

Course Unit	Animal Reproduction and Lactation		Field of study	Veterinary Sciences	
Bachelor in	Zootechnical Engineering		School	School of Agriculture	
Academic Year	2022/2023	Year of study	2	Level	1-2
Type	Semestral	Semester	2	ECTS credits	5.0
Code	9129-312-2205-00-22				
Workload (hours)	135	Contact hours	T 30	TP -	PL 30
			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) Ramiro Corujeira Valentim

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Animal reproduction: learn the fundamentals of the physiology of reproduction of farm animals.
2. Animal Reproduction: be familiar with the endogenous and exogenous factors limiting reproduction activity. Know how to control farm animals' reproduction.
3. Lactation: be aware of the mammary anatomy and physiology. Learn the differences between colostrum and milk, how to handle milk production, and milk curves.
4. Lactation: milking techniques, dry-off methods and milk quality assessment. Mastitis.

Prerequisites

Before the course unit the learner is expected to be able to:

Computer science, anatomy and morphology, ethology and welfare and physiology.

Course contents

Regulation of reproduction: nerves, hormones and target tissues. Male reproductive system. Spermatogenesis and maturation. Female reproductive tract. Spermatozoa in the female tract: transport, capacitation and fertilization. Puberty. Oestrus cycle. Reproductive cyclicity and anoestrus. Reproduction control techniques. Artificial insemination. Fertilization, maternal recognition of pregnancy and early embryogenesis. Placentation and gestation. Parturition. Puerperium and neonatology. Lactation.

Course contents (extended version)

1. Reproduction Regulation Systems
 - Nervous System
 - Endocrine System
2. Reproduction Endocrinology
 - Hypothalamus Hormones
 - Pituitary Hormones
 - Gonad Hormones
 - Placenta Hormones
 - Pheromones
3. Male Genital Tract
 - Testicles
 - Epididymis
 - Sexual Glands
 - Penis and Foreskin
4. Spermatogenesis and Maturation
 - Spermatozoon
 - Seminal Fluid
 - Seminal Metabolism
5. Female Genital Tract
 - Ovaries, Oviducts, Uterus, Vagina
 - External Genital Organs
 - Spermatozoa in the Female Genital Tract
6. Reproduction Activity
 - Puberty
 - Oestrus Cycle
 - Reproductive Cyclicity and Anoestrus
 - Heat Detection Techniques
 - Control of Ovarian Activity
7. Fertilization, Implantation and Placentation
 - Fertilization
 - Implantation
 - Early Embryogenesis
 - Placentation
8. Pregnancy
 - Pregnancy Length
 - Pregnancy Endocrinology
 - Foetal Blood System, Nutrition and Metabolism
 - Amnion and Allantois Fluids
 - Pregnancy Diagnosis Techniques
9. Parturition
 - Onset of Parturition
 - Parturition Stages
 - Parturition Artificial Induction
 - Normal Parturition and Dystocia and Neonatology
 - Puerperium
10. Lactation
 - Mammary Gland
 - Milk Composition
 - Milk Production
 - Milking and Drying-off Techniques
 - Mastitis

Recommended reading

1. JOHNSON, M. H. , 2013. Essential Reproduction. 7ª Edição, Wiley-Blackwell, Ames, EUA, 392 pp.

Recommended reading

2. SENER, P. L. , 2004. Pathways to pregnancy and parturition. 2ª Edição, Current Conceptions, Inc. , Washington State University Research & Technology Park, Washington, EUA, 368 pp.
3. HAFEZ et al. , 2013. Reproduction in farm animals. B. Hafez e E. S. E. Hafez (Eds), 7ª Edição, Lippincott Williams & Wilkins, Filadélfia, EUA, 509 pp.
4. DASCANIO, J. , McCUE, P. , 2014. Equine reproductive procedures. Wiley-Blackwell, Ames, EUA, 576 pp.
5. KUTTY, C. I. , KHAMER, S. , 2013. Milk production and processing. Daya Publishing House, Nova Deli, India, 210 pp.

Teaching and learning methods

Lectures will be support by media and multimedia resources. Practical classes will engage direct working with animals. Seminars will allow teacher and students to explore topics related to Animal Reproduction and Lactation. Non present hours will involve training in a working environment. Students are expected to work largely on their own initiative although with the close support of a tutor.

Assessment methods

1. 1 Test (50%) and 1 Restrict Examination (50%) - (Regular, Student Worker) (Final)
2. General Examination (100%) - (Student Worker) (Final)
3. General Examination (100%) - (Regular, Student Worker) (Supplementary, Special)

Language of instruction

Portuguese

Electronic validation

Ramiro Corujeira Valentim	Teresa Maria Montenegro Araújo A. Correia	Marieta Amélia Martins Carvalho	Ramiro Corujeira Valentim
07-12-2022	07-12-2022	07-12-2022	19-12-2022