

# The Physiological Bases of Farm Animal Reproduction and Lactation [166]

## 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 [Required]                                                                                                                              |                              |                       |
| <b>COURSE CODE</b>                                                                                                                                                                                                                                                    | 166                                                                                                                                                   | <b>SEMESTER</b>              | 5th                   |
| <b>COURSE TITLE</b>                                                                                                                                                                                                                                                   | THE PHYSIOLOGICAL BASES OF FARM ANIMAL REPRODUCTION AND LACTATION                                                                                     |                              |                       |
| <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> |
| Lectures                                                                                                                                                                                                                                                              |                                                                                                                                                       | 2                            | 2                     |
|                                                                                                                                                                                                                                                                       |                                                                                                                                                       | 2                            | 3                     |
| <b>Total</b>                                                                                                                                                                                                                                                          |                                                                                                                                                       | <b>4</b>                     | <b>5</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>                                                                                                                                                                                                                     | Yes (in English)                                                                                                                                      |                              |                       |
| <b>COURSE WEBSITE (URL):</b>                                                                                                                                                                                                                                          | <a href="https://mediasrv.aua.gr/eclass/courses/EZPY211/">https://mediasrv.aua.gr/eclass/courses/EZPY211/</a>                                         |                              |                       |
| <b>TEACHING STAFF</b>                                                                                                                                                                                                                                                 | Theory: Politis I., Charismiadou M., Theodorou G., Christodouloupoulos G.<br>Laboratory: Charismiadou M., Theodorou G., Goliomytis M., Kalogiannis D. |                              |                       |

### (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>Upon successful completion of the course, students will be able (according to Bloom) to:</p> <ul style="list-style-type: none"> <li>Describe the physiological factors that influence conception rate, gestation length, and parturition, and explain the indicators used to estimate reproductive potential, such as prolificacy rate, viability rate, and profitability rate (<b>Knowledge / Comprehension</b>).</li> <li>Analyze the factors affecting milk production, mammary gland growth, and lactation development in ruminants (<b>Analysis / Comprehension</b>).</li> <li>Apply theoretical knowledge to evaluate reproductive and lactation performance in farm animals (<b>Application / Evaluation</b>).</li> <li>Integrate concepts from physiology and production data to propose management strategies that optimize reproductive efficiency and milk yield (<b>Synthesis / Evaluation</b>).</li> </ul> |                                                                                          |                                                                                                      |                                 |                            |                                             |                 |                                     |                       |                                                                                          |           |                              |
| <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> <table> <tr> <td>Search for, analysis and synthesis of data and information, with the use of the necessary technology</td><td>Project planning and management</td></tr> <tr> <td>Adapting to new situations</td><td>Respect for difference and multiculturalism</td></tr> <tr> <td>Decision-making</td><td>Respect for the natural environment</td></tr> <tr> <td>Working independently</td><td>Showing social, professional and ethical responsibility and sensitivity to gender issues</td></tr> <tr> <td>Team work</td><td>Criticism and self-criticism</td></tr> </table>                                                                                                                                    |                                                                                          | 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 |
| 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                                                             |                                                                                                      |                                 |                            |                                             |                 |                                     |                       |                                                                                          |           |                              |

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| Working in an international environment<br>Working in an interdisciplinary environment<br>Production of new research ideas                                                          | Production of free, creative and inductive thinking<br>.....<br>Others...<br>..... |
| <ul style="list-style-type: none"> <li>• Individual and group work</li> <li>• Producing new research ideas</li> <li>• Promotion of free, creative and inductive thinking</li> </ul> |                                                                                    |

### (3) SYLLABUS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Applied animal reproduction: basic elements of female and male reproductive system. Life cycle, spermatogenesis, ovogenesis, insemination, differentiation of genital systems. Differentiation of sexes. Egg and sperm transport, capacitation of spermatozoa, entry into ovum, pronucleus formation. Hormones, control of estrous cycle, control of puberty and seasonality. Structure of the udder. Morphology and texture of mammary gland. Milk composition. Mammogenesis. Growth and evolution of mammary gland. Hormonal regulation. Milk synthesis and secretion. Initiation and maintenance of lactation. Metabolism on mammary gland function. Mammary involution. Factors affecting lactation. |
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### (4) TEACHING and LEARNING METHODS - EVALUATION

| <b>TEACHING METHOD</b><br><i>Face-to-face, Distance learning, etc.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | In classroom, face to face, in laboratory and in the field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |
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| <b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b><br><i>Use of ICT in teaching, laboratory education, communication with students</i>                                                                                                                                                                                                                                                                                                                                                                                           | PowerPoint and video presentations. Communication with students via e-mail. Teaching support through access to the e-class platform, to on-line databases etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |
| <b>TEACHING METHODS</b><br><i>The manner and methods of teaching are described in detail.<br/>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.<br/><br/>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>                              | Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Semester workload |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lectures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 26                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Laboratory practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 26                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Individual study of students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 73                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course total (25 h of workload per ECTS)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>125</b>        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |
| <b>STUDENT PERFORMANCE EVALUATION</b><br><i>Description of the evaluation procedure<br/><br/>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<br/><br/>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i> | <p>The evaluation on the course's theory consists of:</p> <ol style="list-style-type: none"> <li>1. final written examination on the course's theory (100%), consisting of: <ol style="list-style-type: none"> <li>I. Evaluation of elements of the course's theory</li> <li>II. Short-answer questions</li> <li>III. Multiple choice questions</li> </ol> </li> <li>2. Personal written essay and its presentation</li> </ol> <p>The evaluation on the course's laboratory practice is determined by the final written examination (100%) consists of:</p> <ol style="list-style-type: none"> <li>I. Evaluation of elements of the course's laboratory practice</li> <li>II. Short-answer questions</li> <li>III. Multiple choice questions</li> </ol> |                   |

### (5) ATTACHED BIBLIOGRAPHY

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| <b>Proposed Literature:</b> <ol style="list-style-type: none"> <li>1. Hafez, 1962, Reproduction in farm animals.</li> <li>2. Víctor H., Parraguez et al, Reproductive Physiology-Endocrinology, Animal Reproduction in Livestock, Encyclopedia of Life Support Systems (EOLSS,2013).</li> <li>3. Schmidt, G. H. , 1971, Cornell University, Biology of lactation.</li> <li>4. Akers, R. M. 1990, Lactation Physiology: a ruminant animal perspective, Protoplasma 159, 96-111.</li> <li>5. Reece W.O., 2009. Λειτουργική Ανατομική και Φυσιολογία Ζώων (Μεταφρ. Θεοδωρόπουλος Γ., Χαδιώ-Μάντζαρη Σ., Μπαλάσκας Χ., Οικονομόπουλος Ι.). Αθήνα, Utopia.</li> </ol> |
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6. Ρογδάκης Εμμ., 2004. Αναπαραγωγή του προβάτου. Εκδ. Σταμούλη.