



Universitat de Lleida

DEGREE CURRICULUM **ANIMAL REPRODUCTION**

Coordination: GARCIA ISPIERTO, IRINA

Academic year 2019-20

Subject's general information

Subject name	ANIMAL REPRODUCTION			
Code	100313			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Double bachelor's degree: Bachelor's Degree in Veterinary Medicine and Bachelor's Degree in Science and Production	2	COMMON	Attendance- based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	0.3	1.1 0.6	4
	Number of groups	8	2 3	1
Coordination	GARCIA ISPIERTO, IRINA			
Department	ANIMAL HUSBANDRY			
Teaching load distribution between lectures and independent student work	Horas presenciales: 60 Horas no presenciales: 90			
Important information on data processing	Consult this link for more information.			
Language	Catalán: 60% Castellano: 30% Inglés: 10%			
Office and hour of attention	Horari consulta: 9-19 Cita prèvia			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
GARCIA ISPIERTO, IRINA	irina.garcia@udl.cat	10,4	

Learning objectives

Objectives of knowledge: The student that exceeds the subject must: Know the basics of Reproduction Biology of domestic mammals, as well as the bases of artificial regulation of the reproductive process. Special emphasis will be given to the various technologies derived from the Artificial Insemination and Transfer of Embryos.

Capacity objectives:

The student that exceeds the subject must be able to: To use the previously indicated knowledge in the regulation of the reproductive process and to be able to analyze the economic implications of the control of reproductive parameters at the level of exploitation for the different domestic species. Special emphasis will be given to the use of ultrasound as a basic tool for reproductive control.

Competences

Transversal competences of the degree 1. Interpret studies, reports, data and analyze them numerically. 2. Work alone and in a multidisciplinary team. 3. Understand and express with the appropriate terminology. 4. Discuss and argue in various debates. 5. Analyze and evaluate the social and ethical implications of the professional activity. 6. Have a critical and innovative spirit.

Veterinary specific competences 1. Know the basics of animal reproduction and have the capacity for practical application in the management of animals. 2. Know the process of reproduction of farm animals, as well as the technologies for their manipulation and control. 3. Know the main reproductive pathologies and their treatments
Other competences 1. Reproduction, delivery and puerperium: cures and diseases 2. Assisted reproduction

Subject contents

Topic 1. Conceptual, epistemological and historical aspects related to the Science of Animal Reproduction. Definition of bioindustrial ecosystem. Man and animal domestication. Historical development of Zootechnics and understanding of the reproductive process. The Technology of Reproduction today.

Topic 2. Endocrinology of reproduction. The hypothalamo-adenohipofiso-gonadal axis. The pineal gland Follicular dynamics and gonadotropic retrocontrol. Gonadotropins and sex steroid hormones. The prostaglandin F_{2α}, inhibin, prolactin and relaxin.

Topic 3. Cyclicity in the female. Follicular and luteal phases of the female genital organs. Seasonal reproduction and photoperiodism. Reproductive behavior

Unit 4. Immuno-endocrine modulation of pregnancy. Immuno-endocrine mechanisms related to the gestational period. Importance of placental progesterone.

Topic 5. Labor. Preparatory signs of childbirth. The eutotic birth. Birth phases. Dystocic labor. Endocrine sequences of the end of gestation and delivery. Rhythms circadians of childbirth.

Topic 6. The puerperium. Newborn cures. Start of lactation. Effects of breastfeeding.

Topic 7. Reinstatement of cycles strictly after delivery. Anestrus. Postpartum endocrinology. Uterine involution First ovulation and return to the cyclicity. Principal pathologies in different species

Topic 8. The male. Exploration of the males. Impotencia coeundi and generandi. Principal pathologies of male.

Topic 9. Development of artificial insemination. Cryobiology and conservation of semen. Factors that affect the seminal quality and fertility of the bull. Laboratory tests of seminal quality. Sexatge of semen. Insemination procedures. Optimum timing of insemination. Multiple inseminations. Place of deposition of semen. Intraperitoneal insemination. Learning the technique of insemination. The inseminator and the confirmation of estrus.

