Animal Anatomy and Histology [11]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Required]		
COURSE CODE	**11**	**SEMESTER**	**3rd**
COURSE TITLE	ANIMAL ANATOMY-HISTOLOGY		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Theory	3	3
Laboratory practice	3	3
Σύνολο	**6**	**6**

COURSE TYPE	Scientific area
PREREQUISITE COURSES:	Principles of Cellular and Molecular Biology
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	NO
COURSE WEBSITE (URL):	https://oeclass.aua.gr/eclass/courses/EZPY214/
TEACHING STAFF:	Theory: Balaskas C. Laboratory practice: Balaskas C.

(2) LEARNING OUTCOMES

Learning outcomes

The course Animal Anatomy and Histology describes animal body structure and thus sets the basis for understanding the physiological mechanisms of animal functions (physiology).
It aims to present a review of the science of anatomy and histology and terminology, using literature sources inclusive of acclaimed course books and original groundbreaking papers. It aims to present tissue formation and structure, as well as the factors affecting histogenesis and the ways cells and tissues interact with each other. It aims to describe animal body structure, combining macro- and microanatomy (histology), pointing out structural differences between various species (comparative anatomy). It also aims to present basic methods used by anatomy and histology, their potential and limitations. It aims to train students to identify microscopy tissue samples and images, as well as anatomical preparations.
Upon completion of the course the student should be able to:
• Understand international and Greek terminology of anatomy and histology.
• Comprehend animal body structure at the macro- and microscopic level and relate structure to function. Point out structural anomalies and relate these with animal physiological dysfunctions and diseases later during the study of other courses.
• Identify tissue and anatomy samples and the animal species from which such samples were removed (comparative anatomy).
• Understand the methods used for the study of anatomy and histology, as well as their potential and limitations.
• Use safely and efficiently the necessary laboratory equipment and consumables (microscopes, image analysis), combining literature sources and World Wide Web.

According to Bloom a student should be able to:
1. Describe animal body structure, recognize tissues, organs, and systems, as well as the animal species and define structural anomalies. [KNOWLEDGE]
2. Compare structural differences and relate these to specific animal species functions. [UNDERSTANDING]
3. Examine macro- and microscopic samples and relate to specific animal species tissues, organs, and systems. [APPLICATION]
4. Combine macro- and microscopic observations, methods and literature and thus differentiate amongst specific animal species tissues, organs, and systems. [ANALYSIS & SYNTHESIS]
5. Compare animal body structure and relate to their specific functions. [EVALUATION]

General Competences

• Search, analysis and synthesis of data, using the required technologies
• Desicion making
• Autonomus work
• Teamwork
• Work in multidisciplinary environment

• Production of new research ideas
• Respect of natural environment
• Promotion of free, constructive and inductive thinking

(3) SYLLABUS

i. Histogenesis. Animal cell and extracellular matrix.
ii. Tissue description: epithelium, connective and adipose tissue, cartilage and bone, muscle, nervous tissue, blood and lymph.
iii. Osteology. Arthrology. Myology. Anatomy, comparative anatomy, and histology.
iv. Anatomy, comparative anatomy and histology of blood and lymph circulatory systems.
v. Anatomy, comparative anatomy, and histology of respiratory system.
vi. Anatomy, comparative anatomy, and histology of gastrointestinal system. Ruminants and monogastric animals. Liver. Pancreas.
vii. Anatomy, comparative anatomy, and histology of urinary system.
viii. Anatomy, comparative anatomy, and histology of male and female genital systems.
ix. Anatomy, comparative anatomy, and histology of central and peripheral nervous systems.
x. Anatomy, comparative anatomy, and histology of endocrine system.
xi. Sensory organs of smell, taste, vision, hearing and space.
xii. Anatomy, comparative anatomy, and histology of skin. Mammary gland.
xiii. Anatomy, comparative anatomy, and histology of avian species.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	In class, face to face.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	PowerPoint presentations, multimedia and imaging systems, and world wide web. Use of light and fluorescence microscopes and stereoscopes fitted with digital cameras and connected with computerised image analysis software. Use of inverted microscopes fitted with micromanipulation equipment. Embryo cultures. Student learning support by e-class. Communication with students via e-mail.
TEACHING METHODS	

Activity	***Semester workload***
Lectures	39
Laboratory practice	36
Literature search and analysis	25
Individual study	50
Course total (25 h of workload per ECTS)	***150***

STUDENT PERFORMANCE EVALUATION	Evaluation language: Greek Evaluation method: Written final examination. I. Theory (T): 60% of the final exam with short-answer questions. II. Laboratory (L): 40% of the final exam with multiple choice questions (50%) and microscopy histology slide description (50%). Final score: (T)+(L) = 60+40=100% of the total final score.

(5) ATTACHED BIBLIOGRAPHY

-Suggested bibliography

• Θεοδωρόπουλος Γ., Χαδιώ-Μάντζαρη Στ., Μπαλάσκας Χρ., Οικονομόπουλος Ι. Λειτουργική Ανατομική και Φυσιολογία των Ζώων. ISBN-13: 978-618-80647-8-2. Εκδόσεις Utopia, 2014. Επιμέλεια- Μετάφραση του Functional Anatomy and Physiology of Domestic Animals, 4th edition, W.O. Reece, Wiley-Blackwell.
• Μπαλάσκας Χ., Μενεγάτος Ι. Έγχρωμος άτλας ανατομικής των παραγωγικών ζώων. ISBN 978-960-449- 344-9. Εκδόσεις Α. & Σ. Σαββάλας Α.Ε., 2008. Βασισμένο στο McCracken T.O., Kainer R.A., Spurgeon T.L. "Spurgeon's Color Atlas of Large Animal Anatomy", ISBN 0-683-30673-1, Blackwell Publishing, 2006.
• Χ. Μπαλάσκας. Έγχρωμος άτλαντας ανατομικής των μικρών ζώων», ISBN: 978-9925-35-145-9, Εκδόσεις Broken Hill Publishers Ltd, 2023. Βασισμένο στο T.O. McCracken, R.A. Kainer with D. Carlson "Color Atlas of Small Animal Anatomy: The Essentials", ISBN 978-0-8138-1608-1, Blackwell Publishing, 2008.
• Bowden S.J. Introduction to veterinary anatomy and physiology workbook. 2nd edition, Elsevier, 2009.
• Bacha W.J.Jr., Bacha L.M. Color atlas of Veterinary Histology. 2nd edition, Lippincott, Williams and Wilkins, 2000.
• Sirois M. Laboratory procedures for veterinary technicians. Elsevier, 2020.

-Related Scientific Journals:

Anatomical Record Anatomy and Embryology Cell Cell and Tissue Research Journal of Anatomy Journal of Cytology and Histology Journal of Histochemistry and Cytochemistry Journal of Morphology Nature Nature-Cell Biology Nature-Structural Biology