

28405 - Embryology and Anatomy I

Información del Plan Docente

Academic Year	2016/17
Academic center	105 - Facultad de Veterinaria
Degree	451 - Degree in Veterinary Science
ECTS	7.0
Course	1
Period	First semester
Subject Type	Basic Education
Module	---

1. Basic info

1.1. Recommendations to take this course

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

The teaching methodology is structured in three levels: theoretical classes where student participation is encouraged; also lab sessions and practical works/tasks development based on lab sessions are proposed.

5.2. Learning activities

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There will be the following activities:

5.2.1. Theoretical classes (50%): 35 hours. The main course contents are presented.

5.2.2. Practical classes with the active involvement of the student (31.5 hours). Different lab sessions are carried out.

Notes for each lab session where the different activities are planned will be available before the session

5.2.3. Tutored Work Practices Preparation (5 %): 3.5 hours including instruction issue specific dissecting awarded, performing / exhibition with colleagues

5.2.4. Virtual Course Information Management in the Degree of Veterinary Medicine.

5.2.5. Tutorship. Students may solve any questions they might have about unclear contents of the course

5.2.6. Evaluation: Set of theoretical and practical work and delivery of written works.

5.3.Program

Theoretical classes

Session

TITLE

1

Introduction. Concept, Purpose and content of the Veterinary Anatomy. Division of Anatomy Study Techniques. Organs and systems.

General Embriology. Concept, purpose and content of the Veterinary Embryology. Stages of prenatal development: germinal,

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embryonic and foetal periods

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2

Gametogenesis. General concepts.
Spermatogenesis: phases, Multiplication, maturation, transformation and release of sperm. Comparative morphology of sperm and abnormal forms. Oogenesis: phases. Types of eggs. Egg birds

3

Fertilization. Main events and consequences of fertilization. Polyspermy. Parthenogenesis. Fertilization in birds. Segmentation, morulation and blastulation in mammals and birds. Hatching of the blastocyst

4

Gastrulation in mammals and birds. Embryonic or organogenetic period. Derivatives of the germ layers: ectoblast, mesoblast and endoblast. Neurulation and training of sketches or primary organs. Appearance of body shape

5

Introduction to the development and establishment of the Central and Peripheral Nervous Systems

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6

Cardiovascular system. Development of heart and vascular system. Description of the fetal circulation and changes that occur at birth. Congenital malformations

7

Splanchnology. General concepts. Anterior, middle and posterior intestine. Derivatives of the pharynx: pharyngeal pouches. Gill slits

8

Visceral arches. Language development

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	and thyroid gland. Development and training of the lungs and pleura. Congenital malformations
9	Respiratory System. Development of the skull and face. Palate development and training of oral and nasal cavities. Congenital malformations
10	Concepts and mechanisms of development: differentiation, growth, cell migration, morphogenic movements, cellular adhesiveness and affinity. Cell death.
11	Control and genetic regulation of embryonic development. Transgenesis. <i>In vitro</i> fertilization. Embryo transfer. Handling blastocyst. Cloning
12	Nidation or implantation. Embryonic appendages: yolk sac, amnion, allantois and chorion. Embryonic and extraembryonic circulation
13	Placentation. Anatomical and histological classification of placentas. Umbilical cord and chorionic sac. Evolution and characteristics of the chorionic sac in the different domestic species
14	Locomotor System. Definition and parts. Phylogeny and ontogeny. Osteology: osteogenesis and their types. Bone structural organization. Bone biomechanics.

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- 15 Arthrology: artrogénesis. Types of joints and elements that constitute them. Ligaments. Joint biomechanics.
- 16 Miology: myogenesis. Muscles: types and classification. Structural organization of striated skeletal muscle. Auxiliary locomotor structures
- 17 Axil region. Embryonic development. Deformities and congenital anomalies. Regionalization and vertebral formula. Joints of the spine. Biomechanics and joint study: comparative anatomy.
- 18 Autochthonous muscles of the spine: classification. Muscles of the medial and lateral tracts: a comparative study. Tail muscles. Ventral neck muscles: classification and comparative study. Neck fascias
- 19 Thorax: comparative study. Joints and muscles: classification and biomechanics. Diaphragm muscle: development, description and comparative study
- 20 Abdominal muscles: development and classification. Linea alba, prepubic tendon and inguinal ligament. Inguinal canal. Comparative study.
- 21 Composition of a spinal nerve. Regional differences between the spinal nerves. Sensory and motor innervation of the neck, trunk and tail.
- 22 Vascularization of the neck, trunk and tail. Large vessels: aorta, vena cava and parietal branches. Azygos vein and its

