Information about the subject

Degree: Bachelor of Science Degree in Veterinary Medicine

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 1260308 **Name:** Reproduction and Obstetrics

Credits: 6,00 **ECTS Year:** 3 **Semester:** 1

Module: Module of Clinical Sciences and Animal Health

Subject Matter: Clinical Sciences and Animal Health **Type:** Compulsory

Department: -

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

Module organization

Module of Clinical Sciences and Animal Health

Subject Matter	ECTS	Subject	ECTS	Year/semester
Alterations in Structure and Function, and Fundamentals of Diagnosis	36,00	Clinical diagnostic techniques I (Clinical Propedeutics)	6,00	3/1
		Clinical Diagnostic Techniques II (Imaging Diagnosis)	6,00	3/1
		Histopathology and General Pathological Anatomy	6,00	2/1
		Physiopathology and general integrated Pathology I	6,00	2/1
		Physiopathology and general integrated Pathology II	6,00	2/2
		Special pathological anatomy	6,00	2/2
Pharmacology and Therapeutics	12,00	Pharmacology and Toxicology	6,00	3/1
		Pharmacotherapy, preventive medicine and veterinary hygiene	6,00	5/1
Clinical Sciences and Animal Health	60,00	Clinic and health in equines	6,00	3/2
		Clinic and health in water animals	6,00	5/1
		Clinic and health in wild and exotic animals	6,00	3/2

Clinical Sciences and Animal Health	Clinic and health on the farm I	6,00	4/1
	Clinic and health on the farm II	6,00	4/2
	Epidemiology	6,00	3/1
	Pet Clinic	6,00	3/2
	Reproduction and Obstetrics	6,00	3/1
	Veterinary Surgery I	6,00	3/2
	Veterinary Surgery II	6,00	4/1

Recommended knowledge

To have knowledge of Biology, Anatomy, Embryology, Biochemistry, Physiology, Physiopathology, Microbiology and General Pathology.

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1	The student is able to solve problems related to the contents of the module.
R2	The student searches bibliographic information from different sources and knows how to analyse it with a critical and constructive spirit.
R3	The student is able to write documents related to the subject and work in a team.
R4	The student searches bibliographic information from different sources and knows how to analyse it with a critical and constructive spirit.
R5	The student argues according to rational criteria based on his or her work.
R6	The student knows and understands with a critical attitude the concepts that are included in the syllabus/contents of the module of reproduction and obstetrics.
R7	The student is able to work at an animal reproduction laboratory correctly performing the basic operations in both the planning and the development of each of the laboratory practices
R8	The student is able to write a comprehensible and organized text on various aspects of reproduction and obstetrics in the veterinary field.
R9	The student is able to produce documents on reproduction and obstetrics, through teamwork.
R10	Knowing and applying diagnosis, assisted reproduction and the care and illnesses derived from childbirth and puerperium.
R11	The student has understood and assimilated the theoretical contents of the module.
R12	Collaborates with the teacher and classmates throughout the learning process: Attends theoretical, practical or tutorial sessions; works in groups; is respectful in his/her treatment towards others; complies with the organizational rules of the module to the benefit of all.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB2	Capacity to apply knowledge to work or occupation in a professional way and have the competences that are proved by preparing and arguing topics and problem-solving in their specific field of study.				x
CB3	Capacity to gather and interpret relevant data usually within their specific field of study and capacity to make judgments that include reflection on relevant social, scientific or ethical issues.				x
CB4	Capacity to communicate information, ideas, problems and solutions at specialist and non-specialist levels.			x	
CB5	Capacity to develop those learning skills needed to undertake further studies with a high degree of autonomy.				x

GENERAL		Weighting			
		1	2	3	4
CG0	Capacity to speak well in public.				x
CG2	Understanding and applying prevention, diagnosis and individual or collective treatment , and control of animal diseases, individually or in groups, with special attention to zoonoses.		x		
CG3	Understanding and applying control of animal breeding, management, health, reproduction, protection, and feed as well as improving production.		x		
CG5	Understanding and applying laws, regulations and administrative provisions in all areas of the veterinary profession and public health, understanding the ethical implications of health in a changing global context.			x	
CG6	Developing professional practice, acquiring skills related to teamwork, with an efficient use of resources and quality management.			x	

