COURSE DATA

DATA SUBJECT

Code: 40351
Name: Epidemiology and Diagnosis of Parasitic Illnesses
Cycle: Master's Degree / Doctorate
ECTS Credits: 13
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2290 - Máster Universitario en Enfermedades Parasitarias Tropicales	Facultat de Farmàcia i Ciències de l'alimentació	1	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
2290 - Máster Universitario en Enfermedades Parasitarias Tropicales	Epidemiology and diagnosis of parasitic diseases	COMPULSORY

COORDINATION

ESTEBAN SANCHIS JOSE GUILLERMO

SUMMARY

The subject includes an up-to-date overview on the **epidemiology** (including parasite epidemiology and epidemiological geography) of parasitic diseases and their **diagnoses** from an aetiological point of view (with special emphasis on **coprology**) and also from an indirect viewpoint referring to the **immunology and immunodiagnosis of parasitic diseases**, as well as **molecular parasitology**.

The contents of this module refer to:

- **epidemiological aspects** of parasites which continue to be an essential part of the work of all professionals in the health sector, and it is crucial to correctly analyse the importance of the geographic distribution of parasites and their hosts, the influence of abiotic and biotic environmental factors on the epidemiology of parasitic diseases and the application of remote detection (teledetection) in public health, in general, and in parasitology in particular;

- **aetiological diagnosis** of parasitic diseases, which concern basic laboratory techniques in human parasitology and microscopic visualization of any form or structure in which certain parasite species may appear in the distinct biological samples to be analysed. Within this field of diagnosis, **parasite coprology** constitutes one of the most relevant parts within this module and Master, due to the large number of

parasite species encountered in the gastrointestinal tract and related glands, as well as the small size of most parasite structures that can only be detected by means of coproparasitological analyses;

- **immunology and immunodiagnosis** of parasitic diseases which is to analyse the immune response in the context of parasite-host interaction, the immunopathology associated to parasitoses, the application of immunoparasitological methods in the laboratory and the characterization and interpretation of immunodiagnostic methods in Parasitology;

- **molecular parasitology**, which is to shed light on parasite molecules, thus explaining the complex parasite-host relationship in order to establish control mechanisms through the design of systems of molecular diagnosis, design of vaccinations and highly specific treatments.

- finally, integrate the knowledge acquired with the **SDGs** into models of **sustainable development** with a health focus.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

The contents of this module can be studied without the necessity of studying the remaining modules of this Master, although it would be convenient and recommendable to have some previous and basic knowledge of Parasitology and parasitic diseases.

COMPETENCES / LEARNING OUTCOMES

2038 -

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.

Proyectar sobre problemas concretos sus conocimientos y saber resumir y extractar los argumentos y las conclusiones más relevantes para su resolución.

Ser capaces de obtener y de seleccionar la información y las fuentes relevantes para la resolución de problemas, elaboración de estrategias y asesoramiento a clientes.

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.

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. Epidemiology of parasitic diseases- Study of individual cases: phases, forms and transmission of diseases.- Study of parasitoses as mass illnesses.- Importance of secular trends of parasitic diseases.

2. Epidemiological geography of parasitic diseases- Epidemiological geography of each parasitic disease.- Geographic Information Systems (GIS) in Parasitology.- Climatic prediction indices for parasitic diseases.- Remote (satellite) detection of parasitic diseases.

3. Aetiological diagnosis of parasitic diseases- Significance of parasitological analysis and problems concerning direct diagnosis of parasitic diseases- Sampling, transporting and processing of biological samples to be analysed at laboratories through the most appropriate techniques- Methods and techniques of diagnosis including training in microscopic measuring techniques of parasitic structures.

4. Parasite coprology- Importance and problems of coproparasitological diagnosis.- Practical application of all methods and techniques required, from an aetiological point of view, in coproparasitological analysis. - Microscopic recognition of any parasite structure liable to detection in faeces, based on each of the analytical techniques used.- Diagnosis of various clinical cases based on human faecal samples.

5. Immunology and immune diagnosis- Basic principles of the immune response in vertebrates: the case of parasitic infections.- Antigen recognition and response activation of the immune response effector mechanisms of the immune response and regulation of the immune response.- Immune response to parasites. Characterization of the immunological mechanisms involved in host parasite interaction in protozoa, helminths and arthropods.- Regulation of the immune response against parasites.- Immuno-evasion mechanism of parasites and their effects on the interaction with the host.- Immuno-pathological phenomena associated with parasitic infections.- Experimental methods in inmunoparasitology.- Application of the immune response to the diagnosis of parasitic infections.- Development and interpretation of immune diagnosis in parasitic diseases.- Basic principles of the development of vaccines

against parasites

6. Molecular Parasitology- General concepts of molecular methods in Parasitology.- Molecular epidemiology of tropical parasitic diseases.- Preparing and obtaining samples for their study.- Description of genomics and proteomics methodology.- Molecular mechanisms for the evasion of the immune response used by parasites.- Bioinformatics in Molecular Parasitology.- Applications of Molecular Parasitology.- Displayed of the techniques used in the laboratory.

7. Sustainability- Social Responsibility and Cooperation in the field: Objectives and goals of the 2030 Agenda: Weaknesses and improvements of the SDGs;- Shared and subsidiary social responsibility; Multi-stakeholder collaboration formulas;- Planning and examples of responsible and sustainable health projects; Cooperation and health projects in Africa: the case of Mozambique; Cooperation and health projects in Latin America: the case of Argentina (Mundo Sano); Health projects in conflict situations: MSF's action.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	56,00
Seminar	2,00
Laboratory	70,00
Total hours	**130,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	22,00
Independent study and work	74,00
Preparation of lessons	13,00
Preparation for assessment activities	74,00
Resolution of case studies	12,00
Total hours	**195,00**

TEACHING METHODOLOGY

Master class in theory allowing the teacher to organise and plan the subject, study and expand on important aspects of each lesson. Each master class is acompained by suitable graphic material backing up the consolidation of knowledge.Tutorial class or get-together between the tutor and group of students aiming at an exchange of information, analysing and providing orientation or assessment of a problem or project and debating a useful topic for the academic and personal development of the student.Participative model in practical classes, guiding the student¿s work in the laboratory so that he/she is able to apply

his/her knowledge acquired in the theoretical classes, so that correct microscopy of study parasites is achieved together with the solution of practical problems or cases and correct decision making.

EVALUATION

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

The mark of the module will be the sum of a:

a) written text (theoretical-practical exam), test and short questions on: Epidemiology (10%), Aethiological Diagnosis (10%),Immunology and Immunodiagnosis of Parasitic Diseases (10%) as well as Molecular Parasitology (10%);

b) practical exam on Coprology of Parasitic Diseases (45%)

c) practical work on Epidemiological Geography of Parasitic Diseases (10%)

d) continuous evaluation (partial questionnaires, partial tasks, participation, motivation, assistance, etc.) (5%).

It is mandatory to pass the practical exam of Coprology (5 ponts out of 10) to successfully pass the module.

You will not be able to take any exam again to raise your gradeThe 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. The application of the Protocol of Action during the administration of Assessment Tests will be considered. Access to the regulations: https://links.uv.es/3zNcVL5

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