ACADEMIC YEAR 2025/2026

General information	
Name of the integrated course	**PRODUCTIVE AND REPRODUCTIVE PERFORMANCES OF FARM ANIMALS**
Integrated teaching modules	**SUSTAINABILITY AND PRECISION LIVESTOCK FARMING** **REPRODUCTIVEPERFORMANCES TECHNIQUES**
Degree course	Animal Sciences (L38)
Academic Year	III
European Credit Transfer and Accumulation System (ECTS)	5 (ECTS lessons: 3; ECTS exe/lab/tutor: 2)
Language	Italian
Period of teaching	II semester (02/03/2026 – 19/06/2026)
Attendance	Mandatory

Teacher	**e-mail address**	**phone**
Pasquale De Palo	pasquale.depalo@uniba.it	0805713983
Maria Albrizio	maria.albrizio@uniba.it	0805713928

Headquarters	Campus of Veterinary Medicine, S.P. per Casamassima km 3, 70010 Valenzano (Ba)
Virtual rooms	Microsoft Teams Generale | Performances Produttive e riproduttive SA AA 2025/2026 | Microsoft Teams
Tutoring (time and day)	Wednesday, 11.00-13.00; Thursday, 15.00-17.00

Syllabus	
Learning Objectives	The course aims to provide students with useful information for evaluating the environmental, economic and social impacts of the various forms of animal breeding and provide the basics on Precision Livestock farming techniques, providing an insight into the state of the art and future prospects of this new discipline In the farm management of livestock, fertility is the main factor in the health and production management of farms. The future graduate will help the breeder to pursue such economic objectives, through the evaluation of fertility indices and assisted reproduction methods, in collaboration with the veterinarian.
Course prerequisites	Preliminary exams: Animal breeding techniques and Principles of reproduction of domestic animals. The student must already have knowledge of anatomy and physiology, animal nutrition and feeding, farm management and principles of livestock reproduction.

U.O. Didattica e servizi agli studenti
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Contents of the teaching **SUSTAINABLE AND PRECISION LIVESTOCK FARMING** Teacher: **Pasquale DE PALO** **Lectures** **ECTS: 2** **Hours: 16** **TECHNIQUES FOR IMPROVING REPRODUCTIVE PERFORMANCES** Teacher: **Maria ALBRIZIO** **Lectures** **ECTS: 1** **Hours:8**	Principles of livestock production efficiency and environmental, social and economic impact. Greenhouse gases. Toxic gases. Impact of nitrogen excretions. Agro-ecosystem impact of grazing. Impact reduction strategies and case studies. Carbon footprint. Water Footprint. Calculation techniques (Life Cycle Analysis) of the impacts. Precision Livestock Farming, classification and case studies on PLF systems in the management of livestock food production, animal feeding, reproductive and productive monitoring, animal welfare, milking, traceability of production. Hormonal conditioning of the estrus cycle of livestock. Embryo transfer and associated techniques. Assisted reproductive technologies. Laboratory: gametes retrieval, oocyte maturation, spermiogram, in vitro fertilization; embryos evaluation
Practical activities for the integrated course **ECTS: 2 (**1 ECTS of the teaching module "Sustainable and Precision Livestock Farming" + 1 ECTS of the teaching module " **Hours: 20**	Oocytes and sperm sampling, oocytes maturation techniques, sperm analysis, in vitro fertilization, embryo assessment. In field practical training aiming to evaluate data from PLF tools and assess the environmental impacts of livestock industry. Meetings with PLF industry representatives.

Biosafety rules for the attendance of practical activities.	Access to laboratories will be allowed only to students wearing protective clothing (disposable coats and gloves and, when required, also footwear) and that have read the biosafety manual. In field activities will require professional wear and certified safety boots. Disposable protection tools (gloves, disposable boots, etc) will be furnished by the course.

