ACADEMIC YEAR 2023/2024

General information	
Academic subject	**PARASITES, FUNGI, AND FOOD PESTS** (integrated exam of APPLIED MICROBIOLOGY AND PARASITOLOGY)
Degree course	Foods of animal origin safety and health - (LM86)
Academic Year	2023/2024 – I year
European Credit Transfer and Accumulation System (ECTS)	6 (5+1E)
Language	Italian
Academic calendar (starting and ending date)	I semester
Attendance	Strongly recommended

Professor/ Lecturer	
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Department and address	Campus of Veterinary Medicine, S.P. 62 to Casamassima km 3, 70010 Valenzano (Ba)
Virtual headquarters	Microsoft Teams platform (code eluw6ae)
Tutoring (time and day)	Monday and Wednesday from 3:30 pm to 4:30 pm

Syllabus	
Learning Objectives	The course aims to provide basic knowledge about the main parasites and fungi that may be transmitted to humans by contaminated food having animal and vegetable origin. The course will also provide insights into pest control programs (mites, flies and cockroaches), contaminants (yeasts) and environmental sanitation processes.
Course prerequisites	The student must have the basic principles of Parasitology, Biology, Mycology
Contents	**Parasitology:** Parasites of food of animal origin. Knowledge on One Health. Economic and health aspects relating to the quality and hygiene of food. Health risk assessment. Parasitic zoonoses: giardiasis, cryptosporidosis, toxoplasmosis, plerocercosis, cysticercosis, hydatidosis, fasciolosis, anisakiosis, trichinellosis, ascaridosis, paragonimiosis and chloronchiosis. Laboratory diagnosis: search for parasites in processed and transformed meats (fresh, chilled, frozen, salted, bagged and canned) and in fish products. Diagnosis and morphological identification of different stage of development of parasites (larvae, cysts). Research and identification of mites and insects of health interest. Knowledge on the monitoring and pest control programs (mites, flies and cockroaches). Hints of sanitation in the food industries. **Mycology:** General characteristics of Fungi. Fungal contamination of food and livestock productions: meat and cured meat products, dairy products, zoo technical products. Methods for the isolation of fungi from food. Control methods against the yeast development in food products and food preservation.
Books and bibliography	Taylor M.A., Coop R., Wall R., "Parassitologia e Malattie Parassitarie degli Animali", Edizione italiana, EMSI, (2009). Samson R.A., Hoekstra E., Frisvad J. C., Filtenborg O. (1995): Introduction to food-borne fungi, Fourth Edition Centraalbureauvoor Schimmelcultures, Baarn, The Netherland.
Additional materials	Notes of the lessons.

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Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	***40***	***20***	***90***
ECTS			
6	***5***	***1***	

Teaching strategy	
	The teaching includes theoretical and practical activities. The teaching activities will be held in classrooms equipped with multimedia tools through the projection of power point presentations. In the event of a health emergency, the course can be held in "technology enhanced" mode and the theoretical lessons will be delivered through the Microsoft Teams platform. Innovative and interactive teachings will be held through online search in specific websites focused on the relathionship among parasites, fungi and food. During the cycle of lessons, 2 in itinere tests will be planned to verify the dynamics of learning with respect to the programmed objectives, to adapting the programming and changing, if necessary, the modalities. The practical lessons are carried out in the appropriately equipped laboratories of the Parasitology and Mycology section. All practical activities carried out by students will be take place under the supervision of the teacher and her collaborators. During the practical activities students will be divided into groups of maximum 8-10 people. At the end of the course the student will have the opportunity to deepen a topic of interest relating to a parasite and / or fungal species / genus associated with food. During the course practical visits to food industries (i.e., slaughterhouse and center for the delivery and shipment of fish products) will be carried out.
Expected learning outcomes	
Knowledge and understanding on:	In particular, the course will allow the student to acquire knowledge regarding: ○ Biological cycles of parasites transmitted by food; ○ Pathogenesis, epidemiology, clinical signs, diagnosis; ○ Importance of these parasites and related diseases in the context of Public Health; ○ Control systems for fungal and parasitic contamination in the food chain; ○ Main metabolic, structural and biological characteristics of the fungal and parasitic species that contaminate food and livestock products.
Applying knowledge and understanding on:	Through practical activity sample analysis, the students will be able to: ○ Identify the parasitic and fungal forms that may contaminate the food; ○ Distinguish the typical fungal flora of food from the harmful one; ○ Identify the factors favoring fungal and parasitic contamination of food; ○ Plan methods of control and sanitation of environmental against fungal and parasitic contamination also during the manufacturing of food; ○ Know the diagnostic laboratory techniques and good laboratory practices.
Soft skills	• *Making informed judgments and choices* This teaching will help the student to achieve a degree of autonomy in judging the activities related to fungal and parasitic food contamination by: ○ Identification the sources of a parasitic and fungal infection and its etiological agent; ○ Carrying out control plans for reducing the risks of infection; ○ Suggest direct and indirect prophylaxis measures for the control of parasitic / fungal contamination and the ability to apply them in

