

Course Title	<b>Anatomy I</b>				
Course Code	<b>VET-104</b>				
Course Type	Required				
Level	Undergraduate				
Year / Semester	Year 1/ Semester 1 (Fall)				
Teacher's Name	<b>Course Lead:</b> Dr Kyriakos Spanoudes <b>Contributors:</b> Dr Nicolas Perentos				
ECTS	6	Lectures / week	3	Laboratories/ week	2
Course Purpose and Objectives	<p>The main objectives of the course are:</p> <ul style="list-style-type: none"> <li>• Teaching the student the form and structure of the mammalian body and its parts</li> <li>• Introducing the student to the anatomical terminology</li> <li>• To help the student localize identify and properly name and describe the various tissues and organs in the canine body</li> </ul>				

<p>Learning Outcomes</p>	<p>The following list provides the learning objectives (LOBs) that will be covered in the lectures and lab practical of each week:</p> <p>Week 1</p> <p>LOBs covered during lectures:</p> <ol style="list-style-type: none"> <li>1. Introduction to anatomy.</li> <li>2. Learn and apply the anatomic nomenclature – anatomical parts &amp; regions.</li> <li>3. Learn and apply the anatomic nomenclature – positional &amp; directional terminology.</li> <li>4. Describe the basic tissues.</li> <li>5. Describe the basic structural anatomy and body cavities.</li> <li>6. name and describe the skeletal and muscular systems.</li> <li>7. Describe the general function of the skeleton and joints.</li> </ol> <p>LOBs covered during Practical:</p> <p>Introduction to anatomy</p> <ol style="list-style-type: none"> <li>8. Learn and apply the anatomic nomenclature – anatomical parts &amp; regions.</li> <li>9. Learn and apply the anatomic nomenclature – positional &amp; directional terminology.</li> </ol> <p>Week 2</p> <p>LOBs covered during lectures:</p> <ol style="list-style-type: none"> <li>10. Describe the anatomy of bones of the head</li> <li>11. Identify the salient features of the skull and hyoid apparatus</li> <li>12. Identify all the foramina, canals and sinuses of the skull.</li> <li>13. Explain, in broad terms, the differences in skull conformation according to breed.</li> <li>14. Describe all the muscles of the head and the cartilages of the larynx</li> <li>15. Describe the various parts and components of the laryngeal cartilages.</li> <li>16. Describe the origin, insertion and spatial relationships of each muscle</li> <li>17. Explain the function of each muscle</li> <li>18. Describe the innervation of each muscle</li> <li>19. Describe the intermandibular and temporomandibular joints</li> <li>20. Describe the various compartments of the head and their contents.</li> <li>21. Describe the paranasal sinuses</li> <li>22. Describe the innervation of the head.</li> <li>23. Describe the functional classification (i.e. GSA, SSA, GVA, SVA, GSE, SVE and GVE) of the nerves innervating the head.</li> <li>24. Describe the arterial supply to the head, brain and spinal cord</li> <li>25. Describe the venous and lymphatic drainage of the head brain and spinal cord</li> <li>26. Identify the salient features of the skull and hyoid apparatus on radiographs.</li> <li>27. Identify the salient features of the intermandibular and temporomandibular joints on radiographs. Identify the basic features of the viscera of the head on radiographs</li> <li>28. Describe, the factors causing and contributing to otitis media, Name the nerves at risk in a case of otitis media.</li> </ol>
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29. Explain the commonest causes of facial nerve paralysis.  
LOBs covered during Practical:
30. Identify all the bones of the head and distinguish between left and right bones.
31. Identify the salient features of the skull and hyoid apparatus.
32. Identify all the foramina, canals and sinuses of the skull.
33. On a living animal (outside the lab) palpate the bony prominences in the skull.
34. Identify all the muscles of the head and the cartilages of the larynx on a dissected specimen. Identify the various parts and components of each muscle.
35. Identify the various parts and components of the laryngeal cartilages.
36. Plot the origin, insertion and course of each muscle on a skeleton.
37. Plot the origin, insertion and course of the laryngeal muscles on a larynx.
38. On a living animal (outside the lab), palpate the superficial muscles of the head.
39. On a living animal (outside the lab), palpate the larynx
40. Identify the intermandibular and temporomandibular joints on a dissected specimen.
41. Identify the capsule, ligaments and articular disc of the temporomandibular joint on a dissected specimen.
42. Describe the attachments and compartments of the temporomandibular joint's capsule and
43. Plot the attachments of each ligament on a skeleton.
44. Palpate the temporomandibular joint and indicate its extent on a living animal (outside the lab).
45. Identify all the viscera of the head on dissected and loose specimens.
46. Plot the position and extent of the viscera on a skeleton and a dissected specimen.
47. On a living animal (outside the lab), palpate the viscera listed.
48. Identify the nerves of the head on a dissected specimen.
49. Plot the course of each nerve on a skeleton and on a dissected specimen.
50. Identify the arteries, veins and lymph nodes of the head on a dissected specimen.
51. Identify the arteries and veins/dural sinuses/venous plexuses of the brain and spinal cord on a dissected specimen
52. Plot the courses of the arteries and veins/dural sinuses/venous plexuses, and the positions of the lymph nodes on a skeleton and on a dissected specimen.
53. On a living animal (outside the lab), palpate the blood vessels and lymph nodes listed in this section.

