COURSE DATA

DATA SUBJECT

Code: 40349
Name: Human Protozoosis
Cycle: Master's Degree / Doctorate
ECTS Credits: 15
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2038 - Master's Degree in Tropical Parasitic Diseases	Facultat de Farmácia i Ciències de L'alimentació	1	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
2038 - Master's Degree in Tropical Parasitic Diseases	Human protozoa	COMPULSORY

COORDINATION

MUÑOZ ANTOLI-CANDELA CARLA TERESA

SUMMARY

The Module includes an updated overview on the main parasitic human protozoans and their relationship with the host, including the study of the aetiological agent, their evolutionary cycle, epidemiology, transmission, pathology and clinical manifestations, diagnoses, treatment and control. After acquainting the student with generalities of parasitic diseases, the module on human protozoa includes the study of amoebae, flagellates and ciliates of the digestive and urogenital system, diseases caused by flagellated haemotissulars: leishmanioasis, Chagas's Disease and sleeping sickness, human coccidiosis, malaria and opportunist protozoosis. Finally, the module concludes with an overview on Molecular Topology and Machine Learning in the Design of Antiparasitics and Insecticides. The impact of parasites produced by protozoa is made unaware of the Sustainable Development Goals (SDG), specifically with Goal 3 aimed at guaranteeing a healthy life and promoting well-being.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It will be necessary to hold one of the following qualifications (Bachelor's, Double Degree, Licentiate): Pharmacy, Medicine, Veterinary Medicine, Microbiology, Biology, Food Science and Technology, Human Nutrition and Dietetics, Biochemistry and Biomedical Sciences, Biotechnology, Environmental Sciences, Nursing, Physiotherapy. In the case of foreign students, they must hold an official qualification equivalent to one of the previous qualifications.

COMPETENCES / LEARNING OUTCOMES

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Conocer las enfermedades parasitarias en todos sus aspectos de etiología (caracterización morfoanatómica y molecular, ciclo biológico), epidemiología, clínica (sintomatología y patología), diagnóstico (etiológico, inmunológico y molecular), profilaxis y control.

Conocer la terapéutica antiparasitaria.

Contemplar en conjunto y tener en cuenta los distintos aspectos y las implicaciones en los distintos aspectos de las decisiones y opciones adoptadas, sabiendo elegir o aconsejar las más convenientes dentro de la ética, la legalidad y los valores de la convivencia social.

Know how to work in multidisciplinary teams reproducing real contexts and contributing and coordinating their own knowledge with that of other branches and participants.

Ser capaz de asumir cualquiera de las tareas y responsabilidades relacionadas con las enfermedades parasitarias humanas: preparación práctica y formación teórica actualizadas de sanitarios para desempeñar trabajos, funciones y cargos de todo tipo y nivel en el amplio campo de la lucha, control, diagnóstico, difusión, enseñanza y estudio de las enfermedades parasitarias en todo el mundo.

Ser capaz de diseñar antiparasitarios e insecticidas contra vectores transmisores de enfermedades infecciosas.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

DESCRIPTION OF CONTENTS

1. Generalities of Parasitic Diseases

- Concepts, definitions and terminology related to the phenomenon of parasitism and parasitic disease.

- Characterization of the main parasitic groups.

- General mechanisms of the host¿s immunological response to parasitic invasion is analysed.

2. Amoebae, Flagellated and Ciliated of the Digestive and Urogenital systems

-Characterization and general study of the morphology, structure and biology of amoebae, flagellates and ciliates.

- Characterization of the main amoebae of the digestive tract and detailed analysis of Amoebosis and amoebic dysentery.

- Characterization of the main parasitic groups of flagellates of the digestive and urogenital tract.

- Detailed analysis of Giardiosis and Trichomonosis.

- Characterization of the main intestinal ciliates and detailed analysis of Balantidosis.

3. Diseases caused by flagellated in blood and tissues: leishmaniasis, Chagas disease and sleeping sickness

- Leishmaniasis: general analysis of the aetiology, biological cycle, transmission, pathogenesis, symptomatology, diagnosis, treatment and control.
- Sleeping sickness or African Trypanosomiasis: general analysis of the aetiology, life-cycle, transmission, pathogenesis, symptomatology, diagnosis, treatment and control.
- Chagas Disease or American Trypanosomiasis: general analysis of the aetiology, life-cycle, transmission, pathogenesis, symptomatology, diagnosis, treatment and control.

