# .- Animal Husbandry

## Prof. Andrea Minuti, Prof. Aldo Prandini

Ruminants Module

Prof. Andrea Minuti

COURSE AIMS AND INTENDED LEARNING OUTCOMES

Animal husbandry is the science dealing with the transfer of scientific innovations in the breeding sector to business practice. The key aim of the course is to teach students the main ruminant breeding techniques of zootechnical interest and the underlying physiological principles and mechanisms, in order to develop students’ ability to use their knowledge in identifying and dealing with the various problems that arise in different types of livestock farms. A further aim is to incorporate this theoretical and practical knowledge within an economic context to enable students to understand how technical-managerial choices have economic repercussions as well as having to be the most appropriate company choices.

At the end of the course, students will know the productive systems adopted in the breeding of cattle, buffalo, sheep and goats, as well as the influences exerted by genetics, nutrition and breeding techniques on the qualitative and quantitative aspects of production, animal welfare and environmental impacts.

Students must also be able to collaborate in breeding matters with breeders and other professionals in order to:

* be able to detect and interpret the main zootechnical parameters;
* contribute to the correct technical-economic management;
* contribute to the prevention of problems that may occur.

COURSE CONTENT

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|  | ECTS |
| Livestock production |  |
| Consistency of the Italian and global heritage of livestock species of interest. Production and consumption of milk and meat products. The objectives of animal production. | 0.25 |
| Classification and study criteria for cattle, sheep, goats and buffalo breeds |  |
| Functional attitudes. Type of milk and type of meat in bovine species. Characteristics of the main native and foreign breeds of cattle, sheep and goats. | 0.25 |
| The physiological bases of animal production |  |
| Review of the physiology of digestion in ruminant animals: the rumen, bio-fermenter pivotal to the digestive activity of ruminants.  Elements of animal reproduction physiology: the oestrous cycle, follicular development and hormonal regulation system. | 0.25 |
| Milk production (cattle) |  |
| Cattle breeding techniques at different stages of the production cycle: delivery, milk feeding and weaning, replacement breeding, and lactation. The main chemical-physical characteristics of milk and notes on the main factors of variation. Manual, mechanical and robotic milking. | 1.5 |
| Reproduction techniques |  |
| Recognising an animal in heat with traditional techniques and precision farming. Natural and instrumental insemination. Oestrous synchronisation protocols, embryo transfer. Fertility indices. | 0.5 |
| Meat production (cattle) |  |
| Breeding and feeding techniques for beef, veal and young veal herds. | 0.75 |
| Minor breeds |  |
| Breeding and feeding techniques for sheep, goats and buffaloes. | 0.5 |

READING LIST

Technical articles in trade journals.

Film clips available on the web.

Reference texts

A. Sandrucci & E. Trevisi. Produzioni Animali. EdiSES Università. Naples, 2022.

C. Molinari, La bovina da latte. Gestione delle fasi di maggiore criticità nell'allevamento della lattifera, Edagricole, Bologna, 2006.

G. Succi, Zootecnia Speciale, Città Studi, Milano, 1995.

TEACHING METHOD

The course makes use of different teaching methods:

1) lectures to present the underlying principles of the subject. Lectures are supported by PowerPoint presentations;

2) viewing of videos related to practical cases and subsequent discussion.

All the material presented during lectures will be made available on the Blackboard platform.

ASSESSMENT METHOD AND CRITERIA

An oral exam consisting of at least three questions of a general nature, from which further specific questions may arise. Students will have to demonstrate their ability to orient themselves among the topics discussed during lectures. The mark is assigned based on the following criteria:

(a) objective knowledge of the topics, mastery of the topics and appropriate use of the specific terminology;

(b) clarity of presentation;

(c) the ability to respond comprehensively to questions linking different issues;

The oral exam is marked out of 30 and the result is communicated following the end of the exam.

Honours are awarded to students who, in addition to possessing excellent knowledge of the subject, demonstrate particular presentation and reasoning skills.

NOTES AND PREREQUISITES

Prerequisites

Students must possess a basic knowledge of organic chemistry, biochemistry, animal anatomy and physiology.

Should the current Covid-19 health emergency not allow face-to-face teaching, remote teaching will be guaranteed using methods that will be communicated in good time to students.

Information on office hours available on the teacher's personal page at http://docenti.unicatt.it/.

# Monogastric Module

## Prof. Aldo Prandini

COURSE AIMS AND INTENDED LEARNING OUTCOMES

The course aims to provide students with technical and scientific knowledge on the breeding of the main monogastric species (pigs, poultry). The aim of the course is to provide the notions for optimising livestock performance, so as to maintain an optimal level of health in farming conditions that guarantee animal welfare and are able to maintain a high level of quality and safety in the animal products obtained.

At the end of the course, students will know the main techniques related to pig and poultry breeding. They will know the different foods, their composition and evaluation, as well as the feeding technologies that permit the production of animal products (pork, poultry, and eggs) of high quality and in accordance with the regulations governing the main Italian PDO products. The student will understand the main productive variables that permit the production of safe animal products using farming methods that respect animal welfare and have a low environmental impact.

COURSE CONTENT

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| --- | --- |
|  | ECTS |
| *Livestock production*: Italian and world heritage of livestock species of interest. Production and consumption of meat and eggs. | 0.5 |
| *Anatomy and physiology*: notes on the anatomy and comparative physiology of monogastrics. | 0.5 |
| *Meat production*: Breeding and feeding techniques for pigs (light and heavy) and poultry (broilers, turkeys). Slaughtering. The influence of genetic and environmental factors on the organoleptic, technological and nutritional characteristics of meat and processed products. | 2.0 |
| *Egg production*: breeding and feeding techniques for pullets and laying hens. Influence of genetic and environmental factors on the organoleptic, technological and nutritional characteristics of eggs for fresh consumption and for industry. | 1 |

READING LIST

PG Monetti, *Allevamento dei bovini e dei suini,* Giraldi Editore, Bologna, 2001.

PG Monetti, *Appunti di suinicoltura,* Giraldi Editore, Bologna, 1997.

F. Bertacchini, I. Campani, *Manuale di allevamento suino,* Edagricole, Bologna, 2001.

I. Giavarini, *Tecnologie Avicole,* Edagricole, Bologna.

G. Succi, *Zootecnia Speciale,* Città Studi, Milan, 1995.

A. Sandrucci-E. Trevisi*, Produzioni Animali,* EdiSES, 2022.

TEACHING METHOD

Frontal lectures, where the founding principles of the subject will be presented with the aid of PowerPoint presentations and videos taken from the Internet, so offering a practical illustration of the topics covered in class.

Following each lecture, all material will be made available on the Blackboard platform.

The course will be supplemented with seminars on specific subjects related to the topics covered in class, and involving invited recognised experts from the feed industry sector and AUSL (local health units).

Educational visits to commercial pig and poultry farms will also take place, and will include the assistance of breeding technicians.

ASSESSMENT METHOD AND CRITERIA

The exam will be in two parts: a written interim test and a final oral exam. The interim test, written in the middle of the course, is optional and will cover that part of the programme taught to date. Should a student pass the interim test, they will be exempted from covering the interim programme in the final oral exam; those students who fail, or don't take the interim test, will have to cover the entire programme in the final oral exam.

NOTES AND PREREQUISITES

Prerequisites

Students must possess a basic knowledge of organic chemistry and biochemistry.

In the event that the health situation related to the Covid-19 pandemic does not allow face-to-face teaching, remote teaching will be guaranteed in a synchronous manner.

Information on office hours available on the teacher's personal page at http://docenti.unicatt.it/.