CG7	Identifying emerging risks in all areas of the veterinary profession.		x		

SPECIFIC		Weighting			
		1	2	3	4
E24	Knowing and applying methods and procedures of clinical examination, additional diagnostic techniques and their interpretation.				x
E25	Knowing and applying imaging diagnostic and radiation biology.			x	
E26	Knowing and applying necropsy.	x			
E27	Knowing and applying recognition and diagnosis of different types of injuries and their association with pathological processes.			x	
E28	Knowing and applying the clinical study of patients and medical, surgical or hygienic-dietary treatments required, as well as sporadic diseases affecting groups.				x
E29	Knowing and applying diagnosis.				x
E30	Knowing and applying surgical techniques used in veterinary.			x	
E31	Knowing and applying animal anesthesia and resuscitation.		x		
E32	Knowing and applying reproduction, birth and postpartum: care and disease.				x
E33	Knowing and applying assisted reproduction.				x
E34	Understanding and applying fish pathology.			x	
E36	Knowing and applying pharmacotherapy.		x		
E39	Knowing and applying transmission and maintenance of disease and methods of study of disease in populations.		x		
E40	Knowing and applying infectious and parasitic diseases related to veterinary practice including diagnosis and control.		x		
E41	Knowing and applying zoonoses and public health.		x		

E42	Knowing and applying the promotion of collective health in animals, including wildlife, in order to maximize the economic performance in a social, ethical and healthy way.		x		
E43	Knowing and applying technical measures and regulations for the prevention, control and eradication of animal diseases.			x	

TRANSVERSAL		Weighting			
		1	2	3	4
T1	Capacity of analysis, synthesis, implementation of knowledge for problem-solving and decision-making.				x
T2	Understanding and applying the scientific method to professional practice including evidence-based medicine.			x	
T3	Basic knowledge of the veterinary profession: legal, economic, administrative, planning and time management issues and the veterinarians' society together with the importance of monitoring quality, standardization and protocols of veterinary practice.			x	
T4	Mastering fluency in oral and written mother tongue communication, listening and responding effectively using a language appropriate to audience and context.				x
T6	Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.		x		
T7	Ability to adapt to new situations, self-critical ability, being aware of personal limitations and understanding when and where seeking and obtaining advice and professional help.			x	
T8	Efficient and effective work, both independently and as a member of a multidisciplinary team or unit, showing respect, appreciation and sensitivity to the work of others.			x	
T9	Keeping an ethical behaviour in the exercise of given responsibilities toward the profession and society.		x		
T10	Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.			x	

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R4, R5, R6, R7, R8, R10, R11	40,00%	Written assessment of acquired knowledge and skills. The test may consist of a series of open-ended questions or multiple-choice questions about the theoretical contents of the module and/or practical exercises (problem-solving).
R1, R4, R7, R11, R12	15,00%	Evaluation of the practical laboratory work, which must demonstrate the competences acquired by the student and his or her ability to use them to solve the different situations and problems that arise in a laboratory; this assessment may consist of one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experience, the delivery of an individual or group report on the work carried out in the laboratory.
R1, R3, R5, R6, R8, R10, R11, R12	10,00%	Evaluation of practical work in a clinic through which the student must demonstrate the competences acquired and the ability to use them to solve the different situations and problems that arise in a clinic; this assessment may involve one of the following methods, or a combination of several of them: a written individual test, the individual or group performance of a clinical experience, the delivery of an individual or group report on the work carried out in the laboratory.
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12	15,00%	Evaluation of group work through a system of continuous assessment throughout the course based on the delivery of assignments the objectives and content of which will be proposed by the teacher.

R1, R2, R4, R5, R6, R7, R8, R10, R11, R12	20,00%	Evaluation of activities in which the student must do some research individually and structure information related to each of the topics through a system of continuous assessment throughout the course based on the delivery of papers, the objectives and contents of which will be proposed by the teacher.