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- branches. Lymphatic system ontogeny. Lymph nodes and lymphatic vessels of the axial region: thoracic duct and chyle cistern
- 23 Forelimb. Phylogeny and ontogeny of members: congenital anomalies
- 24 Scapular fixator muscles: classification. Situation, relationships and movements of the scapula. Shoulder joint: articular surfaces, ligaments and movements. Motor muscles of the humerus: classification and comparative study
- 25 Elbow joint: articular surfaces, ligaments and movements. Elbow motor muscles: functional classification and comparative study. Carpal joints and phalanges: comparative study of the articular surfaces, ligaments and movements
- 26 Forearm muscles: functional classification and comparative study. Hand muscles: functional classification and comparative study
- 27 Innervation of the forelimb: comparative study of the brachial plexus and its collateral and terminal branches
- 28 Arterial, venous and lymphatic vascularization of the thoracic limb: a comparative study. Fascias and forelimb subcutaneous synovial comparative study
- 29 Elastic and corneal structures of the extremities. Fingernail, ungula and hoof. The hoof of ruminants and swine. The hoof of equines: morphology and functional organization

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30	Hindlimb. General concepts. Pelvic girdle: a comparative study. Hip joint: articular surfaces ligaments and movements. Femur skeletal muscles: classification
31	Femur motor muscles: Comparative study
32	Knee and proximal tibiofibular joints: articular surfaces, ligaments and movements. Motor muscles of the knee joint: classification and comparative study
33	Comparative study of foot joints: articular surfaces, ligaments and movements. Leg and foot muscles
34	Innervation of the hindlimb: comparative study of the lumbosacral plexus and its collateral and terminal branches
35	Arterial, venous and lymphatic vascularization of the hindlimb: comparative study.
	Fascias and synovial of the hindlimb: comparative study­

Practical classes

PRACTICA NUMBER	TITLE
1	Anatomical planes. Nomenclature. Types of bones and basic structure. Spine

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vertebra type. Vertebral formula

2

Cervical vertebrae: a comparative study.
Nuchal skull face. Hyoid. Radiographs of
the neck

3

Thoracic vertebrae. Ribs and sternum.
Lumbar, sacrum and caudal vertebrae.
Introduction to the pelvis. Radiographs of
the chest, abdomen and pelvis

4

Scapula and humerus. Comparative study.
Radiographs of back and arm

5

Radius, Ulna, Carpus and Metacarpus.
Radiographic study

6

Phalanges. Helmet and hoofs. Anatomical
and Radiographic study

7

Innominate bone, femur and patella.
Recognition of details and lateral
radiographs

8

Tibia, fibula and tarsus. Recognition of
details and radiographs

9

Surface Anatomy and Body Regions. Skin
lifting of the neck, back, arm, thorax and
abdomen region. Recognition of surface
structures: superficial fascia.

10

Dissection of the lateral aspect of the neck:
superficial, medium and deep planes.

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- 11 Dissection of the ventral aspect of the neck: superficial and deep planes. Visceral cavity of the neck: limits, content and deep fascia of the neck.
- 12 Lateral planes of the thorax and abdomen I (disinsertion of the latissimus dorsi and trapezius). Epiaxial muscles of the spine. Intercostal muscles
- 13 Lateral planes of the thorax and abdomen II (disinsertion of the external and internal oblique muscles of the abdomen). Surface plane of the back and arm. Superficial dissection of pectoral muscles
- 14 Dissection of the lateral aspect of back, shoulder and arm. Pectoral muscles
- 15 Dissection of the armpit: arm brachial plexus and arterial and venous branches
- 16 Dissection of the dorsal aspect of the forearm and hand
- 17 Dissection of the caudal aspect of the forearm and hand
- 18 Dissection of the rump and hip. Recognition of the important details for surgery in the region
- 19 Dissection of the lateral and medial thigh. Recognition of the important details for surgery in the region
- 20 Dissection of the knee and lateral leg. Recognition of the important details for surgery in the region

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Dissection of the caudal aspect of the leg and foot. Recognition of the important details for surgery in the region

5.4.Planning and scheduling

The course calendar is defined by the Veterinary faculty calendar.

5.5.Bibliography and recommended resources

<http://psfunizar7.unizar.es/br13/eBuscar.php?tipo=a>