ACADEMIC YEAR 2022/2023

General information	
Name of the integrated course	**Veterinary Physiology 1**
integrated teaching modules	Veterinary Physiology 1, Veterinary Ethology , Behavioural problems of cats and dogs
Degree course	Single cycle degree in Veterinary Medicine LM42
Academic Year	II
European Credit Transfer and Accumulation System (ECTS)	10 (ECTS lessons: 7; ECTS exe/lab/tutor: 3)
Language	Italian
Academic calendar (starting and ending date)	I 7 weeks period
Attendance	Mandatory

Professor/ Lecturer	**indirizzo mail**	**telefono**
Marcello Siniscalchi	marcello.siniscalchi@uniba.it	+39 080 0805443927
Angelo Quaranta	angelo.quaranta@uniba.it	+39 080 0805443927

Headquarters	Campus of Veterinary Medicine, S.P. per Casamassima km 3, 70010 Valenzano
Virtual headquarters	Microsoft Teams
Tutoring (time and day)	Tuesday- Thursday 10.00-12.00 am Monday and Wednesday 3.00-5.00 pm or by appointment

Syllabus	
Learning Objectives	The course aims at transferring in-depth knowledge of the functioning of the nervous system, muscle tissue, blood and sense organs of domestic animals. Moreover, the course will transfer the knowledge of physiological bases of behavior and on different aspects of the ethology of the species of veterinary interest as well as technical and in-depth knowledge about the appropriate ethological management of pets and about the main behavioral problems of dogs and cats.
Course prerequisites	Students must have taken and passed the exam of Biochemistry 2 and Anatomy 2 having thus acquired skills in the field of molecular biology, veterinary clinical biochemistry and anatomy of the organs of the various systems of domestic animals.

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Contents of the teaching module: **Veterinary Physiology 1** Teacher: **MARCELLO SINISCALCHI** **Lectures** **CFU: 3** **Hours: 30**	The module concerns Basic Sciences. PHYSIOLOGY OF THE NERVOUS SYSTEM The neuron and the concept of excitability. Glial cells. The threshold potential and voltage-dependent ion channels. The action potential. Propagation of nerve impulses. Synaptic transmission. Inhibitory and excitatory chemical mediators. Estesiology. Receptors and the generator potential. The sensitive pathways. Reflexes. Motor control, the pyramidal and extrapyramidal pathways. Proprioception, vestibular sensitivity and the cerebellum. The regulation of muscle tone and posture. Brain. Autonomic nervous system Organization and distribution of the sympathetic and parasympathetic snow system. Vegetative functions and reflexes. Neurotransmitters and receptors of the autonomic nervous system. PHYSIOLOGY OF MUSCLE TISSUE Neuromuscular synapse. The resting potential and the action potential in skeletal muscle. Mating excitation contraction. Mechanism of muscle contraction. Energy metabolism of skeletal muscles. The smooth muscle and the heart muscle. PHYSIOLOGY OF THE BLOOD Composition and properties of blood. Electrolytic composition of plasma and interstitial liquids. Plasma buffer mechanisms. Plasma proteins. Erythrocytes. Erythropoiesis and Erythrocateresis. Hemoglobin. Leukocytes. Platelets. Hemostasis and coagulation. SENSORY ORGANS Nociceptors and painful fibers. Gustatory perception in domestic animals. Smell. Functions of the vomeronasal organ. Hearing. Vision.
Practical activities for the integrated module (Laboratory, working groups, seminars, field trips): **CFU: 1** **Hours: 15**	PHYSIOLOGY OF THE NERVOUS SYSTEM. Vegetative functions and reflexes. The sensory pathways and reflexes. Adjustment of muscle tone and posture. BLOOD PHYSIOLOGY. Blood buffer mechanisms. SENSORY ORGANS. Practical evaluation of vision and olfaction.
Contents of the teaching module: **Veterinary Ethology** Lecturer: **MARCELLO SINISCALCHI** **Lectures** **CFU: 3** **Hours: 30**	The module concerns Basic Sciences. FUNDAMETAL CONCEPTS OF ETHOLOGY Descriptive ethology. Experimental ethology. The sectors of ethology. Spontaneous components of behavior. Motivational systems. Pulses. Key stimuli and triggering signals. Ontogenesis of behavior. Maturation of behavioral modules. Measuring behavior: the ethogram. PHYSIOLOGY OF BEHAVIOR: Nervous system and behavior. Neurotransmitters and behavioral response. Neural substrates at the base of fear, anxiety and aggression. Hormones and behavior. Control of circadian rhythms. LEARNING: Predisposition to learn. Habituation and associative behavior. Latent learning. Instrumental learning. Imprinting. Insight. Memories and cognitive maps. Animal intelligence, emotions and cognitive processes. Theory of the mind.

