COURSE DETAILS

"PRECISION STRATEGIES IN PARASITOLOGY"
MVET-03/B

DEGREE PROGRAMME: PRECISION LIVESTOCK FARMING

ACADEMIC YEAR 2025/26

GENERAL INFORMATION – TEACHER REFERENCES

TEACHER: ANTONIO. BOSCO
PHONE: +39 081 2530702
EMAIL: ANTONIO.BOSCO@UNINA.IT

GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: /
MODULE: PRECISION STRATEGIES IN PARASITOLOGY
SSD OF THE MODULE: MVET-03/B “PARASSITOLOGIA E MALATTIE PARASSITARIE DEGLI ANIMALI E DELL'UOMO
TEACHING LANGUAGE: ENGLISH
CHANNEL: //
YEAR OF THE DEGREE PROGRAMME: II
SEMESTER: I
CFU: 5

REQUIRED PRELIMINARY COURSES (IF MENTIONED IN THE COURSE STRUCTURE "REGOLAMENTO")

None.

PREREQUISITES (IF APPLICABLE)

During the course of studies, the student must have already acquired basic knowledge on epidemiology, immunology and parasitology relating to the host-microorganism relationship and to the morphology and biology of the main pathogens of zootechnical interest..

LEARNING GOALS

The course has the primary objective of providing the student with insights into epidemiology, diagnosis and prevention/control of the main parasitic diseases of livestock animals (cattle, buffalo, sheep, goat and swine) through Precision Management Approaches.
Having a good knowledge about the way of transmission of parasitic diseases, sources and methods of sample collection, risk factors and innovative methodologies for the prevention of parasitic diseases in livestock animals.
Furthermore, the course aims to provide knowledge, principles, and application of Precision Management Approaches in different areas with interventions to be implemented on individual animals or on community realities (farms) for the prevention of parasitic diseases.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Students are required to demonstrate knowledge of the micro/macro-epidemiology of the main parasitic diseases of livestock animals through use of innovative precision tools (drones, dataloggers and GPS), to be able to formulate a correct diagnosis using innovative techniques (automatisms, Artificial Intelligence and Machine Learning) and to implement prevention measures to control their spread. They also have to know how to apply Precision Management Approaches methods for the diagnosis and prevention of parasitic diseases.

Knowledge and understanding

Students must demonstrate knowledge and understanding of the notions relating to the etiological aspect of parasitic diseases of livestock animals. Applying the acquired knowledge, students should be able to elaborate arguments concerning the relationships between pathogens and host organisms, the difference between endogenous and exogenous infections. Specifically, the course aims to provide students with the knowledge and basic methodological tools necessary for the diagnosis and prevention of parasitic diseases on farms. These tools will allow students to understand the causal connections between different types of parasitic infections, and between the concept of contagion and the onset of the disease. In addition, the course aims students to develop skills from the prevention to the prediction of parasitic diseases by using advanced technologies such as sensors, cameras, GPS for a rapid diagnosis and rapid control of parasitic diseases, to ensure a more efficient integrated health management.

Applying knowledge and understanding

Students must be able to be able to create connections between the notions provided during the course, to implement their knowledge about parasitic diseases of livestock animals. Students are also required to know how to implement prevention and biosecurity measures, in order to limit the transmission of diseases between animals - humans or vice versa; and how to apply innovative methodological tools for the diagnosis and prevention of parasitic diseases.
The course is aimed at transmitting the methodological and operating skills necessary to concretely apply knowledge on parasitic diseases. Furthermore, the ability to use methodological tools will be favored through practical activities by performing laboratory and on-farm techniques (e.g. sensors) suitable for the correct diagnosis and prevention of the main parasitic diseases of livestock animals.

COURSE CONTENT/SYLLABUS

FRONTAL LESSONS	ORE
General Parasitology Concepts: *Epidemiology, mode of transmission, diagnosis and prevention/control of the main parasitic diseases of farm animals (ruminants and swine)*	5
Micro/Macro Epidemiology of parasites *using innovative precision tools (drones, dataloggers and GPS)*	5
Automatisms, new technologies, Artificial Intelligence and Machine Learning *for the diagnosis and prevention/control of parasitic diseases (KFM microscope)*	5
Patient-tailored control model (precision control): *sensors for the diagnosis and*	5

prevention/control of parasitic diseases (Targeted Selective Treatment approach)	
From prevention to prediction: *geographic information systems and geospatial models (cluster and hotspot)*	5
Alternative Approaches *for the control of parasites (Anthelmintic Pasture)*	5
TOTAL	**30**

PRACTICAL TEACHING	ORE
Laboratory activities: introduction of the main innovative diagnostic techniques in parasitology	5
Livestock Farm: farm management, biological sampling and diagnosis of the main parasitic diseases of ruminant and swine by using advanced techniques and innovative laboratory equipment on farm	5
Prevention and Prediction" of parasitic diseases: use of **cameras**, **GPS**, **Drones** and **sensors** in community situations for a rapid diagnosis of parasitic diseases on farm	5
Use of **simulation models** and **geographic information systems** (GIS) for the identification of spatial patterns in the spread of parasitic diseases, to implement their control and prevention programs	5
TOTAL	**20**

READINGS/BIBLIOGRAPHY

- ✓ *Lecture notes provided during the course*.
- ✓ *Suggested scientific articles*.
- ✓ Veterinary Parasitology, M. A. Taylor, R. L. Coop, Richard L. Wall, John Wiley & Sons, 21 dic 2015 (book).

TEACHING METHODS

Teacher will use:
• frontal lessons for 60% of the total hours, which will held in attendance.
• practical lessons for the remaining 40%.
The practical activities will take place in the parasitology and computer science laboratories and in field (livestock farms).
The teacher will use a student-centered method; tutorials; Practical lessons, learning by doing method. The lessons will be supported by multimedia teaching material available to students on the teacher's website, after registering for the course.

EXAMINATION/EVALUATION CRITERIA

a) Exam type:

Exam type	
written and oral	
only written	
only oral	X
project discussion	
other	

b) Evaluation pattern:

The oral exam consists of at least 4 questions.
For the evaluation, the "Regulation for Guidelines_for_exams_management" approved by the Didactic Coordination Committee of the Master Degree in Precision Livestock Farming will be considered.