



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	
<b>ACADEMIC YEAR</b>	
<b>ANNO ACCADEMICO EROGAZIONE</b>	
<b>SUBJECT</b>	
<b>CODE</b>	
<b>SCIENTIFIC SECTOR(S)</b>	
<b>HEAD PROFESSOR(S)</b>	BONANNO ADRIANA      Professore Associato      Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	
<b>TERM (SEMESTER)</b>	
<b>ATTENDANCE</b>	
<b>EVALUATION</b>	
<b>TEACHER OFFICE HOURS</b>	<b>BONANNO ADRIANA</b> Wednesday 09:00    11:00    Dipartimento Scienze Agrarie e Forestali Viale delle Scienze, edificio 4 ingresso G stanza 70 Friday      09:00    11:00    Dipartimento Scienze Agrarie e Forestali Viale delle Scienze, edificio 4 ingresso G stanza 70

**DOCENTE:** Prof.ssa ADRIANA BONANNO

<b>PREREQUISITES</b>	Knowledge of reproductive and digestive physiology of livestock animal species, and crop science are required.
<b>LEARNING OUTCOMES</b>	<p>1. Knowledge and understanding To have specialized knowledge of housing structures, plants, techniques and management suitable to the different farming systems and livestock conditions, and to understand how they influence productive efficiency, animal welfare and products quality.</p> <p>2. Applying knowledge and understanding To have the ability to identify and modulate with autonomy, in livestock farms, the elements of technical and feeding management of animals, and the housing structures and plants that, while respecting animal welfare and environmental sustainability, could contribute to develop efficient production processes and obtain products of high quality standards.</p> <p>3. Making judgements To have the ability to assess the implications and the production results connected to technical and managerial interventions and the use of housing structures and plants implemented in livestock farms.</p> <p>4. Communication To have the ability to expose, either orally or through the writing of a paper, arguments focusing on structures, techniques and management applicable in livestock production systems, and to discuss, also with a non-expert audience, about the importance of the introduction of solutions and innovations with positive reflections on production efficiency, animal welfare, products quality and environment.</p> <p>5. Lifelong learning skills To have with some autonomy the ability to use the specific language of these topics, update the knowledge by examining the technical and scientific publications and attending to congresses and seminars related to the livestock sector, and to be able to undertake further advanced studies.</p>
<b>ASSESSMENT METHODS</b>	<p>The learning evaluation is based on an oral exam consisting of a colloquy in which the student have to answer to a minimum of six questions designed to ascertain the acquired skills, in accordance with the expected learning outcomes, namely the knowledge and understanding of the topics, the ability to apply the knowledge and interpret the related results, in addition to language ownership and adequacy in the oral exposition.</p> <p>The exam is evaluated with a final mark expressed on a 18-30-point scale that takes into account, besides the outcome of the colloquy, also the student's participation in the lessons.</p> <p>To overcome the exam, and then achieve a mark higher than 18/30, the student has to show the possession of a minimum level of skills and a sufficient ability in oral exposition. The lack of an acceptable knowledge of the topics lead to an insufficient evaluation. The maximum score (30/30 with distinction) is reached by the student who participated in the lessons, and shows to have achieved excellent knowledge and abilities.</p>
<b>EDUCATIONAL OBJECTIVES</b>	The course aims to provide students with the scientific and technical knowledge on traditional and innovative management systems and farming techniques of the main livestock species (cattle, sheep, goats, pigs, poultry) reared to obtain dairy products, meat and eggs. The role of physiology, genetic, housing, feeding and management in the farming system is deepened with regard to productive efficiency, animal welfare and the components of technological, hygienic, sanitary, organoleptic, nutritional and health quality of the animal products. The legislative rules regulating animal welfare and establishing the hygienic requisites of the products of animal origin are examined.
<b>TEACHING METHODS</b>	Frontal lessons (75% of time), laboratory activities and technical visits to livestock farms.
<b>SUGGESTED BIBLIOGRAPHY</b>	<p><b>MATERIALE DIDATTICO di RIFERIMENTO</b> TESTO: G. Bittante, I. Andrighetto, M. Ramanzin, Tecniche di produzione animale, LIVIANA Editore Lezioni in Power Point</p> <p><b>ALTRI TESTI CONSIGLIATI</b> G. Succi, Zootecnia speciale, Editrice CLESAV. D. Balasini, Zootecnica Speciale, EDAGRICOLE. G. Succi, I. Hoffmann, La vacca da latte, Editrice CITTA' STUDI. P.G. Monetti, Allevamento dei bovini e dei suini, GIRALDI Editore P.G. Monetti, Appunti di Suinicoltura, GIRALDI Editore I. Giavarini, Tecnologie avicole, EDAGRICOLE S. Cerolini S., M. Marzoni Fecia di Cossato, I. Romboli, A. Schiavove, L. Zaniboli, Avicoltura e Coniglicoltura, Point Veterinarie Italie (PVI) Editore</p>

## SYLLABUS

Hrs	Frontal teaching
2	Introduction to the course. General description of livestock sectors in Italy. Environmental impact of livestock.
6	DAIRY CATTLE. Dairy farming systems. Dairy specialized breeds (Holstein Friesian, Brown, Pezzata Rossa Italiana) and activity of their breeders association with particular reference to genetic improvement programs. Sicilian autochthonous breeds: Modicana and Cinisara.
8	Milk production: synthesis and secretion mechanisms; manual and mechanical milking; factors affecting milk yield, composition, and quality traits; milk health standards for milk and dairy factory according to the current legislation.
2	Reproduction: puberty, oestrus, natural mating and artificial insemination, oestrus synchronization, embryo transfer, pregnancy diagnosis, calving.
4	Calf rearing: birth, suckling, weaning, housing. Veal calves. European regulations for calves protection. Heifer rearing: early first calving, feeding, housing.
8	Dairy farming systems: feeding in dry and milking phase; feeding management, (unifed, automatic feeding station); tie and loose housing and related milking systems.
4	Cows welfare: current European regulations, housing conditions, evaluation of comfort. Organic farming.
6	BEEF CATTLE. Categories of beef cattle. Characteristics and precocity of the main Italian and foreign breeds. Cross-breeding. Transport and slaughter. Qualitative characteristics of the carcass and meat. Rearing technique (housing and feeding) of beef cows, light and heavy calves. Stressors and welfare assessment. Organic farming.
8	SHEEP and GOATS. Main sheep and goats Italian breeds. Rearing systems and techniques: reproduction, lambs nursing and weaning, feeding, grazing techniques, housing and related milking plants. Sheep meat production: carcass types and classification.
12	PIGS. Genetic types (pure breeds, cross-breeders, commercial hybrids), Genetic improvement programs. Rearing of young males and females, boar and sow (housing, reproduction, and feeding). Suckling and weaning of piglets. Production of light and heavy pigs. Slaughter, characteristics and evaluation of carcass and pig meat. Environmental impact of pigs farms and manure management. European regulations for pigs protection. Outdoor and organic pigs farming systems.
8	EGG-LAYING HENS and BROILER CHICKENS. Genetic types reared for eggs and meat. Reproduction and eggs deposition. Incubation and hatching of eggs. Housing systems and feeding for chick, pullet, laying hens and reproducers. Rearing of broiler. Slaughter. Eggs and meat quality. European regulations for hens and broiler protection.
Hrs	Practice
18	Farms technical visits.
Hrs	Workshops
4	Laboratory activities for the physico-chemical evaluation of foods of animal origin.