Observations

Tests or assessment tests will be conducted in Spanish. Therefore, orthographic, morphological, syntactic and semantic of the language according to the criteria of the Real Academia Española (RAE) standards must be respected. Failure to comply with these rules will result in the teacher consider the misspelled as written in Spanish language and therefore not evaluable. Occasionally or circumstantially, they may be used words in the English language to express scientific and technical concepts.The written evaluation can consist of a series of short questions and/or test of the theoretical and/or practical exercises of the course and will consist of two parts. The correct answer to each question involves correctly answering the statement in its entirety.For the final qualification the performance of individual evaluation activities scheduled will be assessed. To pass the course is necessary to obtain at least a score equal to or greater than 5.0 points in each of the sections of assessment tools. If a final mark of 5 points in each section is not achieved and approved only one of them, the approved sections will be saved until the second call of the current course, in which students must approve the full course.After the publication of the notes, the student will have timetables published on the platform, to review its test, unless specifically instructed otherwise by the faculty.For those students who, for different reasons, do not attend the evaluation of some of the parties on the date of the call or who request an anticipated convocation, the evaluations will be carried out by means of an oral examination.Criteria for granting the license plate of Honor: For the teacher may be granted an honors degree for every 20 students (not fraction of 20, except for the first 20 students).Only be awarded honors in first or second call of the first year of enrollment of students in the subject.The Professor may grant honors to one of the students who have earned an honor degree in the course.

MENTION OF DISTINCTION:
According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 (“Sobresaliente”). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1 On-site training activity aimed primarily at acquiring knowledge acquisition skills. It is characterised by the fact that students are spoken to. Also called master class or exposition, it refers to the oral presentation made by the teacher, (with the support of blackboard, a computer and a projector for the display of texts, graphs, etc.), in front of a group of students. They are expository, explanatory or demonstrative sessions of contents. The size of the group is determined by the limit or physical capacity of the classroom; therefore, it is a single group.

M2 On-site training activity aimed primarily at obtaining knowledge application and research skills. Knowledge is built through interaction and activities. The activity consists of supervised monographic sessions with shared participation (teachers, students, experts). The size of the group is variable, from one large group to various small groups, with a minimum of 6 students to ensure interaction. The evaluation will be based on follow-up records kept by the teacher. Participation and the development of the capacity to problematize should be taken into account.

M3 On-site group-work training activity oriented toward problem solving under the supervision of a teacher. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students, to differentiate it from a master class.

M4 On-site training activity in groups that takes place in the classroom. It includes working with documents and formulating ideas without handling animals, organs, objects, products, or corpses (e.g., work with articles or documents, clinical case studies, diagnostic analyses, etc.). It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

M5 On-site training activity in groups that takes place in the Computer Lab where the computer is used as support for learning. It includes work with computer models, specific software, Web queries, etc. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

M6 On-site training activity in groups carried out in the laboratory. It includes the sessions where the students develop laboratory experiments, make dissections or use the microscopes for the study of histological or histopathological samples actively and autonomously, under the supervision of the professor. It also includes work with healthy animals, objects, products, corpses (e.g., animal handling, bacteriological practices, physiology or biochemistry, meat inspection, etc.). It would correspond to the "Supervised practical non-clinical animal work" type e2 of the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

M7 On-site training activity that is defined as the clinical practical work developed in the Veterinary Clinical Hospital or clinical centres ascribed to the University, as well as itinerant clinical practices, mainly with ruminants, equids, pigs, birds and aquatic animals. Also included are necropsies, surgical workshops and training in clinical examination techniques or diagnosis with healthy patients. In these practical sessions the student will always work with animals, which can be healthy (e.g. propaedeutic or obstetrics) or clinical cases (individual or collective), including a protocol or work scheme, being supervised by a teacher and assuming the provision of a service. This type of training corresponds to type e3 of the EAEVE European evaluation called "Clinical Training" (strickly hands-on)". The size of the group will be 5 students or fewer.

M8 A set of on-site training activities carried out by the teacher to provide personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, carrying out projects, etc. The aim is to ensure a truly comprehensive education of the student rather than a mere transfer of information. It is, therefore, a personalized assistance relationship in which the tutor assists, facilitates and guides one or more students in the learning process.

M9 Set of processes that attempt to evaluate the learning outcomes of students expressed in terms of acquired knowledge, capacities, skills or abilities developed and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments). It also includes the Official Calls.

