



# 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 Ordinario      Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	DI GRIGOLI ANTONINO      Professore Associato      Univ. di PALERMO BONANNO ADRIANA      Professore Ordinario      Univ. di PALERMO
<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>	<p><b>BONANNO ADRIANA</b></p> <p>Tuesday 09:00 13:00 Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70</p> <p>Wednesday 09:00 13:00 Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70</p> <p>Thursday 09:00 13:00 Dipartimento Scienze Agrarie, Alimentari e Forestali, edificio 4 ingresso G stanza 70</p> <p><b>DI GRIGOLI ANTONINO</b></p> <p>Monday 10:00 12:00 Area Zootecnia - Dipartimento Scienze Agrarie, Alimentari e Forestali (Edificio 4 - Ingresso G - Stanza 70)</p> <p>Wednesday 10:00 12:00 Area Zootecnia - Dipartimento Scienze Agrarie, Alimentari e Forestali (Edificio 4 - Ingresso G - Stanza 70)</p>

**DOCENTE:** Prof.ssa ADRIANA BONANNO

<b>PREREQUISITES</b>	Knowledge of organic chemistry and reproductive and digestive physiology of livestock animal species 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 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 on animal welfare and production 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 sector, and to be able to undertake further specialized and 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>TEACHING METHODS</b>	Frontal lessons (70% of time), laboratory and classroom activities, and technical visits to livestock farms.

**MODULE  
VETERINARY ENTOMOLOGY**

**SUGGESTED BIBLIOGRAPHY**

E. Tremblay Entomologia applicata. Generalità e mezzi di controllo (Vol. 1)  
Appunti dalle lezioni.

<b>AMBIT</b>	84067-Attività formative affini o integrative
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<b>INDIVIDUAL STUDY (Hrs)</b>	45
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<b>COURSE ACTIVITY (Hrs)</b>	30
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**EDUCATIONAL OBJECTIVES OF THE MODULE**

The course aims to provide basic knowledge on the morphology, anatomy, physiology and biology of insects, identification and biological cycle of taxa and species present in livestock farms, necessary to deal with their management and control.

**SYLLABUS**

Hrs	Frontal teaching
6	Elements of morphology: exoskeleton, head and appendages; thorax and appendages; abdomen and appendages. Elements of anatomy and physiology. Ontogenetic development. Notes on mites.
4	Characteristics of the main orders of insects present in livestock farms.
2	Relationships between Vertebrata and Arthropoda in livestock farms.
6	Monitoring and controlling the insect populations.
Hrs	Practice
6	Identification of the main orders of insects present in livestock farms
2	Collecting and preserving insects in livestock farms.
Hrs	Others
4	Visit to a livestock farm: collection and observations on the arthropods.

**MODULE  
RUMINANTS HUSBANDRY**

*Prof. ANTONINO DI GRIGOLI*

**SUGGESTED BIBLIOGRAPHY**

Materiale utilizzato e discusso a lezione (disponibile su file.pdf).

TESTO: A. Sandrucci, E. Trevisi - Produzioni Animali - EdiSES Università

<b>AMBIT</b>	84063-Discipline della zootecnica, allevamento e nutrizione animale e della gestione aziendale
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	60

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The aim of the course is to transmit knowledge on the breeding techniques and management systems of the main ruminating species (bovine, sheep, goats, buffaloes) bred for milk and meat production.

Specifically, the influence of the several factors (genetic, physiological, structural and technical) of the breeding system on animal welfare and productivity is studied, as well as on aspects linked to the quality of animal products.

The main rules that regulate the requirements of animal products and animal welfare on livestock will also be detailed.

**SYLLABUS**

Hrs	Frontal teaching
2	Introduction to the course. General description of livestock sectors in Italy.
6	<b>DAIRY COWS.</b> Farming systems of the main specialized and autochthonous dairy breeds.
6	Milk production: synthesis and secretion mechanisms; manual and mechanical milking; factors affecting milk production. Influence of production systems on the quality of milk and dairy products. Standards for milk and dairy factory according to the current rules.
4	Calf rearing: birth, suckling, weaning, housing. Veal calves. European regulations for calves protection. Heifer rearing: early first calving, housing.
8	Dairy farming systems: tie and loose housing and related milking systems. Cows welfare: current European regulations, housing conditions, evaluation of comfort. Organic farming.
8	<b>BEEF CATTLE</b> Categories of beef cattle. Characteristics and precocity of the main Italian and foreign beef breeds. Cross-breeding. Transport and slaughter. Qualitative characteristics of the carcass and meat. Rearing technique of beef and suckler cattle. Stressors and welfare assessment. Organic farming. Traceability and labeling of meat products according to current legislation.
6	<b>SHEEP and GOATS.</b> Rearing systems and techniques of main sheep and goats Italian breeds. Reproduction, lambs nursing and weaning, grazing techniques, housing and related milking plants. Sheep meat production: carcass types and classification. Details on wool production. Main qualitative parameters of wool.
2	Breeding of buffaloes and details of the products obtained from them.
Hrs	Others
18	Technical visits to livestock and production infrastructure in the animal products industry.

**MODULE  
MONOGASTRIC ANIMALS BREEDING**

*Prof.ssa ADRIANA BONANNO*

**SUGGESTED BIBLIOGRAPHY**

Sandrucci A., Trevisi E., Produzioni animali, EDISES, edizione I/2022, ISBN 9788836230754

Lezioni in Power Point

**ALTRI TESTI CONSIGLIATI**

Bittante G., Andrighetto I., Ramanzin M., Tecniche di produzione animale, LIVIANA Editore, edizione 2005, ISBN 9788849470833

Monetti P.G., Allevamento dei bovini e dei suini, GIRALDI Editore, Edizione 2001

Cerolini S., Marzoni Fecia di Cossato M., Romboli I., Schiavone A., Zaniboni L., Avicoltura e Conigliicoltura, Point Veterinarie Italie (PVI) Editore, edizione 2015, ISBN 889599549X

Hickman J., Il cavallo e il suo management, Edagricole, ISBN 8820630877

<b>AMBIT</b>	84063-Discipline della zootecnica, allevamento e nutrizione animale e della gestione aziendale
<b>INDIVIDUAL STUDY (Hrs)</b>	45
<b>COURSE ACTIVITY (Hrs)</b>	30

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The course aims to provide students with the scientific and technical knowledge on traditional and innovative management systems and farming techniques of the main monogastric livestock species (pigs, poultry, rabbits and horses) reared to obtain meat, processed 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 quality of the animal products. The legislative rules regulating animal welfare and its evaluation, and establishing the requisites of the products of animal origin are examined.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
10	<b>PIGS.</b> Genetic types (pure breeds, cross-breeders, commercial hybrids), Genetic improvement programs of breeds. 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	<b>EGG-LAYING HENS and BROILER CHICKENS.</b> 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 hen and broiler protection.
2	<b>RABBITS (brief notes).</b> The national rabbit sector. Genetic types. Reproduction cycle: from puberty to weaning. Reproductive rhythm. Cycle production. Feeding of does and fattening rabbits. Meat production. Housing and welfare.
2	<b>HORSES (brief notes).</b> Production addresses of the Italian horse sector. Main breeds in Italy and their aptitude. Farming systems and structures. Reproduction: from fertilization to weaning. Feeds and feeding rations. Meat production.
<b>Hrs</b>	<b>Practice</b>
8	Technical visits to farms.