

# Design and Organization of Livestock Facilities [1510]

## COURSE OUTLINE

### (1) GENERAL

|                                                                                                                                                                                                                                                                       |                                                                                                                 |                              |                       |
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| <b>SCHOOL</b>                                                                                                                                                                                                                                                         | ANIMAL BIOSCIENCES                                                                                              |                              |                       |
| <b>ACADEMIC UNIT</b>                                                                                                                                                                                                                                                  | DEPARTMENT OF ANIMAL SCIENCE                                                                                    |                              |                       |
| <b>LEVEL OF STUDIES</b>                                                                                                                                                                                                                                               | Undergraduate [Major Elective]                                                                                  |                              |                       |
| <b>COURSE CODE</b>                                                                                                                                                                                                                                                    | 1510                                                                                                            | <b>SEMESTER</b>              | 6 <sup>th</sup>       |
| <b>COURSE TITLE</b>                                                                                                                                                                                                                                                   | DESIGN AND ORGANIZATION OF LIVESTOCK FACILITIES                                                                 |                              |                       |
| <b>INDEPENDENT TEACHING ACTIVITIES</b><br><i>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</i> |                                                                                                                 | <b>WEEKLY TEACHING HOURS</b> | <b>CREDITS (ECTS)</b> |
| Theory + Tutorials                                                                                                                                                                                                                                                    |                                                                                                                 | 4                            | 4                     |
| <b>Total</b>                                                                                                                                                                                                                                                          |                                                                                                                 | <b>4</b>                     | <b>4</b>              |
| Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).                                                                                                                                                     |                                                                                                                 |                              |                       |
| <b>COURSE TYPE</b><br><i>general background, special background, specialised general knowledge, skills development</i>                                                                                                                                                | Scientific Area                                                                                                 |                              |                       |
| <b>PREREQUISITE COURSES:</b>                                                                                                                                                                                                                                          | -                                                                                                               |                              |                       |
| <b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>                                                                                                                                                                                                                      | Greek                                                                                                           |                              |                       |
| <b>IS THE COURSE OFFERED TO ERASMUS STUDENTS:</b>                                                                                                                                                                                                                     | -                                                                                                               |                              |                       |
| <b>COURSE WEBSITE (URL):</b>                                                                                                                                                                                                                                          | <a href="https://mediasrv.aua.gr/eclass/courses/AFPGM142/">https://mediasrv.aua.gr/eclass/courses/AFPGM142/</a> |                              |                       |

### (2) LEARNING OUTCOMES

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
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| <b>Learning outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| <p>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.</p> <p>Consult Appendix A</p> <ul style="list-style-type: none"> <li>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</li> <li>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</li> <li>Guidelines for writing Learning Outcomes</li> </ul>                                                                                                                                                                                                                                                                                                                                                   |  |
| <p>The purpose of this course is to provide students of the Department of Animal Science with knowledge concerning the <b>Design and Organization of Livestock Facilities</b>, which house farm animals of particular significance to Greek animal husbandry.</p> <p>Upon completion of the course, students will have been trained and acquired knowledge enabling them to understand topics such as:</p> <ol style="list-style-type: none"> <li>The practical application of managing farm animal populations.</li> <li>The fundamental principles and design criteria of housing facilities for each type of farm animal.</li> <li>The importance of functional housing design to facilitate operational tasks (e.g., feed distribution, milking, cleaning, etc.) and ensure the well-being of the animals.</li> <li>The critical role of thermal and gaseous environmental conditions in enabling farm animals to perform at their maximum genetic potential.</li> </ol> |  |
| <b>General Competences</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| <p>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?</p> <div> <div> Search for, analysis and synthesis of data and information, with the use of the necessary technology<br/> Adapting to new situations<br/> Decision-making<br/> Working independently<br/> Team work<br/> Working in an international environment<br/> Working in an interdisciplinary environment </div> <div> Project planning and management<br/> Respect for difference and multiculturalism<br/> Respect for the natural environment<br/> Showing social, professional and ethical responsibility and sensitivity to gender issues<br/> Criticism and self-criticism<br/> Production of free, creative and inductive thinking<br/> ..... </div> </div>                                                                                             |  |

| <i>Production of new research ideas</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Others...</i><br>..... |
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| <ul style="list-style-type: none"> <li>The practical exercises within the course require both independent and group work, while also promoting decision-making as well as creative and inductive thinking.</li> <li>Skills related to the search, analysis, and synthesis of data and information using new technologies are developed.</li> <li>Students acquire competencies related to the design of housing facilities and the organization of the operational functionality of livestock installations, essential elements for ensuring the well-being of farm animals.</li> </ul> |                           |

