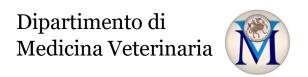


General information			
Academic subject	APPLIED MICRO	APPLIED MICROBIOLOGY of the integrated examination of Applied Microbiology	
	and Parassitolo	and Parassitology	
Degree course	Safety and Heal	Safety and Health of Food of Animal Origin	
Academic Year	2021/2022	2021/2022	
European Credit Transfer and Accumulation Syste		r (ECTS) :	6
Language	italian	italian	
Academic calendar (starting and ending date)		st semester	
Attendance	Not mandatory	Not mandatory	

Professor/ Lecturer		
Name and Surname	Gabriella Elia	
E-mail	gabriella.elia@uniba.it	
Telephone	080.4679805	
Department and address	Veterinary Medicine Campus – Valenzano (BA)	
Virtual headquarters	Teams code: a6wmjfg - Attività tutoria: microbiologia applicata - LM86	
Tutoring (time and day)	Tuesday 2p.m. —4 p.m. Friday 10 a.m. —1 p.m.	
	In presence or in remote	

Syllabus	
Learning Objectives	The course aims at providing more in-depth knowledge on the major fundamentals of microbiology with emphasis on microbial ecology, interactions of microorganisms with environment and host, intrinsic and extrinsic factors affecting microbial growth especially in food systems. Overall these concepts represent tools to understand the applications of microbiology in food safety, production, processing, preservation, and storage. Lectures and lab practicals are devoted to prepare the students to applicative approaches and to lab activity in microbiology.
Course prerequisites	Students must review the concepts that refer to Biology and General Microbiology. The student can take the exam of the Applied Microbiology module only after having successfully passed that of Parasites, Fungi and Food Pests.
Contents	Course program: Definition and Aims of teaching in the context of the Degree Course Microbiological laboratories: organization and management. Laboratory equipment for microbiological analysis; optical and electron microscopy. Biosafety and Biosecurity. Basic information on prokaryotic cells. Microbial ecology: interactions of microorganisms with environment and host; intrinsic and extrinsic factors affecting microbial growth. Methods for sterilization. Disinfectants and antiseptics. Microbial genetics. Mutations and mutants. Horizontal gene transfer mechanisms. Bacterial growth curve. Antibiotics: structure and mechanisms of action. Overview on resistance mechanisms. Selected examples of microorganisms relevant in food hygiene. C. botulinum, C. perfringens; S. aureus; B. cereus; Enterobacteriaceae: Escherichia coli; Salmonella spp; Shighella spp; Y. enterocolitica; Campylobacter spp. Probiotic Microorganisms. Starter cultures; Microrganism as indicator of food quality. Biological sample collection, processing, storage and information management. Food sampling and surface sample methods. Bacteria Testing and Investigation: Principles of Isolation, Cultivation, and Identification of Bacteria. Bacterial counting methods. Bacteria identification





	techniques: morpho-cultural characteristics and biochemical tests; Maldi-tof. Basic information on viruses. Enteropathogenic Viruses. Diagnostic methods in virology: virus isolation and identification. Direct and indirect diagnostic tests: Haemagglutination and Haemagglutination Inhibition Tests; Enzyme Linked Immunoassay (ELISA); Immunofluorescense; Agar-gel immunodiffusion (AGID). The principle and method of polyacrylamide gel electrophoresis: SDS-PAGE and Western blotting. Molecular methods: DNA and RNA extraction, PCR, Real-time PCR.	
Books and bibliography	Poli, Cocilovo, Microbiologia ed immunologia veterinaria, UTET, 2° ed. 2005. LA PLACA M., Microbiologia generale e applicata, ESCULAPIO Slides provided by teacher during the course and lecture notes	
Additional materials		

		1		
Work schedule				T
Total	Lectures		Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours				
150	60		25	65
ECTS				
6	5		1	
Teaching strategy	1		•	
		training identifi Conside session	sons will be held in presence with the help of slide show g will be organized in order to enable each student to pe cation of specific pathogens and to use the main serologering the average number of students enrolled in the cors will require the replication of the hours of exercises in is not provided in e-learning mode.	rform isolation and gical techniques. urse, laboratory
Expected learning	goutcomes			
Knowledge and u		0 0	To know ecological factors influencing bacterial growt To knownow the pro-technological or altering role of r To know the main microbiological techniques for identification of microorganisms To know the main microbial groups in food Ability to apply microbiological knowledge to define as	microorganisms or the isolation and
understanding on: O A i		0	Ability to apply microbiological knowledge to define and interpret the results of a microbiological analysis Ability to apply microbiological knowledge to the understanding and implementation of technological processes and storage conditions, food safety and stability over time Ability to apply biosafety concepts to implement good laboratory practice	
Soft skills Maki Maki		• Co	king informed judgments and choices Ability to analyze critical issues in operating practice Ability to independently address topical subjects more in depth Ability to work and think independently Ability to handle difficult or unexpected situations in the workplace municating knowledge and understanding Ability to adopt different language registers, including technical-scientific registers to communicate adequately experimental results Ability to work in teams or groups, improving communication skills and managing conflict pacities to continue learning The ability to study scientific papers independently.	



Assessment and feedback			
Methods of assessment	Learning assessment methods will be carried out:		
	- during the course, by flip teaching sessions during the which it will be assessed the ability to think independently		
	- by a final oral examination during the which the student must demonstrate the ability to integrate different aspects of microbiology. The oral exposure ability and the correct use of scientific terminology are also evaluated.		
Evaluation criteria	 Knowledge and understanding Ability to clearly express the acquired knowledge Applying knowledge and understanding Ability to link different disciplines and provide appropriate examples Autonomy of judgment Analitycal and synthetical attitudes evaluation Communicating knowledge and understanding Clarity of presentation Oral exposure ability and the correct use of scientific terminology Communication skills Oral exposure ability and the correct use of scientific terminology Capacities to continue learning Ability to rework knowledge and transfer it to new and different situations 		
Criteria for assessment and attribution of the final mark	The evaluation system includes a practical laboratory test (on topics covered during theexercises) which, if sufficiently passed, allows access to an oral exam on topics covered by the program. Analitycal and synthetical attitudes of the students and his /her language skills are also part of the final judgment. The final evaluation, expressed out of thirty, will be considered passed with a grade equal to or greater than 18 /30. The final mark of the integrated exam "Applied Microbiology and Parassitology" will be the average of the Applied Micorbiology test mark and Applied Parassitology test mark.		
Additional information			