## Week 3

LOBs covered during lectures:

54. Describe all the series of vertebrae (i.e., cervical, thoracic, lumbar, sacral and caudal).
55. Describe the muscles of the trunk.
56. Describe the occipito-altanto, altanto-axial, intervertebral and costovertebral joints
57. Explain the function of the intervertebral disks

58. Describe all the viscera of the neck.
59. Describe the arterial supply and the venous and lymphatic drainage of the neck.
60. Describe the innervation of the neck

LOBs covered during Practical:

61. Identify all the series of vertebrae (i.e. cervical, thoracic, lumbar, sacral and caudal).
62. On a living animal (outside the lab), palpate
63. the bony prominences of: C1, C2, C3, C4/C5, C6, C7, T1, T-cranial, T-caudal, lumbar and sacrum.
64. Identify all the muscles of the trunk on a dissected specimen.
65. Plot the origin, insertion and course of each muscle on a skeleton.
66. Identify the occipito-axial, axial, intervertebral and costovertebral joints on a dissected specimen.
67. Identify all the viscera of the neck on dissected and loose specimens.
68. Identify the arteries, veins and lymph nodes of the neck on a dissected specimen.
69. On a living animal (outside the lab), palpate the V. jugularis externa.
70. Identify the nerves of the neck on a dissected specimen.
71. On a living animal (outside the lab), palpate the V. jugularis externa.
72. Identify the nerves of the neck on a dissected specimen.
73. Plot the course of each nerve on a skeleton and on a dissected specimen.

Week 4

LOBs covered during lectures:

74. Describe the chest and the thoracic vertebrae.
75. Describe the ribs and Identify and distinguish between ribs from the cranial, middle and caudal parts of the thorax.
76. Describe the muscles of the chest
77. Describe the intervertebral and costovertebral joints.
78. Explain the function of the intervertebral disks.
79. Describe and explain the thoracic cavity, its boundaries and its contents.
80. Describe and explain the pleural cavities, pleura, pleural recesses, mediastinum, cavum mediastini serosum, cupula pleurae, pericardium and the diaphragmatic line of pleural reflection.
81. Describe all the serous membranes and viscera of the thorax.
82. Explain the arterial supply to the thoracic wall and thoracic viscera and the venous and lymphatic drainage.
83. Explain the innervation of the thoracic wall and thoracic viscera.
84. Identify the salient features of the thoracic vertebrae, ribs and sternum on radiographs
85. Identify the basic features of the thoracic viscera on radiographs
86. Explain, in broad terms, the treatment of oesophageal obstructions and the anatomical factors which influence such treatment.
87. Explain the purpose of thoracocentesis, and describe and demonstrate the site/s at which it is performed.
88. Explain, in broad terms, what pericardial effusion is.

