Universidad Zaragoza

Academic Year/course: 2023/24

28429 - Ruminant Integrated Course

Syllabus Information

Academic year: 2023/24
Subject: 28429 - Ruminant Integrated Course
Faculty / School: 105 - Facultad de Veterinaria
Degree: 451 - Degree in Veterinary Science
ECTS: 14.0
Year: 4
Semester: Annual
Subject type: Compulsory
Module:

1. General information

The subject tries to reflect the basic aspects related to production, clinical and animal health, both from the point of view of the economic process of production and marketing, through the basics of animal nutrition and livestock facilities, to reproduction and all its management in order to improve production. It will also go going through all the pathologies that affect animals, assessing their clinical, diagnosis and treatment.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement.

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

To know and understand the strengths and weaknesses of the cattle and sheep sectors in Spain, the socioeconomic and structural determinants of ruminant production and the commercialization of their products, with reference to the legislative, geographical, sanitary and environmental frameworks.

Knowledge of production systems, reproductive calendars, animal management and feeding management in each phase of the production cycle

Understand the characteristics of housing and facilities and their impact on different ruminant production systems.

Understand the factors that influence product quality.

Know how to apply technical-economic management methods and sustainability analysis in ruminant farms.

Know the objectives and selection criteria, as well as the techniques used in the genetic improvement of ruminants, with respect to the different traits and genetic parameters.

Develop the capacity to make genetic improvement decisions, through the integration of available sources of information (phenotypic, molecular).

Design rations and formulate the concentrate feed necessary to cover the requirements of ruminants according to the production system and phase of the productive cycle.

Know, for each production system, the main types of pastures and forages involved and their use, as well as the environmental services provided by these systems.

Know the diseases of ruminants, their etiopathogenesis, epidemiology and clinical profile.

Approach the diagnosis of any pathological problem affecting ruminants: choose the most appropriate samples and diagnostic techniques for each case and interpret the results.

Establish and apply the most appropriate treatment for each pathology and establish prevention and control measures to avoid the appearance of the most important ruminant diseases. In particular, know the structure and application of the official programs for surveillance, prevention, control and eradication of the most important diseases in animal health.

Know and understand the characteristics and reproductive control of ruminants and the mechanisms involved in labour, as well as the treatment of problems associated with it.

Prepare a clinical history and a veterinary report.

3. Syllabus

PROGRAM OF THEORETICAL CLASSES

This program consists of 92 topics to be taught in 115 face-to-face hours of participative master classes, distributed into 1-hour sessions.

Topic 0. Presentation of the subject

Topic 1. The cattle sector in Spain and Europe: Census, territorial distribution, production and demand. Marketing and support policies

Topic 2. Reproductive control.

Topic 3. Application of reproductive biotechnologies.

Topic 4. Reproductive failure.

Topic 5. Diseases of the female genital tract.

Topic 6. Labour care and obstetric problems. Retention of placenta.

Topic 7. Diseases of the male genital tract.

Topic 8. Abortions of infectious etiology.

Topic 9. Abortions of parasitic etiology: Toxoplasmosis, Neosporosis, Trichomonosis.

Topic 10. Meat production in extensive systems: Justification. Problem. Reproductive

management. Production models: High Mountain areas. Pasture areas. Plateau areas. Wetlands

Topic 11. Main types of pastures and forages in cattle and sheep systems. Estimation of livestock loads. Grazing systems. Advantages and disadvantages of each type.

Topic 12. Meat production in intensive systems: Types of production. Veal, calf, yearling, beef. Grassland-based cattle fattening: interest.

Topic 13. Feeding of growing calves and beef cows: rearing and fattening. Feeding of breeders.

Topic 14. Growth promoters and finishers: Types of products. Effects. Consequences in carcasses and meat. Interest and problems.

Topic 15. Carcass and meat quality: Concept. Channel performance. Conformation. Composition. Channel classification. Main meat quality parameters.

Topic 16. Facilities: General designs (free stalls and communal boxes). Complementary facilities. Fattening facilities.

Topic 17. Objectives and improvement criteria. Character analysis.

Topic 18. Improvement schemes. Genetic evaluation of candidates.

Topic 19. General characteristics: Dairy production systems. Structure. Purchase of new animals. Lactation curves.

Topic 20. Productive and reproductive management: Characteristics. Objectives. Postpartum care. Artificial lactation. Replenishment. Control of the operation. Management of high production cows

Topic 21. Milk production: Affecting factors. Milking: phases, times and hygiene

Topic 22. Dairy cattle feeding

Topic 23. Facilities: Characteristics. Types of stabling. Facilities for nursing calves. Food and water distribution facilities. Milking parlors

Topic 24. Nipple diseases and udder edema.

