

## 28417 - Parasitology

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 28417 - Parasitology

**Faculty / School:** 105 - Facultad de Veterinaria

**Degree:** 451 - Degree in Veterinary Science

**ECTS:** 6.0

**Year:** 2

**Semester:** Second semester

**Subject type:** Compulsory

**Module:**

### 1. General information

The general objective is for the student to know the phenomenon of parasitism and how it influences the health and productive aspects of animals of veterinary interest, as well as the role it plays in public health. The student must know the morphological, physiological, genetic and reproductive characteristics of parasites, the parasite-host relationship, as well as how environmental factors influence this relationship and each of the components separately.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: 3 (3.3, 3.B, 3.D) 4 (4.4, 4.5, 4.7), 9 (9.5), 15 (15.1, 15.8, 15.9).

### 2. Learning results

The student, in order to pass this subject, must demonstrate the following results...

- . Understands the biological phenomenon of parasitism.
- . Is able to recognize the relationships between the components of the biological phenomenon of parasitism, Parasite - Host and how the environment influences this relationship.
- . Is able to handle the definitions of the main components of the parasitism relationship.
- . Is able to relate the main concepts and components of the biological phenomenon of parasitism.
- . Is able to recognize the structural (anatomical), physiological, genetic and ecological components of parasites (protozoa, helminths and arthropods).
- . Is able to understand and manage the taxonomy and systematics of the parasitic living beings studied in the subject..
- . Is able to understand and apply knowledge of the parasite-host relationship in the diagnosis of parasites.
- . Knows and understands the different aspects of the parasite-host relationship in order to explain the epidemiology, pathogenesis and prevention of the infections/diseases they cause in animals of veterinary interest and in humans (zoonoses).
- . Is able to know and use laboratory tools and techniques for diagnostic use.

### 3. Syllabus

#### THEORY

#### GENERAL (5 hours)

Topic 1. Concept of parasitology. Historical evolution and relationship with other sciences. Parasitism and its relation to other types of biological associations. Origin and evolution of parasites. Adaptations to parasitism: Speciation and parasite specificity.

Topic 2. Types of parasites. Biology and physiology of parasites. Biological cycles. Zoological systematics, taxonomy and nomenclature. General classification of parasites of veterinary interest.

Topic 3. Host-parasite relationships. Host invasion pathways. Pathogenic actions of parasites. Host defence reactions. Parasitic resistance and immunity. Mechanisms of evasion of the parasitic immune response.

Topic 4. Parasite-host-environment relationships. Spread of parasites. Influence of environmental and socio-economic factors.

#### ARTHROPODS (5 HOURS)

Topic 5. Type arthropoda. General characteristics and classification. Study of the genera of greatest veterinary interest. Study of

their role as transmitters or carriers of diseases (vectors).

Topic 6. Insecta. General characteristics and classification. Study of the genera of greatest veterinary interest. Study of their role as vectors.

Topic 7. Order Phthiraptera. Order Hemiptera. Order Siphonaptera. Order Diptera. Study of the genera of greatest veterinary interest. Study of their role as vectors.

Topic 8. Order Coleoptera. Order Blattodea Order Lepidoptera. Order Hymenoptera. Study of the genera of greatest veterinary interest. Study of their role as vectors.

Topic 9. Pentastomide. General characteristics and classification. Study of the genres of interest.

Topic 10. Arachnida. General characteristics and classification. Metastigmata. Family Ixodidae. Family Argasidae. Study of the genera of greatest veterinary interest. Study of their role as vectors.

Topic 11. Study of the suborders Prostigmata, Mesostigmata and Astigmata. Study of the genera of greatest veterinary interest. Study of their role as vectors.

#### PROTOZOOS (12 hours)

Topic 12. Subkingdom Protozoa. General characteristics and taxonomic classification. Sarcomastigophora type. Subtype Mastigophora (flagellates). General characteristics and classification. Order Kinetoplastida. Family Trypanosomatidae: Trypanosoma and Leishmania genera.

