COURSE DETAILS

"FEED MANAGEMENT"

DEGREE PROGRAMME: PRECISION LIVESTOCK FARMING

ACADEMIC YEAR 2025/26

GENERAL INFORMATION – TEACHER REFERENCES

TEACHER: ALESSANDRO VASTOLO; RAFFAELLA TUDISCO
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GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: PRECISION FEED PRODUCTION AND MANAGEMENT
MODULE: FEED MANAGEMENT
SSD OF THE MODULE: AGRI-09/B – ANIMAL NUTRITION AND FEEDING (EX AGR/18 –ANIMAL NUTRITION AND FEEDING D.M. 855/2015)
TEACHING LANGUAGE: ENGLISH
CHANNEL: //
YEAR OF THE DEGREE PROGRAMME: II
SEMESTER: II
CFU: 7

REQUIRED PRELIMINARY COURSES (IF MENTIONED IN THE COURSE STRUCTURE "REGOLAMENTO")

None.

PREREQUISITES (IF APPLICABLE)

Knowledge of the characteristics of raw materials and nutritional physiology in animals of zootechnical interest.

LEARNING GOALS

The learning outcomes to be assessed include a comprehensive understanding of the course topics, including new technologies in precision crop protection, Integrated Pest Management (IPM), the application of biological control and beneficial microbes, and the sustainable use of pesticides.

Moreover, the course aims to provide students with specialist knowledge of precision nutrition. At the end of the course, the Feed Management module contributes to the achievement of the expected results through the learning of the following topics: metabolism and digestive utilisation of nutrients in monogastric and polygastric animals; evaluation of animal feed; use of precision tools to improve the evaluation of animal feed and the nutritional management of farm animals; development of balanced rationing plans.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

The course aims to provide students with the basic knowledge and methodological tools necessary to analyse aspects related to animal nutrition and feeding. In addition, methods for evaluating animal feed and nutritional management through precision technologies will be outlined. These tools will enable students to understand the basic metabolic processes of farm animals, learn about the nutritional characteristics of animal feed, and discover the precision technologies that allow for more accurate nutritional management.

Applying knowledge and understanding

Students must demonstrate their ability to draw conclusions from a set of information in order to analyse and manage various aspects related to animal nutrition and feeding. They must be able to make the most appropriate choices in relation to the chemical and nutritional characteristics of foods and the metabolic and physiological needs of animals.

COURSE CONTENT/SYLLABUS ALESSANDRO VASTOLO

FRONTAL LESSONS	HOURS
✓ Fundamentals of animal nutrition: Classification of nutrients: carbohydrates, lipids, proteins, vitamins and minerals.	**2**
✓ Main functions and role of nutrients in animal physiology.	**3**
✓ Digestion and absorption of nutrients.	**3**
✓ Classification of feed: forage, concentrates, agro-industrial by-products and chemical analysis	**2**
✓ Introduction to PLF in nutrition, definition and importance of the precision approach.	**5**
✓ Use of spectrometry and chemical-physical analysis of feed using NIRS instruments.	**5**
✓ Application of sensor ingestion and digestibility methods to assess feed digestibility in vivo	**6**
✓ Use of thermography to assess body condition score (BCS);	**2**
✓ Monitoring and adapting feeding plans in real time.	**2**
✓ Nutritional requirements of farm animals.	**3**
✓ Feeding plans for farm animals.	**2**
TOTAL	**36**

PRACTICAL TEACHING	HOURS
✓ Example of practical rationing in ruminants	8
✓ Recognition of the main animal feedstuffs	3
✓ Chemical and nutritional evaluation of animal feedstuffs using NIR technology	5
✓ Visits to farms	4
✓ *Laboratory analysis for milk and feed quality*	4
TOTAL	**24**

COURSE CONTENT/SYLLABUS RAFFAELLA TUDISCO

FRONTAL LESSONS	HOURS
✓ *Feed legislation and marketing. Quality control of raw materials and finished products.*	**2**
✓ *Sampling, handling and storage of raw materials. Internal transport of raw materials, dosing and grinding. Additives: antioxidants, natural and synthetic; colourings; flavourings.*	**2**
✓ *Treatments to improve the food value of raw materials: pelleting, flaking and extrusion processes. Feed packaging and shipping.*	**2**
TOTAL	**6**

PRACTICAL TEACHING	HOURS
✓ *Formulation of zootechnical feeds using specific software*	**4**
TOTAL	**4**

READINGS/BIBLIOGRAPHY

- ✓ *Lecture notes provided during the course*.
- ✓ McDonald, P., Edwards, R. A., Greenhalgh, J. F. D., Morgan, C. A., Sinclair, L. A., &Wilkinson, R.G. (2011). Animal Nutrition (7th ed.). Pearson Education Limited.

TEACHING METHODS

Teachers will use: a) lectures for approximately 60% of the total hours; b) practical exercises and workshops for approximately 40% of the total hours or credits.

The teacher will use a student-centered method; tutorials; Practical lessons, learning by doing method. The lessons will be supported by multimedia teaching material available to students on the teacher's website, after registering for the course.

EXAMINATION/EVALUATION CRITERIA

*For **integrated courses**, this field should encompass all modules, with indication of the relative weight of each module on the final mark. For integrated courses, this field should be coordinated by the reference teacher for the course.*

a) Exam type:

Exam type	
written and oral	X
only written	
only oral	
project discussion	

other	

b) Evaluation pattern:

Evaluation criteria must be objective, clearly defined, and the same for all students.
They must take into account not only the knowledge of the course subject, but also the ability to express oneself orally and the ability to apply theoretical knowledge in practical tests. In all cases, students' reasoning skills and deductive logic must be assessed, including through problem-solving abilities.
The evaluation is expressed as a grade out of thirty for exams. The exam is considered passed with a score of at least 18/30. In the case of the highest score (30/30), honors ("cum laude") may be awarded.
Grade scale:

- **27–30 with honors**: Substantially comprehensive preparation on the topics covered in the course, ability to make independent critical analyses and connections, full command of specific terminology, and ability to argue, self-reflect, and solve problems.
- **24–26**: Preparation on a wide range of topics covered in the course, ability to make independent critical choices, and good command of specific terminology.
- **18–23**: Preparation on a limited number of course topics, with independent analysis ability limited to purely executive issues and/or analysis that emerges only with the teacher's help; overall correct use of language.

The final mark will be obtained as a medium value between the module of Precision Crop Protection (AGR/12) and Feed management (AGR/18).

*For the evaluation, the "**Regulation for Guidelines_for_exams_management**" approved by the Didactic Coordination Committee of the Master Degree in Precision Livestock Farming will be considered.*