Topic 25. Clinical mastitis in cattle.

Topic 26. Subclinical mammitis in cattle

Topic 27. Control of mastitis in cattle.

Topic 28. Organization of genetic improvement. Cattlemen's associations. Objectives and selection criteria.

Topic 29. Analysis of the characters to be used. Genetic evaluation of candidates for selection.

Topic 30. Biotechnology and genomic selection. Sheep and goats

Topic 31. Cattle and sheep farm management: Calculation of technical-economic and sustainability indicators.

Topic 32. The sheep and goat sector in Spain and Europe: Census, territorial distribution, production and demand. Marketing and support policies.

Topic 33. Operating systems: Intensive and extensive systems. Types. Differential factors. Transhumance.

Topic 34. Reproductive management: Calendars and systems. Use of hormonal, non-hormonal and male effect treatments.

Topic 35. Management of the lamb: first care. Artificial lactation. Weaning. Fattening. Replenishment.

Topic 36. Dairy sheep: Reproductive management. Milking. Drying.

Topic 37. Feeding during lamb rearing and fattening.

Topic 38. Feeding of meat and milk sheep.

Topic 39. Sheep meat and milk facilities: General designs. Complementary facilities. Milking parlors.

Topic 40. Mammitis of infectious etiology in small ruminants.

Topic 41. Control of mastitis in small ruminants.

Topic 42. Objectives and criteria for improvement in meat sheep. Character analysis.

Topic 43. Improvement schemes in meat sheep. Genetic evaluation of candidates.

Topic 44. Improvement schemes in dairy sheep and goats. Genetic evaluation of candidates.
Topic 45. Manures and slurry: value in the restitution of nutrients to the soil. Environmental services of ruminant systems.
Clinic and Healthcare
Diseases with Official and Systemic Control Programs
Topic 46. Bacterial and symptomatic anthrax.
Topic 47. Brucellosis.
Topic 48. Bluetongue.
Topic 49. Rift Valley fever. Peste des petits ruminants
Topic 50. Malignant catarrhal fever. Foot and mouth disease.
Topic 51. Bovine tuberculosis. Contagious bovine pleuropneumonia
Young animal diseases
Topic 52. Hypothermia, starvation, omphalitis, ecthyma, otitis.
Topic 53. Polyarthritis, white muscle, enzootic ataxia, abscess disease. Caseous lymphadenitis.
Topic 54. Sheep respiratory complex.
Topic 55. Bovine Respiratory Syndrome.
Topic 56. Bovine herpesvirus 1 (IBR-IPB/IPV).
Topic 57. Ruminantestivirus (BVD-BD).
Topic 58. Diarrheic syndrome of calves.
Topic 59: Diarrheic syndrome of lambs and kids.
Topic 60. Cryptosporidiosis. Giardiosis
Topic 61. Coccidiosis
Topic 62. Post-mortem diagnosis of the main pathologies of the digestive tract in young ruminants.

Adult respiratory diseases
Topic 63. Differential diagnosis of upper respiratory tract pathology.
Topic 64. Differential diagnosis of lower respiratory tract pathology.
Topic 65. Oestrosis, verminous bronchopneumonia.
Topic 66. Lentivirosis of small ruminants.
Topic 67. Ovine pulmonary adenocarcinoma.
Topic 68. Post-mortem diagnosis of the main pathologies affecting the lung

Digestive system and abdominal diseases
Topic 69. Oral lesions and exploration of the digestive tract.
Topic 70. Alterations of the digestive content: Acidosis and alkalosis.
Topic 71. Alterations of the continent. Vagal intoxication. Tympanism and meteorism.
Topic 72. Colicky pain. Peritonitis and urolithiasis.
Topic 73. Abomasal diseases and DA resolution.
Topic 74. Abomasal surgery.
Topic 75. Paratuberculosis.
Topic 76. Enterotoxemias
Topic 77. Trichostrongylidosis, intestinal cestodosis.
Topic 78. Fasciolosis.
Topic 79. Dicroceliosis. Paranfistomosis.
Topic 80. Hydatidosis, bovine cysticercosis, cysticercosis of small ruminants.
Topic 81. Post mortem diagnosis of the main pathologies of the digestive system in adults.