Topic 13. Diplomonadida. Family Hexamitidae: Genera Giardia and Hexamita. Trichomonadidae. Family Trichomonadidae: Trichomonas genus and others of interest. Family Monocercomonadidae: Genus Histomonas.

Topic 14. Sarcomastigophora type. Subtype Sarcodina (amoebae). General characteristics and classification. Order Amoebida. Genus Entamoeba.

Topic 15. Type Apicomplexa (Sporozoa). General characteristics and classification. Class Sporozoa. Subclass Coccidia. Suborder Adeleina. Genus Hepatozoon. Suborder Eimeriina. General characteristics and classification. Family Eimeriidae: Genera Eimeria and Isospora. Family Cryptosporidiidae: Cryptosporidium genus.

Topic 16. Suborder Eimeriina (continued). Family Sarcocystidae. General characteristics and classification. Genera Toxoplasma, Besnoitia, Neospora and Sarcocystis.

Topic 17. Suborder Haemosporina. General characteristics and classification. Family Plasmodiidae: Plasmodium, Haemoproteus and Leucocytozoon genera.

Topic 18. Subclass Pyroplasmia. Order Piroplasmida. General characteristics and classification. Family Babesiidae: Genus Babesia. Family Theileriidae: Genus Theileria.

Topic 19. Type Ciliophora. General characteristics and classification. Family Balantidiidae: Genus Balantidium.

Topic 20. Microspora type. General characteristics and classification. Order Microsporida. General characteristics and classification. Genera Encephalitozoon and Nosema.

Topic 21. Type Myxozoa. General characteristics and classification. Class Myxosporea. General characteristics and classification. Study of genera of veterinary interest.

#### HELMINTOS (18 hours)

Topic 22. Helminths. General characteristics and classification. Platyhelminthum type. General characteristics and classification. Trematoda. General characteristics and classification. Subclass Monogenea. General characteristics and classification. Study of genera of veterinary interest.

Topic 23. Trematoda class (continued). Subclass Digenea. General characteristics and classification. Family Fasciolidae. Family Dicrocoelidae. Family Paramphistomidae. Family Schistosomatidae. Family Diplostomatidae. Study of genera of veterinary interest.

Topic 24. Cestoda. General characteristics and classification. Order Pseudophyllidea. Family Diphyllobotridae. Order Trypanorhyncha. Family Gymnorhynchidae. Study of genera of veterinary interest.

Topic 25. Order Cyclophyllidea. General characteristics and classification. Family Mesocestoididae. Family Anoplocephalidae. Family Dipylidiidae. Study of genera of veterinary interest.

Topic 26. Family Taeniidae. Taenia and Echinococcus genera.

Topic 27. Type Nematelminthum. General characteristics and classification. Class Nematoda. General characteristics and classification. Subclass Secernentea. General characteristics and classification.

Topic 28. Order Rhabditida. Family Rhabditidae. Family Strongyloidea. Order Oxyurida. Family Oxyuridae. Study of genera of veterinary interest.

Topic 29. Order Ascarida. Family Heterakidae. Family Ascaridae. Family Ascaridiidae. Study of genera of veterinary interest.

Topic 30. Order Strongylida. Superfamily Metastrongyloidea. Family Metastrongylidae. Family Protostrongylidae. Study of genera of veterinary interest. Family Angiostrongylidae. Family Crenosomatidae. Family Phylaroididae. Study of genera of veterinary interest.

Topic 31. Order Strongylida (continued). Superfamily Trichostrongyloidea. Family Dictyocaulidae. Family Trichostrongylidae. Family Ollulanidae. Study of genera of veterinary interest.

Topic 32. Order Strongylida (continued). Superfamily Strongyloidea. Family Strongylidae. Family Chabertiidae. Family Syngamidae. Superfamily Ancylostomatidae. Study of genera of veterinary interest.

