

**COURSE DATA****Data Subject**

<b>Code</b>	34104
<b>Name</b>	Clinical Parasitology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1201 - Degree in Pharmacy	Faculty of Pharmacy	5	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1201 - Degree in Pharmacy	41 - Clinical parasitology	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
ESTEBAN SANCHIS, JOSE GUILLERMO	21 - Cellular Biology and Parasitology

**SUMMARY**

The course is mainly oriented to provide more specific knowledge of parasitic diseases caused by protozoa, helminths (Trematodes, Cestodes, Nematodes and Acanthocephala) and arthropods that affect human beings. Such knowledge is aimed at clinical and epidemiological aspects, with special emphasis on the clinical characterization, the therapeutic update and the prophylactic guidelines of the different parasitic diseases. All of this is meant to generate students' own conclusions for practical application, using individual case studies. Consequently, Clinical Parasitology fits perfectly within some of the sustainable development goals (SDGs) established in the United Nations Agenda 2030. Concretely, six of these SDGs are part of the repercussions parasitic diseases have within the context of the world population. In general, countries, but particularly those in tropical and subtropical zones, present a series of parasitic diseases very much implicated in some of the objectives contemplated in the SDGs. Specifically, a reduction of poverty is aimed at (with consequences such as hunger, malnutrition, the lack of a life in dignity, the impossibility of having access to education, as well as diseases) putting an end to hunger and achieving food security together with improved nutrition; guaranteeing and promoting health and welfare; guaranteeing inclusive, equitable and quality education; and guaranteeing the availability of water and its sustainable management, with sanitation for everybody. All of this is fundamental in order to face parasitic diseases and, thus, achieve a more sustainable world, with a better future for all. Therefore, students will be able to draw relevant conclusions with regard to their future professional role. Consequently, the entire subject is divided in two parts:



- A) General part: on the importance of parasitological laboratory procedures and its problems;
- B) Special part: further subdivided into 3 groups (protozoa, helminths and arthropods) encompassing the epidemiological and clinical aspects of the Parasitic Diseases produced by the relevant species of each of the groups referred to and their impact on humans.

## 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 is recommended to have studied the subjects of "Parasitology" and Microbiological and Parasitological Analysis. The student should also have completed the subject "Immunology" to facilitate the study of the subject.

## OUTCOMES

### 1201 - Degree in Pharmacy

- Training in debate and rationally based criticism.
- Reinforce the acquisition of the general competences of the Curriculum of Degree in Pharmacy.
- Mastering parasitological terminology at clinical level
- Acquire and develop relevant skills for appropriate epidemiological and clinical management
- Knowledge of the practical utility of the therapeutic arsenal available in Spain and abroad for the treatment of each parasitic disease in humans
- Knowledge and usage of standard documentary sources of all types within the clinical field of human parasitic diseases
- Training to address the resolution of the clinical disease in an interdisciplinary manner with other professionals
- Development of future awareness concerning the relevance of the diagnosis, treatment and prevention.
- Practical application of that knowledge to various forms of professional practice, with respect for human rights, democratic principles, the principles of equality between women and men, solidarity, environmental protection and the promotion of peace.

After having completed this course, students should be able to:

- Master parasitological terminology in the clinical field;



- Acquire and develop skills relevant to the proper epidemiological and clinical management of parasitic diseases;
- Know the adequate use of the therapy used in the treatment and prevention of parasitic diseases;
- Know and manage standard documentary sources of all types within the clinical field of human diseases;
- Argue and criticise with a sound and rational basis;
- Deal with the resolution of parasitic diseases from a clinical point of view, in an interdisciplinary manner with other professionals;
- Develop future professional awareness about the relevance of diagnosis, treatment and prevention of parasitic diseases.
- Apply knowledge to the diverse modalities of the professional practice.
- Being able to apply knowledge acquired to the various modalities of professional practice, especially within the six first Sustainable Development Goals (SDGs) of Agenda 2030.

## **DESCRIPTION OF CONTENTS**

### **1. Part I**

Lessons 1 to 3: These first three lessons address, in a general manner, the appropriate protocol of treatment diagnosis of each biological material that is likely to be discussed from a parasitological perspective, as well as all the problems which could later appear in each diagnostic protocol.

### **2. Part II**

The remainder of the lessons examines epidemiological aspects and clinical of parasitic diseases caused by Protozoa, Helminths (Trematodes, Cestodes, Nematodes and Acanthocephala) and Arthropods affecting humans, in response to the different parasitological microhabitats.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Laboratory practices	13,00	100
Seminars	1,00	100
Tutorials	1,00	100
Development of group work	4,50	0
Preparing lectures	48,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>112,50</b>	

**TEACHING METHODOLOGY**

• **Lectures.** In these classes the professor will give an overview of the topic under study with special emphasis on new aspects or special complexity and making use of new teaching tools. During these contact hours of theory, the professor explained Parasitic Diseases caused by Protozoa, Helminths (trematodes, cestodes, nematodes and Acanthocephala) and by arthropods that affect human beings. Such knowledge is aimed at clinical and epidemiological aspects, with special emphasis on the clinical, therapeutic and updating prophylactic regimens for each of the different parasitic diseases. Meanwhile, students should take note of the information they receive, while they should try to raise any doubts and questions that arise at the time.

