COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	ANIMAL PRODUCTION, FISHERIES AND AQUACULTURE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	AS_301	**SEMESTER**	3rd
COURSE TITLE	COMPARATIVE ANATOMY – PHYSIOLOGY OF ANIMALS, BIRDS AND FISHES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	5 (3h-lectures + 2h lab. training)	6

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background
PREREQUISITE COURSES:	There are no prerequisite courses
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek. English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

After the successful completion of the course, students should be able to

- Recognize the organs and tissues in the body of animals – birds – fishes (i) their structure and cell population, as well as (ii) their specific function separately and as functional systems of the organism.
- Learn according to the species of the animal – bird – fish the needs of their genitors for the regulation of their reproductive cycle, thus the stages of embryonic development.
- Use specific pharmaceutical preparations – products for application of anesthesia techniques and recovery of organisms, and predict the stress input in the populations by applied the basic principles for stress treatment.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Applying scientific knowledge
- Search, analysis and synthesis of data and information, using the necessary technologies
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism

3. SYLLABUS

In particularly the course is analyzed in follow modules:

1. Embryogenesis and ontogenesis.
2. Skin and Epithelial system – Musculoskeletal system, organ structure (cell population) and tissues. Body function, movement – swimming.

3. Respiratory system, organ structure (cell population) and tissues. Body function, respiration.
4. Hematopoietic – Circulatory system 1, organ structure (cell population) and tissues. Body function, hematopoiesis.
5. Hematopoietic – Circulatory system 2. Body function, immunity.
6. Digestive system 1, organ structure (cell population) and tissues. Body function, intestinal functions, liver and pancreatic functions.
7. Digestive system 2, organ structure, nutrition (digestion, metabolism).
8. Excretory system, organ structure (cell population) and tissues. Body function, excretion (urine – faeces) regulation, ionic regulation, acid-base balance.
9. Genital – Endocrinal system, organ structure (cell population) and tissues. Body function, reproduction, hormonal functions.
10. Neural system – Sensory organs, organ structure (cell population) and tissues. Body function, brain, central and autonomic nervous system.
11. Body function, anesthesia.
12. Body function, Senses.
13. Stress (stress input in the organism and stress treatment.

Laboratory exercises:

1. Learning anatomical sections and recognizing the position and shape of internal organs in cattle.
2. Learning anatomical sections and recognizing the position and shape of internal organs in goat and sheep.
3. Learning anatomical sections and recognizing the position and shape of internal organs in pig.
4. Learning anatomical sections and recognizing the position and shape of internal organs in rabbit.
5. Learning anatomical sections and recognizing the position and shape of internal organs in hen.
6. Learning anatomical sections and recognizing the position and shape of internal organs in fish.
7. Comparison of structure and function of mammalian-bird lungs to the fish gills.
8. Comparison of structure and function of mammalian - bird - fish blood cells.
9. Comparison of liver and pancreatic functions of mammals - birds – fish.
10. Comparison of mammalian, bird and fish urine and feces.
11. Comparison of mammalian - bird - fish endocrine glands.
12. Comparison of mammalian - bird - fish reproductive system.
13. Comparison of the function of mammalian - bird - fish sensory organs.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of ICT in teaching (Power-Point presentations)
• Uploading of lecture slides and other educational material on E-class
• Communication with the students through the online platform E-class.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>1. Lectures 3 hours x 13 weeks.
2. Further study, search and study of lecture material, associated with (1) (3 hours x 13 weeks)</td><td>39

39</td></tr>
<tr><td>3. Laboratory Exercises 2 hours x 13 weeks.
4. Writing of brief reports of laboratory exercises or laboratory examination related to (3) (1 x 6 hrs)
5. Self-assessment exercises in e-class (1 x 6 weeks)
6. Writing of short work presentation (1 x 13 weeks)</td><td>26

6

6

13</td></tr>
<tr><td>7. Hours of study and preparation for laboratory exercises, assessment of progress (s) and final examination</td><td>18</td></tr>
<tr><td>8. Final examination</td><td>3</td></tr>
<tr><td>Course total</td><td>150</td></tr>
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</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>• Greek Language (Teaching, Examination)
• English Language (Teaching, Examination)

1. Solving Problems Based on Taught (Formative - Concluding) (A)
2. Written Report / Oral Report (Concluding) (B)
3. Written Final Examination (Concluding) (C)

Each case is graded on a scale of 0-10

Final Grade (FG): 0.3A + 0.2B + 0.5C otherwise:
Final Grade (FG): 0.3A + 0.7C

(C) takes place during the current examination period that the lesson is taught, and its iteration (September) (period where A & B scores are maintained). In case of failures of the course the student repeats the Written Final Examination (C).</td></tr>
</table>

	Students with learning difficulties are examined orally.

5. ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

- Book [41954870]: Functional Anatomy of Domestic Animals, Reece William O., 4th ed, UTOPIA publishing.
- Fish Anatomy, Physiology, and Nutrition John B. Gratzek, https://books.google.gr/books?isbn=156465107X
- The Physiology of Fishes, Third Edition (CRC Marine Biology Series) 3rd Edition ISBN-13: 978-0849320224

- *Related academic journals:*

- Journal of the Hellenic Veterinary Medical Society
- Fish Physiology and Biochemistry – Springel
- Fish Histology Research – Research Gate
- Atlas of fish Histology, The University of Chicago Press; Journals