Materail for the personal study	
Books and bibliography	Stefanon B., Mele M., Pulina G. Allevamento animale e sostenibilità ambientale. I principi. Franco Angeli Editore, 2018. Abeni, Nannoni, Sandrucci. Zootecnia di Precisione e tecnologie innovative di allevamento. Le point veterinaire Italie, 2024

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	Material provided by the lecturer during the course, or available at his office. Ptaszynska M. "Compendio di riproduzione animale" 10°ed., Ed MSD Animal Health (2012). Gordon I. "Laboratory production of cattle embryos" CAB Publishing (2003). Herrich J.R. "Comparative embryo culture" Humana Press (2019).
Additional materials	The additional teaching material will be provided by teachers and will be available in the Microsoft Teams platform.

Work schedule			
Hours			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Individual study
125	*24*	*20*	*81*
ECTS			
5	*3*	*2*	*/*

Teaching strategy	
	The few lectures will be accompanied by the presentation of case studies. Furthermore, training will be carried out with in-field visits and seminars held by technicians from companies of the PLF industry. Students divided in small groups of 4-6 units supervised and guided by the lecturer and laboratory technician will take and process biological samples and discuss the results of the observations with the lecturer and technicians

Expected learning outcomes	
Knowledge and understanding ability	At the end of the course, the student will have knowledge and understanding ability related to: ○ Knowledge on how to recognize the variables affecting the impacts; ○ Knowledge on how to recognize the advantages and disadvantages of a PLF system; ○ Knowledge of the theoretical bases and precision livestock farming tools applied according to the different livestock systems ○ knowledge on physiology and animal reproduction.
Applied knowledge and understanding ability	• Competence in estimating the environmental, social and economic impacts of each farming system, as well as of each farm management choice • Competence in recognizing the various inputs and outputs of a livestock system. • Knowing how to use the right categories of PLF systems based on the needs highlighted by a farmer. • Knowing how to advise the breeder also in relation to the impact of his activity as well as on the correct use, from choice to data management, in the PLF area. • connecting all the acquired knowledge will be verified together with the ability of talking on specific subjects
Soft skills	• *Making informed judgments and choices* ○ provide the knowledge bases necessary to allow the student to propose and make decisions aimed at improving the impact and improving management in a livestock farm ○ the student will be able to express and debate with the teacher on asked animal reproductive subjects. • *Communicating knowledge and understanding* ○ know the scientific technical terminology of the sector necessary to

	communicate the topics covered by the subject ○ The teacher will verify the acquisition of technical terminology and the ability to communicate with the veterinarian and with the animal breeder • *Capacities to continue learning* ○ receive the knowledge bases to be able to deepen the issues covered by the subject. ○ Evaluation of the study method used by the student and the concrete learning of the concepts in relation to the professional maturity achieved

Assessment and feedback	
Methods of assessment	The exam of the integrated course allows the acquisition of 5 ECTS of those included in the study plan. The verification of results will be performed by an oral final exam. The student will be asked three questions, one relating to the environmental impact, one to the PLF and one on the topic covered by the study program of the" techniques for improving reproductive performances" module The student will have to achieve a sufficient assessment for all thematic areas to pass the exam. The questions may be aimed at assessing knowledge. Often cases or data will be presented to the student asking him a critical assessment
Evaluation criteria	• *Knowledge and understanding* ○ Knowledge of theoretical basis of livestock sustainability and PLF technologies ○ The student will have to demonstrate to have acquired knowledge of the main themes of reproduction and animal production • *Applying knowledge and understanding* ○ Being able to assess sustainability of a livestock farming system ○ Evaluating critically the application of a PLF tool to a livestock system ○ The student should have acquired skills for the practical application of the topics covered during lessons. • *Autonomy of judgment* ○ Being able to elaborate hypothesis and opinions in case studies ○ The student should be able to autonomously reason on the topics covered. • *Communicating knowledge and understanding* ○ Being able to know technical specific language ○ The student must be able to present the knowledge acquired during the course using the appropriate terminology • *Communication skills* ○ Being able to use technical specific language ○ to possess good communication skills. • *Capacities to continue learning* Competent use of tools for continue self-learning
Criteria for assessment and attribution of the final mark	In formulating the final judgment for each student, the commission will assess the degree of competencies acquired by the student by an oral test providing also practical case studies. According to the skills and competences shown, the student will be assigned the grade expressed in thirtieths, with the possibility of obtaining the "laude", if he/her has demonstrated at least a poor, but significant, added value (originality) to the test.
Other comments	

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