

Animal Models in Biomedical Science [329]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Major Elective]		
COURSE CODE	329	SEMESTER	4 th
COURSE TITLE	ANIMAL MODELS IN BIOMEDICAL SCIENCE		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Theory and laboratory courses		3	2
Total		3	2
COURSE TYPE	Scientific area		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	Yes		
COURSE WEBSITE (URL):	-		
TEACHING STAFF:	Vasiliki Sapanidou		

(2) LEARNING OUTCOMES

Learning outcomes
Upon successful completion of the course, students will be able (according to Bloom) to: • Describe the fundamental principles regulating the use of animals in biomedical research (Knowledge / Comprehension). • Explain the anatomy and physiology of the main animal species employed in research (Comprehension / Application). • Apply principles of experimental design in planning and evaluating animal-based studies (Application / Analysis). • Demonstrate proper training, handling, and management of animals intended for experimental purposes (Application / Synthesis). • Interpret and implement applicable legislation and regulatory frameworks within experimental protocols (Comprehension / Application / Evaluation).
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

1. Introduction to the use of animals in biomedical research. 2. Historical overview and contemporary significance of animal models in biomedical research. 3. Anatomy and physiology of animals used in biomedical research. 4. Types of animal models. 5. Selection of appropriate animal models based on anatomical and physiological characteristics. 6. Selection criteria based on the research protocol. 7. Basic techniques for handling laboratory animals. 8. Anesthesia, analgesia, and euthanasia during experimental procedures. 9. Sampling and analysis of biological materials; administration of substances. 10. Statistical design and reduction of laboratory animal use in biomedical research; alternative experimental techniques in the biomedical sciences.

11. Experimental design and evaluation of results.
12. Biotechnology and genetically modified animals (transgenic and knock-out animals).
13. Practical training with dummies.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face Distant learning through the Eclass platform and MS Teams through the E-class platform and MS Teams	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• PowerPoint presentations and Internet (literature, visual training material) • Communication via e-mail and e-class • Lectures available through e-class platform	
TEACHING METHODS	Activity	Semester workload
	Non-supervised study	10
	Interactive teaching - lectures	25
	Research Essay	15
	Course total (25 h of workload per ECTS)	50
STUDENT PERFORMANCE EVALUATION	• Optional attendance of lectures by students • Evaluation method: Written final examination with short and extensive answer and multiple-choice questions in Greek. • In-class presentation of an essay related to the subjects (50% bonus of the final grade – evaluation based on proficiency and understanding of the material, quality of presentation) • Erasmus students: Oral exams and a written essay related to the course.	

(5) ATTACHED BIBLIOGRAPHY

1. The handbook of experimental animals: The Laboratory Rat, Academic Press, 2000, editor Georg J Krinke.
2. The Experimental Animal in Biomedical Research (Volumes I, II) CRC Press, 1995, editors Rollin E Bernard, Kesel Lynne M.
3. Fundamentals of Laboratory Animal Science, CRC press, 2017, editors Enqui Liu and Jianglin Fan.