

## COURSE LAYOUT

### 1. GENERAL

<b>SCHOOL</b>	Animal Biosciences		
<b>DEPARTMENT</b>	Animal Science		
<b>STUDY LEVEL</b>	Undergraduate - Compulsory		
<b>COURSE CODE</b>	<b>11</b>	<b>SEMESTER</b>	3 <sup>o</sup>
<b>COURSE TITLE</b>	Animal Anatomy-Histology		
<b>INDEPENDENT TEACHING ACTIVITIES</b>		<b>WEEKLY TEACHING HOURS</b>	<b>ECTS</b>
<b>Theory: Lectures</b>		3	3
<b>Laboratory training</b>		3	3
			6
<b>COURSE TYPE</b>	Scientific area		
<b>PREREQUISITES</b>	Principles of Cellular and Molecular Biology		
<b>LANGUAGE</b>	Greek		
<b>IS THE COURSE OFFERED for ERASMUS STUDENTS?</b>	No		
<b>COURSE WEB PAGE (URL)</b>	<a href="https://oeclass.aua.gr/eclass/courses/EZPY214/">https://oeclass.aua.gr/eclass/courses/EZPY214/</a>		

### 2. LEARNING RESULTS

<b>Learning Outcomes</b>
<p>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 their terminology, using literature sources inclusive of acclaimed course books and original groundbreaking papers.</p> <p>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 micro-anatomy (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.</p> <p>Upon completion of the course the student should be able to:</p> <ul style="list-style-type: none"> <li>• Understand international and Greek terminology of anatomy and histology.</li> <li>• Comprehend animal body structure at the macro- and microscopic level and relate structure to function. Point out structural anomalies and relate these with animal physiology dysfunctions and diseases later during the study of other courses.</li> <li>• Identify tissue and anatomy samples and the animal species from which such samples were removed (comparative anatomy).</li> <li>• Understand the methods used for the study of anatomy and histology, as well as their potential and limitations.</li> <li>• Use safely and efficiently the necessary laboratory equipment and consumables (microscopes, image analysis), combining literature sources and World Wide Web.</li> </ul>

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 Competence

- *Search, analysis and synthesis of data, using the required technologies*
- *Decision making*
- *Autonomous work*
- *Teamwork*
- *Work in multidisciplinary environment*
- *Production of new research ideas*
- *Respect of natural environment*
- *Promotion of free, constructive and inductive thinking*

### 3. COURSE CONTENT

- 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

<b>TEACHING METHOD</b>	In class, face to face.
<b>USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES</b>	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.	
<b>TEACHING ORGANISATION</b>	<b>Activities</b>	<b>Workload per semester (hrs)</b>
	Lectures	39
	Laboratory practice	36
	Literature search and analysis	25
	Self study	50
	<b>Total Course (25 hours workload per credit unit)</b>	<b>150</b>
<b>STUDENTS EVALUATION</b>	<p>Evaluation language: Greek</p> <p>Evaluation method: Written final examination.</p> <p>I. Theory (T): 60% of the final exam with short-answer questions.</p> <p>II. Laboratory (L): 40% of the final exam with multiple choice questions (50%) and microscopy histology slide description (50%).</p> <p>Final score: (T)+(L) = 60+40=100% of the total final score.</p>	

## 5. BIBLIOGRAPHY

### **-Proposed Literature:**

- 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.
- 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.
- Hemanson J.W., de Lahunta A., Evans H.E. Milller and Evans' Anatomy of the dog. 5th edition, Elsevier, 2019.

### **-Related Scientific journals (non-exhaustive list):**

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