# .- Precision Zootechnics: Ruminants

## Prof. Erminio Trevisi

COURSE AIMS AND INTENDED LEARNING OUTCOMES

 Provide a technical-scientific preparation aimed at optimising performance, health, production quality and well-being on ruminant farms. Provide the preparation for setting up diets for ruminants and assessing their correctness and sustainability on the farm.

 At the end of the course, students will be able to:

- Understand the management modalities (in particular nutritional) for ruminants in their different physiological phases;

- Carry out feed rationing, including with the help of dedicated computer software;

- Objectively evaluate ruminant diets and identify main management errors (feed and management related);

- Understand the causes of milk composition variations and managing these interfering factors;

- Plan the organization of dairy cow herds;

COURSE CONTENT

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| Topic | ECTS |
| *Introduction to the course*. Species bred for milk and meat production. Milk production in Italy: production systems, evolution and their sustainability. Main foods used in the feeding of dairy animals. | 0.5 |
| Models used in the field of nutrition. Requirements, estimation of ingestion capacity, ration optimisation parameters.  | 1.5 |
| Rationing, with the application of models in the various phases of the animal productive cycle. Composition of main livestock feed. Automation of power supply systems and precision power supply. | 1.5 |
| Composition, chemical-physical and technological-dairy characteristics of milk and the main variation factors: genetic, physiological, health, environmental and food.  | 1.0 |
| Milking and milk quality. Animal performance monitoring systems. Automation and precision livestock farming. | 1.0 |
| Extensive farming systems. Feeding and breeding techniques.  | 0.5 |

READING LIST

Lecture notes or material posted on the dedicated website (Blackboard platform).

Antongiovanni M., Mele M., Buccioni A. *Nutrizione degli animali in produzione zootecnica.* Edagricole-New Business Media, *2019.*

Cannas A., Pulina G., *Dairy goats feeding and nutrition*,CABI, UK, 2007.

Cox S., *Precision livestock farming*, Ed. Wageningen Academic Publishers, 2007.

Inra, *Alimentation Feeding System for Ruminants*, 2018, INRA, France.

NRC, *Nutrient requirements of dairy cattle*, National Academy Press, Washington D.C., 2001.

NRC, *Nutrient requirements for beef cattle* (7th Ed.). National Academy Press, Washington, DC. 1996.

Pulina G., *L’alimentazione delle pecore da latte*, Avenue Media, Bologna, 2001.

Sandrucci A., Trevisi E. (a cura di), *Produzioni Animali*. Ed. EdiSES, 2022.

Sauvant D., Perez-M. Tran J.M., *Tables of composition and nutritional value of feed materials*, INRA Ed., 2002.

TEACHING METHOD

Frontal lectures, computer lab work, and farm visits.

1) Frontal lectures to present the key concepts of the subject, with the opportunity for widespread interaction. The lectures are accompanied by PowerPoint slides, which are subsequently made available to students on the Blackboard platform;

2) Practical lessons, in a computer lab or with the student's own PC, to learn the use of ruminant rationing software and develop rations for cows in different physiological categories;

3) Seminars conducted by recognised experts on specific course topics.

ASSESSMENT METHOD AND CRITERIA

 An oral exam comprising three questions on general topics, which will then give rise to further more specific questions. Each question is assessed with a mark from 0 (no answer) to 11 (exemplary answer). The mark is assigned on the basis of the following criteria: a) objective knowledge of the topics and mastery of the subjects; b) presentation clarity; c) ability to respond exhaustively to questions, linking different topics.

NOTES AND PREREQUISITES

Students must possess knowledge of food evaluation, nutrition and animal physiology.

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