M10 Autonomous training activity, including activities and coursework, bibliographic searches. The results obtained from unsupervised group and teamwork will be evaluated, with particular attention paid at the time of evaluation to the acquisition of specific knowledge development skills through group work.

M11 Autonomous training activities related to personal study, or the preparation of individual course assignments. The individual preparation of readings, essays, problem solving, papers, reports, etc. will be evaluated through presentations or submissions during theoretical classes, practical classes, seminars and/or tutorials. The evaluation of the submitted papers will consider the structure of the paper, the quality of the documentation, originality, spelling and presentation.

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons (TL) M1	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12	58,00	2,32
Problem-solving Practice (PSP) M3	R1, R5, R6, R11, R12	2,00	0,08
In-Classroom Practice (ICP) M4	R1, R2, R3, R4, R5, R6, R8, R9, R11	7,00	0,28
Computer Practice (CoP) M5	R1, R2, R5	1,00	0,04
Laboratory Practice (LP) M6	R1, R2, R3, R4, R5, R7, R8, R9, R11, R12	9,00	0,36
Clinical Practice (CP) M7	R1, R2, R3, R4, R5, R6, R8, R10, R11, R12	9,00	0,36
Tutorial M8	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12	2,00	0,08
Evaluation (Ev) M9	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12	2,00	0,08
TOTAL		**90,00**	**3,60**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M10	R1, R2, R3, R4, R5, R6, R8, R9, R11, R12	25,00	1,00
Individual work M11	R1, R2, R4, R5, R6, R7, R8, R10, R11, R12	35,00	1,40
TOTAL		**60,00**	**2,40**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
DU1.- Physiological Basis of Reproduction.	ITEM 1. Endocrinology of reproduction. Hypothalamic hormones, pituitary hormones, steroid hormones, prostaglandins, relaxin, inhibin, activin, growth factors and melatonin. Chemical structure, biosynthesis, mechanism of action, biological activity, metabolism, and clinical applications. ITEM 2. Ovarian physiology. Gametogenesis in the female: folliculogenesis and oogenesis. Puberty. Ovulation. Corpus luteum: establishment, development and regression. Hormonal regulation of the estrous cycle. ITEM 3: Physiology of the testis. Spermatogenesis: general characteristics and neuroendocrine control. Characteristics of the ejaculate. Spermatozoa: structure and chemical composition. Seminal plasma: origin, chemical composition and biological properties. Physiological basis of ejaculation and copulation.
DU2.- Pregnancy and Parturition.	ITEM 1: Sperm capacitation and acrosome reaction. Fertilization. Abnormalities of fertilization. Embryonic development and transport. Uterine attachment. Physiological basis of pregnancy. Maternal recognition of pregnancy. Endocrine modifications. ITEM 2: Physiological basis of parturition: fetal and maternal mechanisms, endocrine control. Calving: prodromes and partum stages. Parturition induction methods used in the different domestic species. ITEM 3: Physiological basis of the puerperium: uterine involution. Physiology of the mammary gland. Neuroendocrine reflex of milk ejection.

DU3.- Technology of Reproduction.	ITEM 1: Hormonal and non-hormonal control of female sexual activity. Induction of puberty. Control of estrus and ovulation: general principles. Advantages and disadvantages. Hormonal and non-hormonal control of male sexual function. ITEM 2: Semen collection and processing. Semen evaluation: basic procedures, advanced and new techniques. Basis of sperm preservation. Current methods of sperm conservation. Characteristics and composition of the diluents. Methods of sperm selection. ITEM 3: Artificial insemination. Optimal time of insemination: estrus detection. Artificial insemination methods. Insemination in the mare, cow, sheep, pig and small animals. ITEM 4: Embryo handling and transfer. Criteria for selection of donors and recipients. Estrus synchronization and superovulation. Embryo collection and valuation. Embryo transfer in different animal species. Embryo conservation. ITEM 5: In vitro Fertilization. Oocytes collection. Preparation of sperm and oocytes, gamete co-culture. Valuation methods. Intracytoplasmic sperm injection (ICSI). In vitro culture of embryos. Culture media. Assessment methods. ITEM 6: Pregnancy diagnosis. Different methods of pregnancy control. Clinical and ultrasound diagnosis. Effectiveness of different systems. Accuracy of pregnancy tests: sensitivity and specificity.

