DIAGNOSTIC IMAGING TECHNIQUES

1	Course Title:	DIAGNOSTIC IMAGING TECHNIQUES
2	Course Code:	VET3042
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	1.00
8	Theoretical (hour/week):	1.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. HAKAN SALCI
15	Course Lecturers:	-
16	Contact information of the Course Coordinator:	hsalci@uludag.edu.tr 0 224 2940841 Bursa Uludağ Üniversitesi Veteriner Fakültesi Cerrahi Anabilim Dalı Görükle BURSA
17	Website:	www.veteriner.uludag.edu.tr
18	Objective of the Course:	This course provides students with the basic knowledge and understanding of radiography to prepare for clinical practice. It is aimed that students have knowledge about basic radiography techniques and evaluation of X-rays for disease diagnosis and ultrasonography.
19	Contribution of the Course to Professional Development:	To provide students with basic knowledge, skills and understanding by helping diagnosis during veterinary practices.
20	Learning Outcomes:	
	1	The student learns basic radiation physics and x-ray beam creation, the mechanism of an x-ray machine, and knows how to take a radiography using an x-ray machine.
	2	Knows and applies different types of x-ray devices and other radiography device / tools used in radiology department.
	3	After traditional x-ray, it can develop film manually or by developing a machine.
	4	Evaluate the quality of a radiograph, recognize film errors and artifacts and prevent them.
	5	Knows the importance, potential dangers and consequences of radiation protection, applies the rules and bears responsibility.
	6	Can apply standard and special radiographic positions according to different animal species, regions / problems / diseases.
	7	Distinguish between normal and pathological findings on radiography depending on the species and race / region and makes a list of differential diagnoses.
	8	Gains knowledge of ultrasound definition, physics and device.
	9	Learns the basics of ultrasonographic examination.

	10	Learns normal and artifact images encountered in ultrasonographic examination and examination evaluations.

21	Course Content:

Course Content:

Week	Theoretical	Practice
1	Introduction, radiation physics,	
2	Electromagnetic waves, reaction of radiation with matter, structure and function of x-ray machine	
3	Brightness and contrast of the film, equipment in the radiology department, digital radiography	
4	Darkroom, film development techniques, identification, standard positioning	
5	Film evaluation principles, film defects and artifacts, radiation protection	
6	Standard and special radiographic positioning in small animals (by species, region and disease)	
7	Standard and special radiographic positioning in large animals (by species, region and disease)	
8	Standard and special radiographic positioning in exotic pet, bird, amphibian and other animals	
9	History of ultrasonography and obtaining sound waves, ultrasonographic image formation	
10	Ultrasonographic imaging and artifacts	
11	Ultrasonographic examination technique, diagnostic and operative ultrasonography	
12	Specific ultrasonographic examination of abdominal organs	
13	Specific ultrasonographic examination for other body organs	
14	Other ultrasonographic applications and doppler ultrasonography	

22	Textbooks, References and/or Other Materials:	1.Radiographic Techniques, Morgan JP, Doval J; Samii V. Schlutersche; 1st ed. 2003. 2.Textbook of Veterinary Diagnostic Radiology, Thrall, D, 5th Ed, Saunders Elsevier, St. Louis, 2007. 3.Bovine Radiology, Bargai U, Pharr JW, Morgan JP. Wiley-Blackwell, 1991. 4.Atlas of Small Animal Ultrasonography, Dominique Penninck, MarcAndre d'Anjour, Wiley-Blackwell, 2020. 5.Small Animal Diagnostic Ultrasound, John S. Mattoon, Thomas G. Nyland, Elsevier, 2014.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00

Contribution of Term (Year) Learning Activities to Success Grade	40.00
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	Students will be assessed in terms of their answers to the questions from the presentations and lecture notes presented during the semester, with one midterm exam and one final exam at the end of the semester. The exam will be carried out as a test and written classic.

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	3	3.00	9.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	0	0.00	0.00
Final Exams	1	1.00	1.00
Total Work Load			26.00
Total work load/ 30 hr			0.83
ECTS Credit of the Course			1.00

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ÖK2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ÖK3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ÖK4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ÖK5	5	5	5	5	5	5	5	0	5	5	5	5	5	5	5	5
ÖK6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
ÖK7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
ÖK8	5	5	5	5	5	5	3	3	3	5	5	4	4	4	4	4
ÖK9	4	4	4	4	4	4	3	3	3	3	5	5	3	3	3	4
ÖK10	4	4	4	4	4	4	4	4	4	3	3	3	4	4	4	4

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High