• **Practical classes.** In the contact hours of practical activity in the lab focuses on two parts: the teacher will present the objectives, report on material handling, will oversee the job done and help the interpretation of results, by contrast, students conducted on an individual recognition of parasite species in different biological samples, viewing control slides and the resolution of practical cases.

• **Tutoring.** During this time, the student must present their needs, while Professor proceed to guide and resolve any doubts, all in order to achieve an adequate knowledge of the matter. Students will come to them in small groups.

• **Seminars.** Students, in groups of up to four students, develop and expose a work on some of the issues proposed by the teacher. These seminars will be exercised to find information, the ability to outline and speaking. Also encourage teamwork.

OBSERVATION: The agenda contemplated in the academic year 2020-2021 (with health situation maintained by Covid-19) will only be activated if the health situation requires it and with prior agreement of the Governing Council.



## EVALUATION

To evaluate the student's progress, i.e. his/her level acquired, the total number of hours present together with the daily work carried out are considered, which enables the teacher to obtain a dynamic image of the development of each student along the course.

However, the numerical qualifications of his/her knowledge and acquired skills is based on methods which are a comparable and are an objective measure, with recorded results, implying the assessment of written tests.

In this sense, and by means of a theoretical/practical exam of **theoretical classes**, questions, clinical cases and tests are given with the aim to assess the acquired knowledge, i.e. 5 out of 10 points have to be obtained to pass the exam (constituting 85% of the final mark).

The **practical content** is considered as well, i.e. the student has to attend all practical classes (in justifiable cases, an alternative group will be allocated), at the same time, the practical notebook has to be filled in correctly. In order to pass this exam, 6 out of 10 points have to be obtained (4 for attendance and 6 for the contents of the notebook) which constitutes 10% of the final mark.

The student's attitude and dedication in **tutorials** are also considered, requiring his/her obligatory presence, which constitutes 5% of the final mark.

Students who participate in the **seminar** are specifically assessed, i.e. a special qualification is obtained, constituting 5% of the final mark.

Those students who are not present in the first call for the theoretical exam are officially considered absent and will have to be present for the second call.

Finally, student assessment of theory as well as practice of those students who do not pass the subject during the academic year will be kept for the next two academic years.

OBSERVATION: The agenda contemplated in the academic year 2020-2021 (with health situation maintained by Covid-19) will only be activated if the health situation requires it and with prior agreement of the Governing Council.





## REFERENCES

### Basic

- BEAVER (P.C.), JUNG (R.C.) & CUPP (E.W.), 1986.- Parasitología Clínica. Salvat Edit., Barcelona, 822pp.
- BOGTISH (B.J.) & CHENG (T.C.), 1999.- Human Parasitology. 2 Edit. Academic Press, Orlando., 496pp.
- MARKELL (E.K.), VOGEL (M.) & JOHN (D.T.), 1994.- Parasitología Médica. Edit. Interamericana, Madrid, 395pp
- MARKELL (E.K.), JOHN (D.T.) & KROTOSKI (W.A.), 1999.- Medical Parasitology. 8th Edition. W.B. Saunders Company, Orlando, 544pp
- GARCIA (L.S.), 2001.- Diagnostic Medical Parasitology. American Society for Microbiology
- ASH (L.R.) & ORIHEL (T.C.), 2010.- Atlas of Parasitología Humana. 5ª Edición. Editorial Médica Panamericana
- BERGER (SA) & MARR (JS), 2006.- Human Parasitic Diseases. Soucebook. 1ª Edition. Jones and Bartlett edit.
- SERVICE (M.), 2008.- Medical Entomology for students. Edit Cambridge University
- CABELLO (R.), 2007.- Microbiología y parasitología Humana. Bases etiológicas de las enfermedades infecciosas y parasitarias. 3ª Edición. Editorial Médica Panamericana

### Additional

- ORIHEL (T.C.) & ASH (L.R.), 1995.- Parasites in Human Tissues. ASCP Press (American Society of Clinical Pathologists), Chicago
- ASH (L.R.) & ORIHEL (T.C.), 1991.- Parasites: a guide to laboratory procedures and identification. ASCP Press (American Society of Clinical Pathologists), Chicago
- DUBEY (JP), 2010.- Toxoplasmosis of animals and humans. 2ª Edition. CRC Press