Diseases with nervous symptomatology
Topic 82. Diseases of the bovine nervous system.
Topic 83. Diseases of the ovine nervous system.
Topic 84. Listeriosis. Louping ill.
Topic 85. Transmissible spongiform diseases
Topic 86. Post mortem diagnosis of the main pathologies of the nervous system.

Blood diseases
Topic 87. Babesiosis, theileriosis, anaplasmosis.

Skin and muscle tissue diseases
Topic 88. Besnoitiosis, sarcocystosis.
Topic 89. Hypodermosis, cutaneous myiasis, scabies, other ectoparasitosis.
Topic 90. Small ruminant pox. Bovine nodular dermatosis.

Podiatric diseases
Topic 91. Lameness in small ruminants (Footroot).
Topic 92. Lameness in cattle.
Topic 93. Laminitis.

Urinary system diseases
Topic 94. Leptospirosis. Bacillary hemoglobinuria.
Topic 95. Post mortem diagnosis of the main pathologies of the urinary system.

PRACTICAL CLASS PROGRAM
It consists of 60 hours of practical activities, distributed as follows:
Internship type I: in farms, slaughterhouse, laboratories, computer room and necropsy room (52 hours).
Internship type II: seminars, clinical cases, work and visits to livestock farms (8 hours).

Internship type I
Practice 1. Calculation of rations and formulations
a) Growing calves
b) Dairy cattle
c) Pregnant ewes, suckling ewes and lambs
Practice 2. Computerized management of genetic information in
a) Meat
b) Milk
Practice 3. Genetic management of a herd
Practice 4. Calculation of costs and break-even point for dairy cattle farms
Practice 5. Sheep milking management
Practice 6. Carcass and meat quality
a) channel
b) meat
Practice 7. Technical-economic indicators and sustainability evaluation in beef cattle and sheep.
Practice 8. Introduction to clinic
Practice 9. Clinical cases and podiatry
Practice 10. Applied reproduction in ruminants
Practice 11. Clinical cases and diagnosis of diseases of the respiratory system
Practice 12. Clinical cases and diagnosis of diseases of the digestive system
Practice 13:
a) Clinical cases and diagnosis of udder diseases
b) Diagnosis of infectious diseases of the udder
Practice 14. Exploration and diagnosis of pregnancy in ruminants
Practice 15. Necropsies in ruminants
Practice 16. Joint clinical sessions: report development and discussion
Practice 17. Laboratorial support for the diagnosis of protozoosis
Practice 18. Laboratory support for the diagnosis of helminthosis and arthropodosis.

Practice 19. Serology: Diagnosis of infectious diseases

Practice 20. Exhibition of the livestock study-prospecting

Practice type II

Practice A- Field work (livestock prospecting) (Common for Productions-Medicine and Health).

Practice B- Livestock farm visit (Common for Productions - Medicine and Health)

Seminar I. Sanitary programs in small ruminants

Seminar II. Cattle health programs

The detailed program of theoretical and practical activities is complemented by:

- Study for the consolidation of knowledge and preparation of the required tests and assignments
- Tutorials
- Performance of the established tests and presentations

4. Academic activities

Students will receive:

- Master classes: 115 hours
- Practical classes (I): A total of 52 hours of practical training will be given (10 sessions of 1 to 3 hours and 13 sessions of 1 to 1.5 hours), in the teaching building of the Animal Experimentation Service, in the Center for Agri-Food Research and Technology (CITA), Mercazaragoza, in the computer room, in the teaching laboratories of Infectious and Parasitic Diseases and Animal Production and in the Necropsy Room.
- Practical classes (II): 2 seminars, a livestock prospecting project and a visit to a cattle or sheep farm, for a total of 8 hours.

5. Assessment system

In each four-month period, there will be a written test with short answer questions, multiple-choice questions or other type of objective test, which will correspond to the theoretical and practical classes. The multiple-choice may be true-false questions or multiple-choice. In both cases a negative grade associated to chance will be applied in case of a wrong answer, which will be the maximum resulting from the formula 1/n-1.

The written test will account for 70% of the grade of the subject, and the student must have passed each of the midterm exams of each term. In case of not having passed this test but having passed the practical part, the grade obtained in the work and practices performed will be maintained for future exams.

The written test of the first midterm requires a minimum grade of 25% in each of the blocks. If the grade for this midterm exam is between 4.5 and 4.9, in subsequent exam sessions, only those blocks with a grade lower than 5 will have to be assesed.

The two works carried out during the term (clinical report and analysis of a livestock farm with its corresponding report) will be evaluated and will represent 15% of the final grade of the subject.