovascular system.

- Lymphatic System

11. Respiratory Physiology:

- Functional anatomy of the respiratory system. The lungs of mammals. Functional structure. Exchange

gases.

- Regulation of respiration in mammals.

12. Renal Physiology:

- The mammalian kidney. Functional anatomy. Processes involved in the formation of urine. Formation of urine c

13. Digestive:

- Anatomy and function of the digestive system in mammals. Gastrointestinal regulatory systems: enteric nervous

- Mouth and esophagus: saliva and swallowing

- Stomach

- Small intestine: Pancreatic Secretion. Bile secretion. Chemical digestion. Absorption. Entero-hepatic circulation

- Large intestine: digestion mechanical and chemical. Absorption. Formation of feces. Defecation

14. Control of body temperature

15. Reproduction:

- Testicular function. Control of male reproductive functions

- The ovarian function. The endometrial and ovarian cycle. Player control in the female.