4. Human Coccidiosis

- Multidisciplinary analysis of human Coccidioses.
- Theoretical and practical study of the main human Coccidioses.

- Specific analysis of the problem of these diseases in tropical and subtropical countries, as well as in other parts of the world.
- Analysis of these diseases considering their aetiology (morphoanatomics and life-cycle), epidemiology, clinical presentation (symptomatology and pathology), diagnosis (aetiological and immunological), treatment, prevention and control.

5. Malaria

- Malaria: general analysis of etiology, life cycle, pathogenesis, symptoms, diagnosis, treatment, and prophylaxis.

- Malaria: special study of transmission, epidemiology, and control.

- Problems of malaria control. Organization of vector control.

6. Opportunistic protozooses

- *Pneumocystis jiroveci*: study of biological characteristics, life-cycle, epidemiology, pathogenesis, clinical manifestations, diagnosis, treatment and control.
- *Blastocystis* sp.: study of biological characteristics, life-cycle, epidemiology, pathogenesis, clinical manifestations, diagnosis, treatment and control.
- *Cryptosporidium* sp.: study of biological characteristics, life-cycle, epidemiology, pathogenesis, clinical manifestations, diagnosis, treatment and control.
- Microspora (Microsporidia) and Myxozoa. Myxosporea. Classification. Diagnostic characteritics. Biology and life-cycle. Hosts. Phylogenetic relationships. Importance of Myxosporidia as potential opportunists in immunosuppressed patients. The role of Myxosporidia as allergens through the ingestion of infected fish.

7. Molecular Topology and Machine Learning in the Design of Antiparasitics and Insecticides

- Theory: molecular topology: introduction. - QSAR analysis methods - Prediction of molar, molecular and biological properties. - Analysis of multilineal and discriminant regression. - Design of active compounds for parasitic diseases and against vectors.
- Practice: Managment of computer programs used in the calculation of topological indices. - Analysis of multilineal and discriminant regression. - Studies of prediction and of discrimination of biological and pharmacological activity. - Design of new active compounds.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	75,00
Seminar	2,00
Laboratory	71,00
Total hours	**150,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	90,00
Preparation of lessons	13,00
Preparation for assessment activities	90,00
Resolution of case studies	12,00
Total hours	**225,00**

TEACHING METHODOLOGY

Theoretical master class, allowing the teacher to highlight the most important aspects of every lesson. Each master class will be accompanied by graphical material. Tutorial or meeting between the teacher and a group of students with the purpose of exchanging information, analysing, orientating or evaluating a problem or a project, of debating a topic etc. useful for the academic and personal development of the student. Participative model in the practical classes, guiding the work of the student in the laboratory, so that the knowledge acquired in the theoretical classes is practically applied and correct microscopic vision of the studied parasites is achieved.

EVALUATION

A student will pass the module with a minimum of 5 points out of 10.

The mark of the module will be the sume of:

a) **written obligatory examination**, which includes questions, topics to be developed, concepts, problems or questions of reasoning, tests, drawings or schemes with questions, etc. The contents will include that of the all theoretical lessons with exception of "Molecular Topology and Machine Learning in the Design of Antiparasitics and Insecticides" (72%);

b) **task resolution**: The module "Molecular Topology and Machine Learning in the Design of Antiparasitics and Insecticides" will be evaluated through the virtual classroom as follows: multiple choice questionnaires for continuous evaluation (11%) and presentation of tasks (7%);

c) **continuous evaluation** (partial questionnaires, partial tasks, participation, motivation, assistance, etc.) (10%).

You will not be able to take any exam again to raise your grade.

The copy or manifest plagiarism of any task that is part of the evaluation will imply the impossibility of passing the subject, then submitting to the appropriate disciplinary procedures.

Please note that, in accordance with Article 13. d) of the University Student Statute (RD 1791/2010, of December 30), it is the duty of a student to refrain from using or cooperating in fraudulent procedures in the evaluation tests, in the works carried out or in official documents of the university.

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