89. Explain the purpose of intracardiac injection, describe and demonstrate the sites at which it is performed, and explain the potential complications of the procedure.
90. Explain, in broad terms, how patent ductus arteriosus and persistent right aortic arch develop, their clinical effects and how they may be treated.
91. LOBs covered during Practical:
92. Identify all the thoracic vertebrae.
93. Identify the salient features of a rib
94. Identify the different components of the sternum
95. On a living animal (outside the lab), palpate the bony prominences of the ribs and the sternum.
96. Identify all the muscles of the chest on a dissected specimen.
97. Plot the origin, insertion and course of each muscle on a skeleton.
98. Identify the intervertebral and costovertebral joints on a dissected specimen.
99. Identify all the serous membranes and viscera of the thorax on dissected and loose specimens.
100. Identify the arteries, veins and lymph nodes of the thoracic wall and thoracic viscera on a dissected specimen.
101. Identify the nerves of the thoracic wall on a dissected specimen.
102. Identify the nerves of the thoracic viscera on a dissected specimen

## Week 5

LOBs covered during lectures:

103. Describe the bony components of the thoracic limb and the shoulder
104. Identify all the bones of the thoracic limb
105. Describe the structure and function (stability and mobility) of the shoulder joint and its bony components
106. Describe the structure and function (stability and mobility) of the elbow joint and its bony components.
107. Explain the static supports (joint capsules, ligaments) of the shoulder and elbow joints.
108. Describe the musculature and fascia of the shoulder and elbow.
109. Describe the muscles involved in moving the shoulder joint
110. Describe the muscles involved in moving the elbow joint
111. Outline the blood supply (vasculature) to the shoulder joint.
112. Describe the blood supply to the upper limb.
113. Describe the innervation to the shoulder and elbow joints.
114. Describe the brachial plexus and its terminal branches.

LOBs covered during Practical:

115. Identify the bones of the thoracic limb and the shoulder
116. Distinguish between left and right bones.
117. Identify the salient features of each bone.
118. On the living animal, palpate the bony prominences
119. Identify all the muscles of the thoracic limb on a dissected specimen
120. Identify the various parts and components of each muscle
121. Describe the origin, insertion and spatial relationships of each muscle.
122. Explain the function of each muscle.
123. Describe the innervation of each muscle
124. Plot the origin, insertion and course of each muscle on a skeleton.

125. Identify, describe and explain all the synovial sheaths and bursae.
126. Identify, describe and explain the specializations of the deep fascia.
127. On the living animal, palpate the muscles.
128. Identify all the joints of the thoracic limb on a dissected specimen.
129. Identify the capsule, ligaments and any other components of each joint on a dissected specimen
130. Describe each joint and its various components
131. Describe the attachments, extensions and compartments of each joint's capsule.
132. Plot the attachments of each ligament on a skeleton.
133. Explain the function of each ligament
134. Palpate each joint and indicate its extent on the living animal.
135. Explain the brachial plexus and the innervation of the thoracic limb.
136. Identify the nerves of the thoracic limb on a dissected specimen
137. Plot the course of each nerve on a skeleton and on a dissected specimen.
138. Describe the arterial supply to the thoracic limb.
139. Describe the venous and lymphatic drainage of the thoracic limb.
140. Identify the arteries, veins and lymph nodes of the thoracic limb on a dissected specimen.
141. Plot the courses of the arteries and veins, and the positions of the lymph nodes on a skeleton and on a dissected specimen.
142. On the living animal, palpate the blood vessels.
143. On the living animal, palpate the lymph nodes.

