UNIVERSITY of NICOSIA

Year 2

Course Title	**Comparative Anatomy**				
Course Code	**VET-202**				
Course Type	Required				
Level	Undergraduate				
Year / Semester	Year 2/ Semester 1 (Fall)				
Teacher's Name	**Course Lead:** Dr Sergi Olvera-Maneu				
ECTS	6	Lectures / week	3	Laboratories / week	1 (2.5h)
Course Purpose and Objectives	The main objectives of the course are: • To teach the students the variations in form and function between selected mammalian and avian species. • To explain the specific differences between similar organ systems in various species. • To teach the students to compare and contrast the normal structure and disposition of major organs and systems of various species including mammals and birds. • To teach the students to relate the structure and function of these animals to their lifestyles and environments. • To teach the students to be able to communicate, both orally and in writing, in the specialized language of anatomy and physiology.				
Learning Outcomes	The following list provides the learning objectives that will be covered in the lectures, lab practical sessions and tutorials of each week: Week 1 **LOBs covered during lectures:** **Block A – L1, L2, L3: Comparative Anatomy of the Digestive system of domestic animals** **The head & the skull** 1. Describe the differences in the skulls of a dog, a horse and a cow and pig **The masticatory apparatus** 2. Name the 4 types of teeth 3. Describe the dental formulas of the dog, cat, cow horse and pig				

4. Describe the differences between carnivore's jaw an herbivore's jaw and an omnivore's jaw.

Oral cavity

The lips

5. Describe the anatomy of the lips in domestic species.

The tongue

6. Describe the anatomy of the tongue and lingual papillae in domestic species.

The salivary glands

7. Describe the anatomy of the salivary glands in domestic species.

LOBs covered during practicals:

Block A – P1: Skull bones, teeth, and jaws

1. Identify the skull of a dog, a cat, a horse, and a cow, compare to each other and identify the following bones: Maxilla, frontal and frontal sinus, parietal, occipital, temporal, nasal, lacrimal, zygomatic arch, mandible.

2. Observe and check the dental formula of the cow, horse, dog, cat, and pig.

3. Identify the differences between the different types of teeth.

4. Identify the main skull foramens in the horse skull.

Week 2

LOBs covered during lectures:

Block A – L4, L5, L6: Comparative Anatomy of the Digestive system of domestic animals

The stomach

The horse's stomach.

8. Describe the stomach of the horse, note its relatively small size

The pig's stomach.

9. Describe the anatomy of the pig stomach.

The ruminant's stomach.

10. Describe the anatomy of the ruminant stomach.

	11. Explain why digestion process in ruminants is called anterior fermentation 12. Describe locations of the different compartments of the stomach **LOBs covered during practicals:** **Block A – P2: Simple stomach (pig and horse) and complex stomach (ruminants)** 5. Identify the 4 compartments of the ruminant stomach and study the exterior and interior features of each part. 6. On the exterior of the rumen, identity the dorsal, ventral, cranial, caudodorsal, and caudoventral blind sacs 7. Identify the abomasum and its various regions (fundus, body, and pyloric region). 8. Identify the parietal and visceral surfaces. 9. Identify how he interior of the abomasum has permanent spiral folds. 10. Identify the parts of the simple stomach of the horse and pig. Week 3 **LOBs covered during lectures:** **Block A – L7, L8, L9: Comparative Anatomy of the Digestive system of domestic animals** **The small intestine** ***The horse's SI*** 13. Describe the structure of the small intestine of the horse ***The ruminant's SI*** 14. Describe the structure and location of the small intestine **The large intestine** ***The horse's LI*** 15. Describe the structure of the large intestine of the horse 16. Explain why the digestion process in a posterior fermentation 17. Describe the cecum, its form and location 18. Describe the colon and its 4 parts

The pig's LI

19. Describe the structure of the large intestine of the pig

20. Discuss how the ascending colon is like that of the ruminants, with three exceptions: There is no proximal loop, the spiral loop is very different, and most of the segments of the large intestine have sacculations and bands like those in the horse

21. Discuss that the biggest difference is that the spiral loop is not nearly as symmetrically coiled as in the ruminants

The ruminant's LI

22. Describe the structure of the large intestine of ruminants

23. Discuss how, in all ruminants, large and small alike, the large intestine is smooth; neither sacculation nor bands are present**.**

LOBs covered during practicals:

Block A – P3: Small and large intestine (pig, horse, and ruminants).

11. Identify the cecum of the horse, cow and pig.

12. Identify the great colon of the horse and its 4 parts.

13. Identify the structures and parts of the small intestine of the horse, cow, and pig. Note the main differences.

Week 4

LOBs covered during lectures:

Block A L10, L11, L12: Comparative Anatomy of the Digestive system of domestic animals

The spleen

24. Describe de differential anatomy of the domestic animals' spleen.

The Glands associated with the alimentary canal (liver, gallbladder, and pancreas)

25. Describe the anatomy of the liver, gallbladder, and pancreas of ruminants.

26. Describe the anatomy of the liver and pancreas of horses.

27. Describe the anatomy of the liver, gallbladder, and pancreas of pigs.

LOBs covered during practicals:

	Block A – P4: The liver and consolidation of the digestive system. 14. Describe and identify the main differences between domestic species of the liver. 15. Describe and identify the lobules of the liver. 16. Describe the anatomy of the gallbladder of the pig and the cow. Week 5 **LOBs covered during lectures:** **Block B – L13, L14, L15: Osteology, myology, arthrology, and angiology of the horse** 28. Describe the superficial muscles of the shoulder and the neck of a horse. 29. Describe the deep muscled of the shoulder and the neck of the horse. 30. Name and identify the bones of the foreleg of a horse. 31. Describe the joints in the foreleg. **LOBs covered during practicals:** **Block B – P5: Bones and joints of the horse forelimb.** 17. Identify the bones listed below in a horse front leg: scapula, humerus, fused radius and ulna, carpal bones, metacarpal bone, splint bones and proximal sesamoid bones 18. Identify the joints of the horse's front leg. Week 6 **LOBs covered during lectures:** **Block B – L16, L17, L18: Osteology, myology, arthrology, and angiology of the horse** 32. Describe and identify the muscles of the front leg of a horse. 33. Describe the major blood vessels of the horse forelimb. 34. Explain the differences in the foreleg of a dog, horse, cow, and pig. **LOBs covered during practicals:**

Block B – P6: Muscles, vessels, and nerves of the horse forelimb.

19. Identify the muscles of the front leg of a horse
20. Identify the major vessels of the horse front limb.

Week 7

LOBs covered during lectures:

Block B – L19, L20, L21: Osteology, myology, arthrology, and angiology of the horse

35. Name and identify the bones of the hindlimb of a horse.
36. Describe the joints in the hindlimb.
37. Describe and identify the muscles of the hind leg of the horse.

LOBs covered during practicals:

Block B – P7: Bones and joints of the horse hind limb.

21. Identify the bones listed below in a horse hind leg: Pelvis, femur, patella, fibula and tibia, metatarsal proximal sesamoid bones and phalanx.
22. Identify the joints of the hindlimb.

Week 8

LOBs covered during lectures:

Block B – L22, L23, L24: Osteology, myology, arthrology, and angiology of the horse

38. Describe the major blood vessels of the horse hindlimb.
39. Describe the foot of a horse, name all its components.
40. Explain why the hoof is constructed of thousands of small tubules of horny material.
41. Describe the frog and its function.
42. Explain what the stratum Internum of the horse's foot is, and how it relates to the "white line".
43. Discuss what allows the horse to sleep standing up.

LOBs covered during practicals:

Block B – P8: Muscles, vessels, and nerves of the horse hind limb.

23. Identify the muscles of the hind leg of a horse

24. Identify the major vessels of the horse hindlimb.

Week 9

LOBs covered during lectures:

Block C L25, L26, L27: Comparative Anatomy of the Urogenital system of domestic animals

The urinary system

The kidneys

Discuss the variation in structure and complexity of the kidneys in different animals - monolobed, as in the pig, dog, cat, sheep, and horse, or multilobed, as in the cow and poultry.

The ureters

Describe the anatomy of the ureters of the horse, cow, pig

The urinary bladder

Describe the anatomy of the urinary bladder of the horse, cow, pig.

The urethra

Describe the anatomy of the urethra of the horse, cow, pig.

The adrenal glands

Describe the anatomy of the HPA system of the horse, cow, pig dog and cat.

Discuss the differences in the anatomy of the adrenal glands of the horse, cow, pig, dog, and cat.

LOBs covered during practicals:

Block B – P9: Consolidation of the musculoskeletal system of the horse.

Week 10

LOBs covered during lectures:

Block C L28, L29, L30: Comparative Anatomy of the Urogenital system of domestic animals

The male and female reproductive system

	37. Discuss the different shapes and types of uteri of the mare, cow, sow, dog, bitch, and queen, rabbit, and primate 39. Compare the male reproductive systems in the stallion, boar, bull, ram, dog, and cat **LOBs covered during practicals:** **Block C – P10: Urogenital system.** Identify the kidneys and its parts of various species. Identify the uterus and ovaries and its parts of various species. Identify the penis and testicles and its parts of various species. Week 11 **LOBs covered during lectures:** **Block D – L31, L32, L33: Avian anatomy** 40. Describe the skeleton of a chicken 41. Discuss the major differences from mammal's skeleton – fusion or elimination of bones 42. Discuss the differences in the skulls of chicken, duck, and birds 43. Describe the pneumatization of the skull 44. Describe the S shaped cervical region of the vertebral column of an adult chicken 45. Describe the gross anatomy of avian long bone 46. Describe the feet of an adult chicken 47. Discuss the differences in feet of various avian species. **LOBs covered during practicals:** **Block D – P11: Bird anatomy.** "71. Identify the skeleton of a chicken 72. Identify the muscles of a chicken 73. Identify the air sacks 74. Identify the major blood vessels in birds" Week 12

	LOBs covered during lectures: **Block D L34, L35, L36: Avian anatomy** 48. Describe the digestive track of a chicken 49. Explain the function of the crop 50. Discuss the cloaca and the difference form mammals 51. Describe the urogenital track of birds 52. Describe the lungs of birds 53. Describe the form, position, and function of the air sacks, describe how they communicate with the pneumatic bones 54. Explain how many respiratory cycles in the bird are required to move one pocket of air through the lungs, and why 55. Describe the major blood vessels in birds **LOBs covered during practicals:** **Block CD – P12: Consolidation of Bird anatomy & Urogenital system**		
Prerequisites	None	Required	None
Course Content	**Lecture Topics:** • GI tract of ruminants • GI tract of a horse • GI tract of a pig • The skeletal system and locomotor apparat of the horse • The muscular system of the horse • Avian anatomy		
Teaching Methodology	Lecture-based learning and laboratory practical sessions		
Bibliography	1. Veterinary Anatomy & Physiology 2. Guide to Ruminant anatomy 3. Color atlas of veterinary anatomy The Horse 4. A Color atlas of avian anatomy		
Assessment	Theory exam 60%; Practical exam 30%; Participation 10%.		
Language	English		