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	SOCIAL BEHAVIOR: Social behavior and communication in domestic animals. Regulation of food intake and eating behavior. Reproductive and maternal behavior. Sexual behavior. The game. Calm signals. Behavioral disturbances. Stress. Anxiety, fear and phobias. Aggression.
Practical activities for the integrated module (Laboratory, working groups, seminars, field trips) **CFU: 1** **Hours: 15**	APPLIED ETHOLOGY: Basic behavior modification techniques. Reinforcement. Differential reinforcement. Flooding. Systematic desensitization. Attention check. Conditioning. Counterconditioning. Chaining. Shaping. HUMAN-ANIMAL RELATIONSHIP Human-animal relationship. Sensitive periods. Human-animal communication. Bond of attachment. Strange situation. Use of animals for therapeutic purposes: pet therapy.
Contents of the teaching module: **Behavioural problems of cats and dogs** Lecturer: **ANGELO QUARANTA** **Lectures** **CFU: 1** **Hours: 10** **Practical activities for the integrated module (Laboratory, working groups, seminars, field trips)** **CFU: 1** **Hours: 15**	The module concerns Basic Sciences. The Veterinarian and Behavioral Medicine. Problems related to anxiety in dogs. Aggression in the dogs. Sensory deprivation syndrome. Obsessive-compulsive disorders and hypersensitivity-hyperactivity syndrome. Behavioral problems in older dogs. Inappropriate elimination in cats. Presentation, discussion and analysis of practical cases related to the main disorders of dogs and cats: anxiety, phobias, obsessive-compulsive disorders, hyperactivity / hypersensitivity, aggression, disorders of the elderly dog.
Practical activities for the integrated course	The practical activities will be held in the afternoon during the two-month period of teaching according to the schedule reported in the lesson diary. Students will be divided into groups of 8-10 students and the individual activities will be replicated for each of the groups. The number of groups is related to the type of practical activity and the consistency of the cohort of students attending the course.

Biosafety rules for the attendance of practical activities	Students must wear protective clothing (white coat and gloves), and have read the biosafety manual.

Books and study materials	
Books and bibliography	Sjaastad, Sand, Hove, "Fisiologia degli animali domestici", Casa Editrice Ambrosiana, 2013.

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	Per Jensen: Etologia degli animali domestici. McGraw-Hill - 2011. La clinica comportamentale del cane e del gatto, Karen Overall, Edizioni Medico-Scientifiche.
Additional materials	Lecture notes and scientific papers are recommended

Work schedule			
Hours			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
250	70	45	135
CFU/ETCS			
10	7	3	/

Teaching strategy	Lessons will take place in the classroom, using the support of a projector, and will be presented as PowerPoint slideshow. The practical lessons will take place at the Labdog laboratory of the Section of Animal Physiology and Behaviour of the Department of Veterinary Medicine for the direct measurement of the physiological parameters for the clinical evaluations of domestic animals, for the direct observation of animal behavior and the behavioral problems of dogs and cats.

Expected learning outcomes	
Knowledge and understanding on:	Students should acquire the basic knowledge of the functioning mechanisms of the: - mechanisms that regulate cellular, blood, striated, smooth and cardiac muscle function and the mechanisms that govern the functioning of the central and peripheral nervous system of domestic animals - factors that modulate these mechanisms - physiological basis of animal behavior - aspects of the ethology of the species of veterinary interest - appropriate ethological management of pets. - main behavioral problems of dogs and cats Basic knowledge of the factors that modulate these mechanisms: • 2.3 The structure, function and behaviour of animals and their physiological and welfare needs.
Applying knowledge and understanding on:	○ 1.4 Communicate effectively with clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned and in full respect of confidentiality and privacy. ○ 1.6 Work effectively as a member of a multi-disciplinary team in the delivery of services. ○ 1.8 Be able to review and evaluate literature and presentations critically. ○ 1.9 Understand and apply principles of clinical governance, and practise evidence-based veterinary medicine ○ 1.13 Demonstrate an ability of lifelong learning and a commitment to learning and professional development. This includes recording and reflecting on professional experience and taking measures to improve

