

<b>Academic subject:</b> Microbiology and applied immunology			
<b>Degree Class:</b> L38		<b>Degree Course:</b> Animal Science	
		<b>Academic Year:</b> 2020/2021	
		<b>Kind of class:</b> mandatory	
		<b>Year:</b> II	
		<b>Period:</b> I	
		<b>ECTS:</b> 8 divided into <b>ECTS lessons:</b> 7 <b>ECTS</b> <b>exe/lab/tutor:</b> 1	
<b>Time management, hours, in-class study hours, out-of-class study hours</b> lesson: 70    exe/lab/tutor: 25    in-class study: 0    out-of-class study: 105			
<b>Language:</b> Italian		<b>Compulsory Attendance:</b> Yes	
<b>Subject Teacher:</b> Annamaria Pratelli		<b>Tel:</b> 0804679835 <b>e-mail:</b> annamaria.pratelli@uniba.it	
		<b>Office:</b> Department of Veterinary Medicine  Room:      Floor: 1°	
		<b>Office days and hours:</b> Tuesday 10:30am – 12:30am Thursday 2:30pm – 4:30pm	
<b>Prerequisites:</b> Anatomy and Physiology. The student must have acquired knowledge and skills relating to the anatomical areas, the biochemical and physiological mechanisms that regulate cellular functions and the blood and lymphatic compartments.			
<b>Educational objectives:</b> Acquisition of in-depth knowledge of the morphological, biological and pathogenetic characteristics of bacteria and viruses, and of the functions of the immune system.			
<b>Expected learning outcomes (according to Dublin Descriptors)</b>		<p><b>Knowledge and understanding:</b> The student must acquire specific skills in bacteriology, virology and immunology, mandatory to the study of the prophylaxis of infectious diseases. They must also know good laboratory practices, and the main diagnostic procedures both for the diagnosis of bacterial and viral infections, and for serological investigations.</p> <p><b>Applying knowledge and understanding:</b> The student must be able to understand how microorganisms interact with the environment and carry out their pathogenic action towards the host.</p> <p><b>Making judgements:</b> The teaching does not confer autonomy of choice and decision to the future graduate in a particular cultural field.</p> <p><b>Communication:</b> The student must demonstrate mastery of the scientific language, and knowledge of the principles of microbiology, of the mechanisms that regulate the microbial world and of the immune response.</p> <p><b>Lifelong learning skills:</b> The student must be able to describe the characteristics and the pathogenic properties of viruses and bacteria, and the main mechanisms of the immune response</p>	
<b>Course program</b>			
<p><b>Bacteriology.</b> Prokaryotes (Archaea and Bacteria) and Protists (Eucarya). Optical and fluorescence microscopes. Main sterilization and disinfection systems. General information on bacteria. Structure of the bacterial cell. Bacteria steins. Bacterial growth factors. Bacterial growth curve. Bacteria cultivation and identification techniques. Pathogenic properties of bacteria. Bacterial genetics: chromosomes and plasmids, mutations, transformation, conjugation, transduction, phage conversion. Mechanism of action of antibiotics. Antibiotic resistance. Laboratory techniques for the diagnosis and identification of bacteria. Systematic bacteriology: main bacteria of medical-veterinary interest.</p> <p><b>Virology.</b> General information on viruses. Structure and physical-chemical characteristics of viruses. Replication of DNA and RNA viruses. Virus cultivation. Cytopathic effects. Virus titration. Viral genetics. Bacteriophages: morphology, lytic cycle and lysogenic cycle. Virus-host relationship and pathogenesis of viral infections. Prions. Laboratory techniques for the diagnosis and identification of viruses. Systematic virology: main viruses of medical-veterinary interest.</p> <p><b>Immunology.</b> Natural immunity: physical-chemical barriers, complement system, interferon, phagocytosis. Passive immunity: immune sera and colostrum. Active immunity: primary and secondary lymphoid organs, myeloid and lymphoid cells, antigens and haptens, antibodies, humoral and cell-mediated immunity. Principles of immunopathology. Hypersensitivity (I, II, III, IV type). Serological diagnostics. Vaccines.</p>			

**Teaching methods:** Theoretical lessons are held through the use of Power Point presentations.

Practical lessons take place in the suitably equipped laboratories of the Infectious Diseases section of the Veterinary Medicine Department. Students, divided into groups, are supervised by the subject teacher and collaborators. Students are invited and urged to individually carry out the laboratory techniques covered by the exercise and to discuss with the teacher or collaborators.

**Auxiliary teaching:** The classroom is equipped with multimedia tools such as PC, projector and internet connection. The laboratories are equipped with all the instruments necessary for carrying out the main virological, bacteriological, biomolecular and serological investigations.

**Assessment methods:** The assessment of knowledge takes place through an oral test on the topics of the program. The student must demonstrate mastery of scientific language, knowledge of the principles of microbiology, of the mechanisms that regulate the microbial world and of the immune response.

**Bibliography:**

- Poli G., Microbiologia ed Immunologia Veterinaria, Edra S.p.A., third edizion 2017
- González J.R.R., Larrea C.L., Rodríguez S.G., Naves E.M., Immunologia. Biologia e patologia del sistema immunitario, Piccin Editore, 4° edition 2012
- Murphy K., Immunobiologia di Janeway, Piccin Editore, 8° edition 2012
- Notes from the lessons
- Lecture notes on bacteriology by Professor M. Corrente