Topic 10. Future of insemination technology. Ovine and cabrum. Porcine. Equine. Rabbits Dog and cat. Expectations of artificial insemination technology.

Topic 11. Regulation of ovarian function. The detection of estrus. Synchronization protocols of oestrus and ovulation: in cyclic females, in the anestrus of lactation / seasonal anestrus. Control of multiple ovulations in monotocas.

Topic 12. Technology of the diagnosis of pregnancy. Control of return to estrus. Physical methods Hormonal methods Ultrasound Determination of the fetus number. Determination of sex

Topic 13. Live embryo production. Induction to superovulation. Embryo collection and evaluation. In vitro culture and cryopreservation of embryos.

Topic 14. Embryonic transfer. Selection and management of the receivers. Synchrony between the donor and recipients. Procedures of non-surgical transfer of embryos. Bisection and sexatge of the embryos.

Topic 15. Production of in vitro embryos. Collection techniques of oocytes. The insemination in in vitro fertilization. Intra-cytoplasmic insemination. In vitro fertilization. In vitro culture of the embryos. Cloning technologies. Production of transgenic animals. Consequences of the use of different technologies.

Item 16. Control of labor, postpartum and the onset of puberty. Interruption of pregnancy, indications. Hormone induction of labor. Induction of the resumption of ovarian activity. Practical implications of precocious puberty. Hormonal induction of puberty. Artificial lactation

Topic 17. Cesarean section

Practical activities

Practice 1. Exploration of the female genital tract to the dissection room. Vaginal cytology.

Practice 2. Video projections. Video projections followed by a seminar related

Practice 3. Fundamentals of ultrasound. Ultrasound, a revolutionary tool at the farm level and in research

Practice 4. Evaluation of semen and preparation of seminal doses.

Practice 5. Artificial insemination in cow and sow. The cow and the sow as study models for artificial insemination.

Practice 6. Ultrasound applied to Animal Reproduction. Ultrasonic morphology of ovarian structures, uterus not gestating, position-part and cyclic. Ultrasonic anatomy of the pregnant uterus and concepts. Applied aspects of the detection of gestation by ultrasound. Determination of sex.

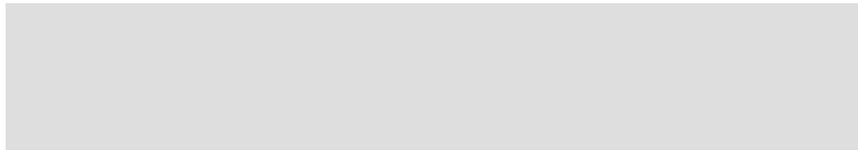
Practice 7. Embryonic micromanipulation. Identification of the different stages of the preimplantation embryo. Morphological evaluation of embryos. Embryonic manipulation.

Practice 8. Exploration of male genital tract

Methodology

The subject will be developed in weekly sessions of 4 hours. The active learning of the student is encouraged, so the master class is reduced to the minimum. The student becomes responsible for their learning, conducting personal study, work, group classes, posters and activities that encourage the individual growth of knowledge. The subject requires reading scientific publications in English from the main scientific databases, as well as active involvement of students. There is also a visit to dairy farm to implement the skills acquired during the course

Development plan



Evaluation

Cumulative test type tests: 12, 15 and 20%

Virtual discussion forum: 8%

Classes in groups and practices: 10%

poster: 10%

Class-work: 12.5%

Final cooperative learning: 12.5%

Bibliography

Basic

Arthur GH., Noakes DE., Pearson H., Parkinson TJ. Veterinary reproduction and obstetrics. Saunders Co. Ltd. 7th edition.

Gordon I. Tecnología de la reproducción de los animales de granja. Acribia, 2006. Fields MJ, Sand RS, Yelich JV. Factors affecting calf crop. Biotechnology of Reproduction. CRC Press, 2002.

Senger PL. Pathways to Pregnancy and Parturition. Current Conceptions, Inc., 2006.

Complementary

REPROLOGY. Controlar la reproducción es controlar el futuro, CEVA Santé Animale, 2001 (CD-ROM)

REPROLOGY. Ecografía del aparato genital de los rumiantes, CEVA Santé Animale, 2007 (CD-ROM)