

Course Title	Diagnostic skills development II				
Course Code	VET-307				
Course Type	Required				
Level	Undergraduate				
Year / Semester	Year 3/ Semester 2 (Spring)				
Teacher's Name	Course Lead: Contributor:				
ECTS	6	Lectures and small group teaching / week	3	Laboratories / week	2
Course Purpose and Objectives	<p>The main objectives of the course are:</p> <ul style="list-style-type: none"> • The principles and practice of radiography and ultrasonography • Collecting and handling samples (blood, faeces, urine, cavity fluids, pathological samples) • Heart auscultation • Applied pharmacology of sedative and anaesthetic drugs and what can go wrong • Case examples (supervised self-directed learning where students would be given some basic information and would have to work through the case creating a problem list, differential diagnosis for each problem and a diagnostic plan. They receive results for each test requested and work through the case under supervision. 				
Learning Outcomes	<p>The following list provides the learning objectives that will be covered in the lectures, lab practical sessions and tutorials of each week:</p> <p>Week 1</p> <p>LOBs covered during lectures and practicals:</p> <ol style="list-style-type: none"> 1. Describe the Principles of Physics Used in Radiography 2. Discuss -inside the Atom 3. Describe the X-ray Tube 4. Discuss the diagnostic Equipment 5. Understand the production of X-rays 6. Discuss the Effects of Radiation 7. Discuss control of the Primary Beam and Scatter 8. Discuss intensifying Screens and Cassettes 9. Discuss digital Radiography 10. Discuss radiation Protection 11. Discuss radiography Principles <p>Week 2</p> <p>LOBs covered during lectures and practicals:</p> <p>Thoracic radiography:</p> <ol style="list-style-type: none"> 12. Discuss artefactual causes of increased lung opacity 13. Discuss increased bronchial pattern 				

14. Discuss increased alveolar pattern
15. Discuss increased interstitial pattern
16. Discuss increased vascular pattern
17. Discuss decreased vascular pattern
18. Describe cardiac diseases that may be associated with a normal cardiac silhouette
19. Discuss increased size of cardiac silhouette
20. Discuss decreased size of cardiac silhouette
21. Discuss abnormalities of the ribs
22. Discuss abnormalities of the oesophagus
23. Discuss abnormalities of the trachea
24. Discuss pleural effusion
25. Discuss pneumothorax
26. Discuss abnormalities of the diaphragm
27. Discuss mediastinal abnormalities

Week 3

LOBs covered during lectures and practicals:

Abdominal Imaging

28. Describe the radiography of the Liver
29. Describe the radiography of the Spleen
30. Describe the radiography of the Stomach
31. Describe the radiography of the Intestines
32. Describe the radiography of the Ureters
33. Describe the radiography of the Bladder
34. Describe the radiography of the Urethra
35. Describe the radiography of the Kidneys
36. Discuss the loss of intra-abdominal contrast
37. Describe the radiography of the Prostate
38. Describe the radiography of the Uterus
39. Describe the radiography of Abdominal masses
40. Discuss abdominal calcification/mineral density

Skeletal radiography

41. Describe the radiography of fractures
42. Discuss altered shape of long bones
43. Discuss delayed ossification/growth plate closure
44. Discuss increased radiopacity
45. Discuss periosteal reactions
46. Discuss bony masses
47. Discuss osteopenia
48. Discuss osteolysis
49. Discuss mixed osteolytic/osteogenic lesions
50. Discuss joint changes

Week 4

LOBs covered during lectures and practicals:

Radiography of the head and neck

51. Discuss increased/decreased radiopacity/bony proliferation of the maxilla
52. Discuss increased/decreased radiopacity/bony proliferation of the mandible
53. Discuss increased/decreased radiopacity of the tympanic bulla
54. Discuss increased/ decreased radiopacity of the nasal cavity

55. Discuss increased radiopacity of the frontal sinuses
56. Discuss increased radiopacity of the pharynx
57. Discuss thickening of the soft tissues of the head and neck
58. Discuss increased/decreased radiopacity of the soft tissues of the head and neck

Radiography of the spine

59. Discuss normal and congenital variation in vertebral shape and size
60. Discuss acquired variation in vertebral shape and size
61. Discuss changes in vertebral radiopacity
62. Discuss abnormalities in the intervertebral space
63. Discuss contrast radiography of the spine

Week 5

LOBs covered during lectures and practicals:

Thoracic ultrasonography

64. Discuss pleural effusion
65. Discuss mediastinal masses
66. Discuss pericardial effusion
67. Understand altered chamber dimensions
68. Understand changes in ejection phase indices of left ventricular performance

Abdominal ultrasonography

69. Discuss renal disease
70. Discuss hepatobiliary disease
71. Discuss splenic disease
72. Discuss pancreatic disease
73. Discuss adrenal disease
74. Discuss urinary bladder disease
75. Discuss gastrointestinal disease
76. Discuss ovarian and uterine disease
77. Discuss prostatic disease
78. Discuss ascites

Ultrasonography of other regions

79. Discuss US of the testes
80. Discuss US of the eyes
81. Discuss US of the neck

Week 6

LOBs covered during lectures and practicals:

Veterinary Laboratory Sampling Techniques

82. Describe labelling of specimens
83. Describe handling and transport of specimens
84. Describe collection of specimen Whole blood
85. Describe collection of specimen serum
86. Describe preparation of blood smears
87. Describe autoagglutination test
88. Describe buccal mucosal bleeding time
89. Describe skin scraping
90. Describe skin biopsy
91. Describe faeces collection

92. Discuss faecal analysis findings
93. Discuss faecal blood
94. Discuss faecal parasites
95. Discuss faecal culture
96. Discuss faecal fungal infections
97. Discuss undigested food residues
98. Describe urine collection
99. Discuss urinalysis findings
100. Discuss alterations in specific gravity
101. Discuss abnormalities in urine chemistry
102. Discuss abnormalities in urine sediment
103. Discuss infectious agents

Week 7

LOBs covered during lectures and practicals:

Diagnostic Procedures

104. Describe fine-needle aspiration (FNA)
105. Describe bronchoalveolar lavage
106. Describe gastrointestinal (GI) endoscopic biopsy
107. Describe ultrasound-guided biopsy
108. Describe cerebrospinal fluid (CSF) collection
109. Describe bone marrow aspiration
110. Describe thoracocentesis
111. Describe pericardiocentesis
112. Describe cystocentesis
113. Describe abdominocentesis/diagnostic peritoneal lavage
114. Describe blood pressure measurement
115. Describe central venous pressure
116. Describe indirect blood pressure measurement by Doppler technique
117. Describe nasal flush cytology
118. Describe Schirmer tear test

Week 8

LOBs covered during lectures and practicals:

Cytological findings

119. Practice Tracheal/bronchoalveolar lavage
120. Practice Nasal flush cytology
121. Interpret Liver cytology
122. Interpret Kidney cytology
123. Interpret Skin scrapes/hair plucks/tape impressions
124. Interpret Cerebrospinal fluid (CSF) analysis
125. Practice Fine needle aspiration of cutaneous/subcutaneous masses

Week 9

LOBs covered during lectures and practicals:

Heart auscultation

126. Identify the stethoscope and its components
127. Discuss areas of auscultation in the various animals
128. Identify normal heart sounds
129. Identify abnormal heart sounds
130. Identify arrhythmias Heard on auscultation

	<p>131. Identify murmurs 132. Identify other Sounds auscultated in the thorax</p> <p>Week 10</p> <p>LOBs covered during lectures and practicals:</p> <p>Anaesthesia</p> <p>133. Discuss general Pharmacology of Anaesthetic and Analgesic Drugs 134. Discuss pharmacokinetics and pharmacodynamics 135. Discuss anticholinergics 136. Discuss adrenergic Agents 137. Discuss sedatives and Tranquilizers 138. Discuss opioids 139. Discuss partial opioid agonist and agonist/antagonist</p> <p>Week 11</p> <p>LOBs covered during lectures and practicals:</p> <p>140. Discuss Non-Steroidal Anti-Inflammatory Drugs 141. Discuss Anaesthetic and Analgesic Adjunctive Drugs 142. Discuss Muscle Relaxants and Neuromuscular Blockade 143. Discuss Injectable Anaesthetics 144. Discuss Inhalation Anaesthetics 145. Discuss Local Anaesthetics</p> <p>Week 12</p> <p>LOBs covered during lectures and practicals:</p> <p>146. Discuss respiratory emergencies 147. Discuss clinical signs of respiratory distress 148. Explain treating respiratory distress 149. Discuss airway obstruction 150. Discuss respiratory and chest cavity diseases 151. Discuss iatrogenic causes of respiratory emergencies 152. Discuss respiratory arrest 153. Discuss treating pulmonary oedema 154. Discuss cardiovascular emergencies 155. Discuss indicators of poor cardiac function 156. Describe equipment needed for cardiac emergencies 157. Describe essential drugs used in managing cardiopulmonary complications</p>		
Prerequisites	Diagnostic skills development I	Required	None
Course Content	<ul style="list-style-type: none"> • The principles and practice of radiography and ultrasonography • Collecting and handling samples - blood, faeces, urine, cavity fluids, pathological samples • Heart auscultation • Pharmacology of sedative and anaesthetic drugs • Complications during anaesthesia • Case studies 		

Teaching Methodology	Lecture based teaching (minor), Small group teaching (major) and practical sessions					
Bibliography						
	Authors	Title	Edition	Publisher	Year	ISBN
		Handbook of Small Animal Radiology and Ultrasound: Techniques and Differential Diagnoses	2nd	Saunders	2010	978-0702028946
	Nichola Coombes, Ayone Silva-Fletcher	Veterinary Clinical Skills Manual		CABI International	2018	978-1786391629
	Suzanne Easton	Practical Veterinary Diagnostic Imaging	2nd	Wiley-Blackwell	2012	978-0470656488
	Francis K. Smith et al.	Manual of Canine and Feline Cardiology	5 th	Saunders	2015	978-0323188029
	Leigh A. Lamont	Veterinary Anesthesia and Analgesia: The Fifth Edition of Lumb and Jones	5 th	Wiley-Blackwell	2015	978-1118526231
	William W. Muir	Handbook of Veterinary Anesthesia	5 th	Mosby	2012	978-0323080699
Assessment	Objective Structured Clinical Examination (mini-OSCE) (40%), Final examination (60%)					
Language	English					

