INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Cattle Science			Field of study	Animal and Agricultural Productions								
Bachelor in	Zootechnical Engineering			School	School of Agriculture								
Academic Year	2022/2023	Year of study	3	Level	1-3	ECTS credits	7.0						
Type	Semestral	Semester	1	Code	9129-312-3102-00-22								
Workload (hours)	189	Contact hours	T 30	TP -	PL 45	TC -	S -	E -	OT 20	O -			

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Fernando Jorge Ruivo Sousa

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Theoretical knowledge about the social organization of a breed, a study of two such cases: Friesland breed / Mirandesa breed;
2. Theoretical and practical knowledge of the morphology and physiology of suitable dairy cattle.
3. Theoretical and practical knowledge management and management of cattle for milk, beef and mixed aptitude.
4. Theoretical knowledge on the main systems of production of milk / beef .
5. Theoretical and practical knowledge on plant and equipment holdings of cattle.
6. Theoretical knowledge on commercial circuits of the main products and sub-products of the farm.

Prerequisites

Before the course unit the learner is expected to be able to:
1. Students should have knowledge of anatomy, morphology, behavior and animal welfare;
2. physiology, reproduction, lactation, hygiene and health, nutrition and food, animal improvements;
3. Pasture and forage, informatics, sociology and economics

Course contents

Social organization of a breed; case study type: Friesland breed / Mirandesa breed; morphology and physiology of cattle, milk aptitude; management and management of cattle for milk, beef and mixed aptitude; main production systems of milk / beef; facilities and equipment for cattle farms, commercial circuits of the main products and sub-products of the farm

Course contents (extended version)

1. Introduction
   - Importance of cattle to produce food for human consumption; identification
   - Registration of reproductive and productive aptitude, control aptitude in production;
   - Reproductive and productive capacities to control and its significance; The Herd book;
   - Association Breeders; Breed election
2. Reproduction and selection in milk cattle
   - Bases for the genetic progress; Relationship and consanguinity;
   - Data correction for non-genetic factors; cow selection; bull selection; crossbreed
3. Lactation Secretion and milking/ milking machine
   - The mammary gland; physiology of Lactation Secretion; the lactation curve;
   - factors that influence the profit and the milk composition. Milking machine and the milking systems.
4. Management of milk cattle
   - Constitution of the herd and normal management practice of the reproduction animals
   - Milk systems for calf's born in the farm; management systems of feeding the reproduction animals
5. Housing and other facilities of the milk cattle farm
   - Organization, measurements, most important technical characteristics;
   - row material flow, products, effluents, animal circulation/operators
6. Growth and development
   - Theoretical curve of growth; the real curve for live weight gain; factors that influence the growth;
   - the definition of the most important production types of beef through the growth curve;
   - The development curve; the practical consequences of development; conformation;
7. Types and systems of beef production
   - Extensive, intensive and semi-intensive production systems; age at slaughter, sex; cow and bull.
   - Methods of planning the feed for beef cattle; feeding requirements; feeding periods
8. Selection of reproduction animals, aiming beef production
   - The 3 types of herd for beef production and its selection propose; selection programs;
   - the use of reproduction animals in pure breed and crossbreed, improvement of the herd production
9. Hygio prophylaxis in beef and milk cattle
   - Hygiene of facilities and equipments, the recommendable cares and vaccination.
10. Transportation/ Slaughter /carcass classification
   - Legislation in effect, technical procedures that are advise
11. Marketing of the main products and sub-products of the farm; OMC for milk and beef production
   - Usual commercial circuits, Legislation in effect about this sector

Recommended reading

1. Artigos científicos publicados em revistas da especialidade de que se destacam: Animal Production; CD Rom fornecido pelo docente.
2. Estrategia de Alimentación para Vacas Lecheras de Alta Producción. Ed. A. G. T. Editor S. A. Thomas G. Field and Robert W. Taylor (2002). Beef Production and Management Decisions (4th Edition).
3. Journal of Animal Science; Journal of Agricultural Science; Journal of Dairy Research; Journal of Dairy Science; Meat science. Outros conteúdos ministrados e dispoíveis em Bases de dados e na Internet
4. Anne Fanatico, Ron Morrow, & Ann Wells(1999). Sustainable Beef Production , NCAT, ATTRA Publication. DGSV (1981). Bovinos em Portugal, coord. . António Rodrigues. G. H. Schmit, L. D. Van Vleck (1978).
5. Bases Científicas de la Producción Lechera. U. de Cornell. Ed. Acribia. Mollevi, M. Torrent (1980). Bovinotecnia - Lechera y cárnica, Vol I e II, Biblioteca Agrícola AEDOS.

Teaching and learning methods

Lecture classes with the multimedia means resources. practical lessons of demonstration and perform of management practices. Travel to farms for observation and case studies. Realization of a practical theory paper work. Guidance mentoring would help teachers to monitor and assist students in developing different activities.

Assessment methods

1. exercises, theoretical work, written exam, - (Regular, Student Worker) (Final, Supplementary, Special)
2. overall test writing, grading = 9, 5 - (Student Worker) (Final, Supplementary, Special)

Language of instruction

Portuguese

Electronic validation

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04-12-2022	21-12-2022	21-12-2022	22-12-2022