**Week 6****LOBs covered during lectures:**

144. Describe the bony components of the Pelvic limb
145. Outline the static support of the stifle and hock joints (ligaments and joint capsule).
146. Describe the articular cartilage and menisci of the stifle.
147. Describe the musculature, fascia and cartilage of the stifle and hock.
148. Describe the muscles moving the stifle joint.
149. Describe the muscles moving the hock joint.
150. Describe the muscles of the foot.
151. Describe the innervation of stifle joint and the musculature involved in moving the stifle.
152. Describe the innervation of stifle joint and the musculature involved in moving the hock
153. Identify the salient features of the bones and joints of the pelvic limb on radiographs.

**LOBs covered during Practical:**

154. Identify all the joints of the Pelvic limb on a dissected specimen.
155. Identify the capsule, ligaments and any other components of each joint on a dissected specimen
156. Describe each joint and its various components
157. Describe the attachments, extensions and compartments of each joint's capsule.
158. Plot the attachments of each ligament on a skeleton.

159. Explain the function of each ligament
160. Palpate each joint and indicate its extent on the living animal.
161. Explain the innervation of the pelvic limb.
162. Identify the nerves of the pelvic limb on a dissected specimen
163. Plot the course of each nerve on a skeleton and on a dissected specimen.
164. Identify the arteries and veins of the pelvic limb
165. Plot the courses of the arteries and veins and the positions of the lymph nodes on a skeleton and on a dissected specimen.
166. On a living animal (outside the lab), palpate the blood vessels listed in this section.
167. On a living animal (outside the lab), palpate the lymph nodes listed in this section.

#### Week 7

LOBs covered during lectures:

168. Describe and apply the different classifications of the nervous system: embryological classification; segmentation classification; anatomical or topographical classification; functional classification.
169. Describe the organisation of the brain into its major divisions
170. Recognise the major anatomical features of each of these division, based on external examination of dorsal, lateral and ventral views of the brain and in a median section of the brain.
171. Appreciate the basic functional roles of each of these major divisions and their major anatomical features
172. Describe the various sensory and motor regions of the cerebral hemispheres and appreciate their basic functional significance.
173. Describe the structure and function of the different meninges
174. Describe the ventricles of the brain and its function
175. Describe the principles of blood supply to the brain on a comparative species basis
176. List the twelve cranial nerves, their origins and basic functions

LOBs covered during Practical:

177. Identify the anatomical features of the brain
178. Identify the anatomical features of the autonomic nervous system
179. Define the ANS and describe its general features, including differences between the somatic nervous system and the 2 neurone VE pathway; dual innervation by sympathetic and parasympathetic divisions and the effects of system dominance; enteric innervation
180. Describe the anatomy of the Sympathetic (S) Nervous system
181. Describe the anatomy of the Parasympathetic (PS) Nervous system
182. Identify where sympathetic and parasympathetic nervous systems are anatomically co-located

#### Week 8

LOBs covered during lectures:

183. Describe the position of the spinal cord in relation to the structure of the vertebral canal

184. Describe the general anatomy of the spinal cord and how it changes in cross sectional appearance along its length
185. Appreciate the general relationships between spinal cord segments and the enclosing vertebrae
186. Describe the differential distribution of white and grey matter within the spinal cord.
187. Describe the topographical relationships between the spinal cord, the spinal meninges, and the vertebral canal, and understand the formation of epidural space.
188. Describe the structure and function of spinal nerves and plexuses.
189. Describe how the spinal cord segments formed, and appreciate its clinical significance

LOBs covered during Practical:

190. Identify the anatomical features of the Spinal cord
191. Identify the Brachial plexus, including the named nerves comprising it
192. Identify the lumbar plexus, including the named nerves comprising it.