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	practice. • *Communicating knowledge and understanding* Students will be able to: ○ Use the acquired knowledge to interpret cases or aspects that are unpublished. ○ Organize knowledge in a personal and autonomous way to make simple interdisciplinary connections with related subjects ○ Demonstrate knowledge of the main analytical methods used in the laboratory, in the parasitological and mycological field. • *Capacities to continue learning* The students will improve the specific terminology of the subject and will be able to move safely and autonomously in the parasitology and mycology laboratories. The students will also acquire the manual skills on the diagnostic methods commonly used in parasitology and mycology laboratories and will be able to analyse the results.

Assessment and feedback	
Methods of assessment	On-going tests Self-assessment questionnaire Practice Test Final exam
Evaluation criteria	• *Knowledge and understanding* By the in itinere tests the student will be able to demonstrate the level of understanding and knowledge acquired during the course and by the oral examination the student will be able to demonstrate that the student has acquired adequate final knowledge relating to parasitic and fungal contaminations in all its characteristics with particular regard to the etiology and recognition of their pathogenic potential, epidemiology, clinical picture, laboratory diagnostics, aspects of prophylaxis active and passive and therapy. • *Applying knowledge and understanding* During the exam, the theacher must verify if the student has acquired adequate knowledge of the main parasites and fungal species that could be present in food and if the student has a correct presentation of contents using an appropriate scientific language. • *Autonomy of judgment* During the practical test, the student will be exposed to a case of contamination of food with parasites and / or fungi and will have to demonstrate that they have acquired an autonomous evaluation of judgment in suspecting the presence of the parasite / yeast and will have to indicate an adequate procedure diagnostics to confirm the suspicion of contamination. In addition, you will need to adequately describe the useful control measures. • *Communicating knowledge and understanding* During the oral exam, the language used by the student will provide the examiner with the ability to evaluate the exposure and logical integration of the contents learned by the student as well as the appropriateness of the scientific terminology acquired. • *Communication skills* Students must be able to: ○ Fully frame their work in wider contexts and motivate the choices made in an understandable and convincing way;

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	○ Transfer their knowledge adapting the communication method to the needs of the interlocutor; ○ Cooperate effectively in the activities of homogeneous and heterogeneous working groups; ○ To easily start working and social relationships. • *Capacities to continue learning* During the oral exam, the examiner will assess whether the learning of knowledge has been sufficiently thorough.
Criteria for assessment and attribution of the final mark	Assessment methods: The assessment of knowledge takes place through an oral exam on program topics. The candidate will have to exhibit his/her knowledge on biology, on the role of fungi and parasites in contamination of food and during the transformation processes. They will be able to indicate the specific control and prophylaxis plans against food contamination by yeast and parasites. The integrated examination of Applied Microbiology and Parasitology will be divided into two modules: "Applied Microbiology" and "Parasites, Fungi, and Food Pests". The student must first take the exam of the "Parasites, Fungi and Food Pests" module, then they will be able to access the Applied Microbiology exam. The final score of the integrated course "Applied Microbiology and Parasitology" will be unique and uniformly assessed by the teachers of the two courses that compose it.
Additional information	
	Bio-safety material and clothing required for attendance at the course

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