Topic 33. Order Spirurida. Superfamily Filarioidea. Family Onchocercidae. Subfamily Onchocercinae. Subfamily Setariinae. Subfamily Dirofiliariinae. Study of genera of veterinary interest.

Topic 34. Order Spirurida (continued). Superfamily Habronematoidea. Superfamily Thelazioidea. Family Thelaziidae. Study of genera of veterinary interest. Superfamily Spiruroidea. Family Spirocercidae. Family Gongylonematidae. Study of genera of veterinary interest.

Topic 35. Subclass Adenophorea. Order Enoplida. Superfamily Trichinelloidea. Family Trichinellidae. Family Trichuridae. Study of genera of veterinary interest.

## PRACTICAL TEACHING

Study of the basics of parasitological diagnostic techniques.

Study of the morphology of the Insecta. Identification of the different taxonomic groups and the evolutionary stages of each group.

Practice 3.- Study of the morphology of the Arachnida. Identification of the different taxonomic groups and the evolutionary stages of each group.

Study of the morphology of Protozoa (I). Identification of the different taxonomic groups and the evolutionary stages of each group.

Study of the morphology of Protozoa (II). Identification of the different taxonomic groups and the evolutionary stages of each group.

Study of the morphology of Trematoda. Identification of the different taxonomic groups and the evolutionary stages of each group.

Study of the morphology of Cestoda. Identification of the different taxonomic groups and the evolutionary stages of each group.

Study of the morphology of Nematoda. Identification of the different taxonomic groups and the evolutionary stages of each group.

Practice 9.- Review practice

Presentation and evaluation of the practical work. Evaluation of the knowledge and skills acquired in the practical classes.

## 4. Academic activities

Different types of teaching resources are combined for learning the subject:

Theoretical classes: 40 hours of theoretical activities distributed into 4 thematic blocks and made up of 35 topics.

Laboratory practices: 20 hours, structured in 10 sessions of 2 hours each. Practical teaching is carried out in coordination and parallel to theoretical teaching.

Practical work: preparation and public presentation of a topic assigned by the teacher. The work will be carried out jointly by the designated practice group.

## 5. Assessment system

Evaluation of theoretical knowledge: written test where students will prove the acquisition of knowledge, skills and aptitudes indicated in the learning results. It will consist of 40 short answer questions, with a weighted distribution related to the theoretical knowledge taught (general and descriptive parasitology and basis for parasitological diagnosis). The grade will be from 0 to 10, and a 5 will be required to pass. The grade will account for 70% of the student's final grade in the subject, provided it has been passed.

Evaluation of the practical sessions: test in which the student will prove the acquisition of knowledge, skills and aptitudes of the topics covered in the practical sessions. This assessment will consist of two parts:

. Written exam with images of 10 slides seen during the term, both in the practical and theoretical sessions.

. Practical recognition exam (macro and/or microscopic) of parasite specimens seen in the different practical sessions.

Both tests will assess the knowledge and perception of the morphological details of the different taxonomic types studied in the subject. The grade will be from 0 to 10, and a 5 will be required to pass. The grade will represent 20% (10% slides + 10% parasite specimens) of the student's final grade in the subject, provided it has been passed.

Evaluation of the practical work: public presentation in which the ability to work in a team and to present the knowledge acquired is assessed. The grade will be from 0 to 10, and a 5 will be required to pass. The grade will account for 10% of the student's final grade in the subject, provided it has been passed.

The evaluation of the practical sessions and the practical work will be carried out in practice number 10. Students who have not taken the practical exam or have taken it but would like to repeat it can do so during the official exam period.

In order to pass the subject it is necessary to pass each evaluation test separately (theoretical exam, evaluation of practical sessions and practical work). Of the three parts that make up the total evaluation of the subject, a passing grade will be retained for one academic year, with the same grade obtained.