### (3) SYLLABUS

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| <p><b>I. Cattle Barns:</b> Characteristics of the animals. Confinement and free-stall housing. Organization of cattle barns. Auxiliary areas in dairy barns. Comparison of different housing systems. Milking in a dedicated space – selection of milking parlors.</p> <p><b>II. Sheep and Goat Barns:</b> Design methodology, introduction to design, design of primary and auxiliary spaces. Construction elements (e.g., flooring, alleys, natural ventilation systems, etc.) of sheep and goat barns.</p> <p><b>III. Poultry Houses:</b> Characteristics of poultry. Environmental conditions. Housing for laying and breeding hens for egg production. Housing for broiler chickens. Poultry house equipment.</p> <p><b>IV. Pig Farms:</b> Characteristics of the animals to be housed. Conditions of the artificial environment. Selection of farm location. Types and production systems. Breeding pigsties. Fattening pigsties. Equipment.</p> <p><b>V. Artificial Housing Environment for Farm Animals:</b> Psychrometric processes. Energy exchanges between farm animals and the artificial environment. Calculation of required minimum and maximum ventilation.</p> |
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### (4) TEACHING and LEARNING METHODS - EVALUATION

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| <p><b>TEACHING METHOD</b><br/><i>Face-to-face, Distance learning, etc.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | In-person, face-to-face sessions held in the lecture hall                                                                                                                                                                                                                                                         |                          |
| <p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b><br/><i>Use of ICT in teaching, laboratory education, communication with students</i></p>                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Use of general-purpose software for slide presentations and communication with students.</p> <p>Posting of lectures on the University's website.</p>                                                                                                                                                           |                          |
| <p><b>TEACHING METHODS</b><br/><i>The manner and methods of teaching are described in detail.</i><br/><i>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.</i></p> <p><i>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</i></p>                            | <b>Activity</b>                                                                                                                                                                                                                                                                                                   | <b>Semester workload</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lectures                                                                                                                                                                                                                                                                                                          | 26                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Laboratory exercises                                                                                                                                                                                                                                                                                              | 26                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Autonomous study                                                                                                                                                                                                                                                                                                  | 48                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                   |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Course total (25 h of workload per ECTS)</b>                                                                                                                                                                                                                                                                   | <b>100</b>               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                   |                          |
| <p><b>STUDENT PERFORMANCE EVALUATION</b><br/><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p> | <p><b>I.</b> The language of assessment is Greek.</p> <p><b>II.</b> The grade for the theoretical and practical components is determined 10% by active participation in lectures and practical exercises, and 90% by a final written examination consisting of multiple-choice questions and design problems.</p> |                          |

### (5) ATTACHED BIBLIOGRAPHY

|                                                                                                                                                                                                                                                                                |
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| <p><b>- Suggested bibliography :</b></p> <ul style="list-style-type: none"> <li>Aggarwal A. and R. Upadhyay. 2013. Heat Stress and Animal Productivity. Springer: India.</li> <li>Albright, L. D. 1990. Environment Control for Animals and Plants. ASAE, Michigan.</li> </ul> |
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- Mount, L. E. (1979). Adaptation to thermal environment. London, UK: Edward Arnold.
- MWPS (Midwest Plan Service). 1983. Swine Housing and Equipment Handbook, 4th ed. Ames, IA: Iowa State University.
- Pedersen, S., and K. Sällvik. 2002. Heat and moisture production at animal and house levels. In 4th Report of Working Group on Climatization of Animal Houses. Horsens: CIGR.

**- Related scientific journals:**

Animals, Applied Animal Behavior, Applied Engineering in Agriculture, Biosystems Engineering CIGR Journal, Livestock Science, Poultry Science, Small Ruminant Research, TRANSACTIONS of the ASABE