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	performance and competence. ○ 1.16 Handle and restrain animal patients safely and with respect of the animal, and instruct others in helping the veterinarian perform these techniques. ○ 1.20 Assess the physical condition, welfare and nutritional status of an animal or group of animals and advise the client on principles of husbandry and feeding. ○ 1.31 Assess and manage pain. ○ 1.36 Advise on, and implement, preventive and eradication programmes appropriate to the species and in line with accepted animal health, welfare and public health standards.
Soft skills	*Making informed judgments and choices* ○ At the end of the course, students must be able to evaluate the meaning of specific animal behaviours and to express their opinions about the cause / effect processes underlying the different functioning of the organs of domestic animals ○ Students are also expected to acquire the following soft skills: Must also acquire the following cross-cutting competence: 2.3 The structure, function and behaviour of animals and their physiological and welfare needs; 2.5 Etiology, pathogenesis, clinical signs, diagnosis and treatment of common diseases and disorders occurring in common domestic species. *Communicating knowledge and understanding* ○ Students must acquire the correct scientific skills and technical language to provide specialist professional support. ○ Students are also expected to acquire the following soft skills: 2.1 Understanding of, and competence in, the logical approaches to both scientific and clinical reasoning, the distinction between the two, and the strengths and limitations of each. *Capacity to continue learning* ○ Students must acquire the ability to improve their knowledge independently through further studies by reading specialized texts and scientific literature, as well as through courses and by the direct observation of animals. ○ Students are also expected to acquire the following soft skills: 2.2 Research methods, the contribution of basic and applied research to veterinary science.
Day One Competence	**Knowledge and understanding:** 2.3 **Applying knowledge and understanding:** 1.4 1.6 1.8 1.9 1.13 1.16 1.20 1.31 1.36

Assessment and feedback	

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Methods of assessment	At the end of the course, students in good standing with prerequisites will be admitted to the final examination. The exam will consist of an interview or a written test with multiple-choice questions on the topics of the course. Students must demonstrate technical and in-depth knowledge of several topics of the course program, using scientific terminology and showing critical skills in analysing the functioning of the organs of domestic animals, the physiology of animal behavior and the main behavioral problems of dogs and cats, as well as the skills and knowledge acquired during practical lessons.
Evaluation criteria	In formulating the judgment for each student, the teacher will take into account: • *Knowledge and understanding*: ○ Students are expected to organize the knowledge of the basic and fundamental concepts of the program course and show the ability to analyse the principles of functioning of organs and apparatuses, which are crucial for the study and the understanding of pathological processes. ○ Students are expected to organize the knowledge of the basic and fundamental concepts of the program course and show the ability to analyse the features and causes of the main behavioral problems of dogs and cats • *Applied knowledge and understanding:* ○ Students are expected to demonstrate their knowledge about the methodologies for evaluating the physiological parameters of domestic species. ○ Ability to connect all the notions learned and report on a specific topic ○ Students are expected to acquire the ability of effectively approach the behavioral problem and the client, in order to formulate a correct diagnosis and chose an adequate therapeutic plan. • *Autonomy of judgment:* ○ Students are expected to propose critical hypotheses on the causes and factors affecting the functioning mechanisms of the organs and systems of domestic animals and the mechanisms of animal behaiour ○ Critical analysis of the main behavioral problems of dogs and cats • Communicatiion skills ○ Students are expected to critically and independently discuss the issues addressed in the course program ○ Students are expected to make connections between the different topics of the course program ○ Students are expected to discuss the program topics with appropriate scientific and technical language • *Capacity to continue learning:* ○ Students are expected to show the ability to improve their knowledge independently through the reading of specialized texts and scientific literature. ○ Students will have acquired an adequate study method that allows him to continue the study independently

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Criteria for assessment and attribution of the final mark	The assessment of students' knowledge will be carried out through an oral interview. The final mark will be the result of the collegial judgment relating to the partial tests in which the student must demonstrate to have acquired a critical sense of the topics studied. The final mark is expressed out of thirty. The exam will be passed with a mark equal to or greater than 18 and will take into consideration not only the accuracy of the answer, but also the communication skills, clarity of presentation, disciplinary competence and the level of detail.
Additional information	

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