DU4.- Pathology of Reproduction.	ITEM 1: Infertility and sterility in the female. Congenital causes. Influence of nutrition. Vaginal, vulvar, cervical and uterine alterations that cause infertility. ITEM 2: Neuroendocrine and ovarian abnormalities causing infertility in the female. Noninfectious causes: Reproductive abnormal conformation. Endometritis, pyometra and mucometra. Endometrial cysts. ITEM 3: Infertility and sterility in the male. Neuroendocrine and testicular disorders that cause infertility. Disorders of the penis and foreskin, scrotum, spermatic cord, epididymis and accessory glands. Alterations in copulation, ejaculation and semen quality. ITEM 4: Pathology of pregnancy. Ectopic pregnancy and multiple, abnormal duration. Embryonic resorption. Disorders of pregnancy of maternal origin: dropsies, uterine rupture and hernia, vaginal prolapse, presence of abnormal flows. Disorders of pregnancy from embryonic or fetal origin: fetal death, fetal mummification and maceration. Abortion. ITEM 5: Pathology of parturition. Monitoring and induction of calving. Dystocia: concept, predisposing factors, classification and general treatment of dystocia from maternal and fetal origin. Consecutive accidents to calving: bleeding, bruising, necrotizing vaginitis, traumatic injuries and postpartum paraplegia. ITEM 6: Pathology of the puerperium. Retained placenta, ketosis, mastitis and puerperal infections. Alterations of the mammary gland. Diseases of the newborn.

Organization of the practical activities:

	Content	Place	Hours
PR1.	Collection techniques and analysis of seminal quality. Conservation of semen in various domestic species.	Farm	3,00
PR2.	Interpretation of ultrasound images of the reproductive device.	Farm	3,00
PR3.	Cytological study of the female's vaginal epithelium.	Farm	3,00
PR4.	Reproductive management, heat synchronization protocols and artificial insemination techniques.	Farm	3,00
PR5.	Diagnosis pregnancy	Farm	3,00
PR6.	Obstetric procedures and resolution of dystocia	Farm	3,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
DU1.- Physiological Basis of Reproduction.	10,00	20,00
DU2.- Pregnancy and Parturition.	10,00	20,00
DU3.- Technology of Reproduction.	12,00	24,00
DU4.- Pathology of Reproduction.	13,00	26,00

References

C. Dumon, 2009. Patología de la Reproducción en la Especie Canina. Ed. Inter-Médica.England, G., Heimendahl, A.V. BSAVA. 2010. Manual of Canine and Feline Reproduction and Neonatology. British Small Animal Veterinary Association; 2nd revised edition.Feldman, E.C.; Nelson, R.W. 2007.Endocrinología y reproducción canina y felina. Ed. Inter-Médica.Gary England, 2005. Fertility and Obstetrics in the Horse. 3ª edición. Editorial Blackwell Publishing. Gustavo A. Palma. 2009. Biotecnología de la reproducción. Ed. Agro-Veterinaria.Richard M. Hopper. 2014. Bovine Reproduction. Wiley-Blackwell.Marthina L. Greer. 2014. Canine Reproduction and Neonatology. Tenton NewMedia.Jackson, 2004. Handbook of Veterinary Obstetrics. 2nd edition. Editorial Saunders.Margaret Root Kustritz, 2012. Reproducción clínica de caninos y felinos. Ed. Inter-Médica.McKinnon, Squires, Vaala y Varner, 2011. Equine Reproduction, 2nd Edition. Wiley-Blackwell.Mooney, C.T., Peterson, M. BSAVA. 2004. Manual of Canine and Feline Endocrinology. British Small Animal Veterinary Association; 3rd revised edition.

Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

[X] Microsoft Teams

[ ] Kaltura

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

X	Microsoft Teams
	Kaltura

Explanation about the practical sessions:

The practices of the course developed in the Veterinary Farm will be carried out by the Teams platform, using the didactic material that the Professor may consider.

2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

[X] The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

[ ] The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System: