

Laboratory Diagnostics in Animals [333]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Major Elective]		
COURSE CODE	333	SEMESTER	8th
COURSE TITLE	LABORATORY DIAGNOSTICS IN ANIMALS		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		1	
Laboratory exercises		2	
TOTAL		3	3
COURSE TYPE	Scientific area		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	No		
COURSE WEBSITE (URL):			
TEACHING STAFF:	• John Ikonmopoulos (Course supervisor) • Ioannis Arsenakis • Vasiliki Sapanidou		

(2) LEARNING OUTCOMES

Learning outcomes
The expected learning outcome is the attainment of a satisfactory level of knowledge regarding: • Understanding the procedures involved in the main diagnostic methods • Understanding the criteria and characteristics used to evaluate diagnostic methods • Comprehending the rationale behind combining diagnostic methods to enhance diagnostic accuracy and effectiveness • Familiarization with fundamental laboratory techniques in microbiological, serological, molecular, and histological analysis Classification of Learning Objectives Based on Bloom's Taxonomy – The student will be able to: 1. Understand the usage and evaluation principles of laboratory diagnostic methods. [KNOWLEDGE] 2. Understand the principles of designing laboratory diagnostic investigations for animal diseases. [KNOWLEDGE] 3. Perform basic laboratory diagnostic techniques. [APPLICATION] 4. Understand the principles of quality control in a diagnostic laboratory. [COMPREHENSION]
General Competences
• Investigate, analyse and compose data and information, using the appropriate technical means • Autonomous work • Decision making • Team work • Promote free, creative, and conductive thinking

(3) SYLLABUS

Theory
1. Laboratory diagnostic methods in animals (terrestrial, aquatic, and bees). Principles of sampling, sample transportation to the laboratory, and storage. Criteria for sample acceptance or rejection. 2. Evaluation of diagnostic methods: sensitivity, specificity, limit of detection, accuracy, repeatability (intra- and inter-laboratory). 3. Rationale for combining diagnostic laboratory methods.

4. Principles of operation and diagnostic protocols for microbiological, serological, molecular, and histological diagnostic methods.
5. Principles of quality control in the veterinary diagnostic laboratory according to the ISO 17025 standard.

Laboratory Exercises

1. Antibigram – determination of breakpoints according to EUCAST
2. DNA isolation and quality control
3. PCR for the detection of microbial pathogens and quality control
4. Brix and Immunocrit methods
5. Laboratory analysis of urine
6. Laboratory techniques for qualitative evaluation of semen

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Theory: Face-to-face instruction in the computer lab using audiovisual material and comprehension/self-assessment exercises. Laboratory exercises: Hands-on training in the laboratory, combined with comprehension and self-assessment exercises through the E-class platform and interactive educational materials.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Teaching and learning tools include the use of PowerPoint presentations, communication with students via email, support of the educational process through the e-class platform, and implementation of interactive H5P learning materials.	
TEACHING METHODS	Activity	Semester workload
	Lectures	25
	Practical training	25
	Research essay	5
	Study and analysis of the literature	5
	Independent study	15
	Course total (25 h of workload per ECTS)	75
STUDENT PERFORMANCE EVALUATION	Assessment language: Greek. Theory assessment is conducted in person, using computers and the E-class platform, through randomized selection of questions from a database. Laboratory assessment is carried out both through practical exercises in the laboratory and via the E-class platform, also using randomized question selection from a database. A grade bonus system is applied for both theory and laboratory components, based on the student's performance on a voluntary assignment. The criteria for the bonus system and overall student assessment are clearly posted and continuously available to students through the E-class platform.	

(5) ATTACHED BIBLIOGRAPHY

Journal of Laboratory Medicine
MSD Veterinary Manual
Journal of Veterinary Diagnostic Investigation
Veterinary Microbiology
Journal of Comparative Pathology