Week 9

LOBs covered during lectures:

193. Describe the structure and topography of the trachea of the dog and to know the important comparative features in the other domestic animals.
194. Describe the pattern of lung lobation, surfaces and borders in each of the domestic species of veterinary importance.
195. Describe visceral and parietal pleura and to understand the pleural cavities.
196. Describe the line of pleural reflection on each species.
197. Describe the blood supply and innervation to the lungs and the diaphragm.
198. Describe the contents and regions of the nasal cavity, including the paranasal sinuses and to appreciate the functional anatomy of the nose and nasal cavity.
199. Describe the anatomical boundaries of the pharyngeal cavities, and appreciate their normal appearance.
200. Describe the topography, structure and functions of the larynx. Name the major nerves and blood vessels which supply the larynx.

LOBs covered during Practical:

201. Identify the contents and regions of the nasal cavity, including the paranasal sinuses and to understand the functional anatomy of the nose and nasal cavity
202. Identify the nasopharynx and understand its functions and relationships with the nasal cavity, the common pharynx, the larynx in various species
203. Know which organs and structures are contained within the thorax.
204. Describe the diaphragm, identify its parts, attachments and foramina, its blood and nerve supply.
205. Distinguish visceral and parietal pleura and to understand the pleural cavities



206. Identify the reflections and recesses of the pleura and to be aware of any clinical significance.
207. Describe the structure and topography of the trachea of the dog and to know the important comparative features in the other domestic animals
208. Describe the lungs with its lobes, surfaces and borders and which structures enter and leave each lung at the hilus.
209. Describe the relationship of the lungs to other thoracic structures.
210. Differentiate the lungs of the domestic animals

**Week 10****LOBs covered during lectures:**

211. Introduction to ultrasounds.
212. Learn and apply ultrasound nomenclature.
213. Introduce ultrasound equipment.
214. Introduce ultrasound probe selection.

**LOBs covered during Practical:**

215. Perform a vascular ultrasound examination on a living animal (B- mode, Doppler, and Power Doppler).
216. Perform an MSK ultrasound examination on a living animal (tendons, ligaments, joints, limbs)

**Week 11****LOBs covered during lectures:**

217. Describe the position and orientation of the heart in the thorax with reference to external anatomical landmarks.
218. Describe the gross anatomy of the mammalian heart and pericardium.
219. Describe the pericardium and its layers.
220. Describe the external and internal features of the heart.
221. Describe the blood supply and the innervation of the heart.

**LOBs covered during Practical:**

222. Describe and identify the external features of the heart and external border of each heart chamber
223. Describe and identify the internal features of the heart including the chambers, myocardial walls and valves.
224. Identify the coronary blood vessels
225. Identify the pericardium and name its layers.
226. Identify on specimens the paths of the major blood vessels

Prerequisites	None	Required	None			
Course Content	<ul style="list-style-type: none"> <li>● Introduction to Anatomy</li> <li>● Anatomical terminology</li> <li>● The skeletal and muscular systems</li> <li>● The thoracic and pelvic limb</li> <li>● The head</li> <li>● The neck</li> <li>● The thorax</li> <li>● The Cardiovascular system</li> <li>● The Respiratory system</li> <li>● Introduction to Ultrasound</li> </ul>					
Teaching Methodology	Lectures combined with clinical work, dissection labs in small groups.					
Bibliography	<b>Authors</b>	<b>Title</b>	<b>Edition</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
	Baljt Singh	Dyce, Sack, and Wensing's Textbook of Veterinary Anatomy	5th	Saunders	2017	978-0323442640
	Howard Evans, Alexander de Lahunta	Guide to the Dissection of the Dog	8th	Saunders	2016	978-0323391658
	Alexander de Lahunta	de Lahunta's Veterinary Neuroanatomy and Clinical Neurology	5th	Saunders	2021	978-0323696111
	Arthur S. King	Physiological and Clinical Anatomy of the Domestic Mammals: Central Nervous System v. 1	1st	Wiley-Blackwell	1987	978-0198541875
Assessment	Attendance 10%, Practical exam 30%, final written exam 60%					
Language	English					