General & Clinical Animal Microbiology [xxxx]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Required]		
COURSE CODE	**XXXX**	**SEMESTER**	**4th**
COURSE TITLE	GENERAL AND CLINICAL ANIMAL MICROBIOLOGY		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Theory	3	
Laboratory exercises	2	
Total	**5**	**5**

COURSE TYPE	Scientific area
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	Yes
COURSE WEBSITE (URL):	https://oeclass.aua.gr/eclass/courses/EZPY142/
TEACHING STAFF:	• John Ikonomopoulos (Course supervisor) • Athanasios Gelasakis • Vasiliki Sapanidou

(2) LEARNING OUTCOMES

Learning outcomes
The specific course is focused on teaching, comprehending and training on the biologic characteristics of microbial pathogens of animals and birds, including their classification, nomenclature, in vitro detection and interaction with the host. The course syllabus also addresses issues fundamental for Animal Health and Infectious Diseases, such as genetic predisposition and pathogenesis, as well as principles of disease management and control, aiming at protecting public health with respect to animal welfare. The expected learning outcome is a satisfactory level of understanding with regards to: • The characteristics of microbial cells and non-cellular microbial pathogens • Host-pathogen interaction, and its association with the pathogenesis of infectious diseases • Aetiology, pathogenesis and clinical manifestation of the main infectious diseases of animals and birds, particularly of those that are characterized as zoonotic • Detection and identification of bacteria, fungi and viruses • The basic analytical methods applicable in a microbiology laboratory With regards to Bloom the student will be able to: 1. Understand the names and the biological characteristics of microbial pathogens [KNOWLEDGE] 2. Understand the principles of classification and nomenclature of bacteria, fungi and viruses [KNOWLEDGE] 3. Comprehend the interaction between microbial pathogens and hosts [COMPREHENTION] 4. Comprehend how the biological characteristics of microbial pathogens and their interaction with the host determine the pathogenesis of infectious diseases [COMPREHENTION] 5. Comprehend the aetiology, pathogenesis and clinical manifestation of infectious diseases, particularly of the zoonotic [COMPREHENTION] 6. Apply the basic methods of microbiological analysis [APPLICATION] 7. Combine theoretical knowledge and practical training for the analysis of the scientific information that is available internationally, in connection to the field of microbiology of animals [ANALYSIS]
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

A. General Microbiology

1. Introduction to Microbiology
   a. Microbial pathogens and Fungi
2. Types of microbial cells
   a. Bacteria
   b. Spirochetes
   c. Rikettsia
3. Morphological and Biological characteristics of bacteria
   a. Shape, Size, Structure and Classification
   b. Nutrition, Multiplication/Propagation/Reproduction, Spores, Motility
   c. Cultivation
4. Non-cellular microbial pathogens– Viruses, prions
   a. Shape, Size, Structure
   b. Classification, Multiplication/Propagation/Reproduction
5. Infectivity of microbial pathogens
   a. Koch's postulates
   b. Invading the host, Infection
   c. Host-pathogen interaction, Biofilms, Immunity
   d. Microbial flora

B. Veterinary Microbiology

a. Gram-positive bacteria (main diseases in animals and humans, pathogenesis, clinical manifestation)
b. Gram-negative bacteria (main diseases in animals and humans, pathogenesis, clinical manifestation)
c. Viruses and prions (main diseases in animals and humans, pathogenesis, clinical manifestation)

Laboratory Exercise

1. Safety in the microbiology laboratory
2. Aseptic technique for the transfer of liquids
3. Growth media, principles of preparation and properties
4. Preparation and fixation of smears
5. Preparation and fixation of blood smear
6. Staining of blood smears using May Grunwald-Giemsa
7. Sample collection and inoculation of growth media
8. Assessment of in vitro microbial growth
9. Gram stain
10. Methods of serology and ELISA

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face Distant learning through the Eclass platform and MS Teams
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• PowerPoint presentations and Internet (literature, visual training material) • E-learning platform http://zp.aua.gr/el/content/eA/virtual • Communication by e-mail and e-class • Lectures available through the e-class platform
TEACHING METHODS	

Activity	***Semester workload***
Lectures	60
Practical training	15
Clinical training	10
Research essay	5
Individual study	30
Mock exams	5
Course total (25 h of workload per ECTS)	***125***

STUDENT PERFORMANCE EVALUATION	Student evaluation consists of 2 parts: Written and practical examination, the latter corresponding to the syllabus of the laboratory exercises. Students are encouraged to retain on voluntary basis, a Personal Evaluation Booklet (PEB), in which the tutor records the score of the essays undertaken by the student and any other achievement. The scores recorded in the PEB are used only in favour of the

	student (the PEB score cannot have a negative impact on the final score). The use of the PEB score is applicable each time the student sits the exam for the course. Detailed instructions for the use of PEB and the course examination are available from the beginning of the semester through e-class, and they are explained in class. Written and/or oral essays that are assigned on voluntary basis, on subjects relevant to the course and of interest to the student (subjects are defined after discussion with the tutor). Scores are recorded in PEB (PEB score), in the form of a percentage and can be up to 50% of the score corresponding to written examination, if higher than 4, and is added to the latter, formulating the final score. The evaluation of Erasmus students relies on essays and an oral examination conducted face-to-face after the presentation of each essay

(5) ATTACHED BIBLIOGRAPHY

Lecture and lab notes uploaded to Eclass by the tutors.
Essentials of Veterinary Bacteriology and Mycology, Carter and Chengappa.
Cowan and Steels Manual for the identification of Medical Bacteria.
Μαθήματα Γενικής και Ειδικής Μικροβιολογίας, Κ. Σαρρής ΑΠΘ.

-Related Scientific Journals:
Annual Review of Microbiology. Comparative Immunology Microbiology and Infectious Diseases. FEMS Microbiology Reviews.