

**Biological basis of Pathology**

Code: 101883  
ECTS Credits: 12

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OB	3	1

**Contact**

Name: Albert Villoria Ferrer  
Email: albert.villoria@uab.cat

**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

**Other comments on languages**

Veure la guia en català

**Teachers**

Manuel Monreal Bosch  
Manel Puig Domingo  
Jordi Tor Aguilera  
Jaime Alijotas Reig  
Roberto Muga Bustamante  
Salvador Altimir Losada  
Antonio Martinez Rubio  
Christian Domingo Ribas  
Joaquín Oristrell Salva  
Maria Assumpta Caixas Pedragos  
Javier Calvet Calvo  
Jaime Almirall Daly  
Xoel Pena Perez  
Joan Romeu Fontanals  
Alejandro Olive Marques  
Javier Santemases Ejarque  
Antonio Dávalos Errando  
Pedro Tudela Hita  
Jordi Casademont Pou  
Raquel Nuñez Aragon

Cristina Pacheco Pacheco  
Yenny Paola Zuluaga Blanco

Yéssica López Loureiro

Carlos Feijoo Masso

Patricia Sigüenza Bonete

Begoña Mari Alfonso

Daniel Fuster Martí

Juan Jose Lopez Nuñez

## Prerequisites

It is advisable that the student has achieved some basic skills in cell biology, biochemistry, molecular biology and genetics.

It is absolutely necessary to have achieved sufficient knowledge in:

General and specific anatomy of the different organs and systems.

General and specific physiology of different organs and systems

## Objectives and Contextualisation

The subject is scheduled in the third year of the Degree at the Hospital Teaching Units, once basic knowledge about the structure and function of the human body has been achieved.

Its objective is the study of physiopathology oriented to the understanding of the general and basic aspects of diseases. The student must understand what the sick person is and the relationship that the professionals of the health sciences establish with the patient through the analysis of the subjective data that afflict them and of the objective data provided by the physical examination and complementary examinations. elementals that are used to reach a diagnosis.

It will offer you the perspective of how clinicians, with whom you should interact and collaborate, see the disease. It is, therefore, a contact between the student and the clinic based on a global and systematized analysis of the features of the pathophysiology of the main diseases, in a complementary way to the contents of the subjects related to the diagnostic and therapeutic procedures (general techniques of laboratory, microbiology and parasitology, biomedical imaging, pathological anatomy and general pharmacology) also scheduled during the studies.

## Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Describe biomedical problems in terms of causes, mechanisms and treatments.
- Display knowledge of the concepts and language of biomedical sciences in order to follow biomedical literature correctly.
- Display theoretical and practical knowledge of the major molecular and cellular bases of human and animal pathologies.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Read and critically analyse original and review papers on biomedical issues and assess and choose the appropriate methodological descriptions for biomedical laboratory research work.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.

- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

## Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Analyse the functional mechanisms of the organism's response to the principal causes of diseases.
3. Correctly use the terminology of medicine and its text and reference books
4. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the blood and haematopoetic organs.
5. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the cardiovascular system.
6. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the digestive system.
7. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the endocrine system, including diabetes.
8. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the excretory system.
9. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the male and female reproductive system.
10. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the musculoskeletal system.
11. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the nervous system.
12. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of the respiratory system.
13. Display understanding of changes in the organism and in its responses to disease with age.
14. Display understanding of the the basic mechanisms of cell and tissue responses to injury.
15. Identify the principal pathologies that become more prevalent with ageing.
16. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
17. Metabolic diseases. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of metabolism and the nutritional state, including diabetes.
18. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
19. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
20. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
21. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
22. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
23. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.

24. Understand scientific texts on pathology of the different systems and write review papers on these.
25. Understand the molecular and cellular bases of cancer, the causes of its development and the bases for its treatment.
26. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

## **Content**

### **THEORETICAL PROGRAM (TE)**

The theoretical program is composed of a total of 45 topics, grouped as follows:

- 1.- Introduction and general concepts. The first 4 topics, introductory, address general basic aspects: the concept of the subject, the main approaches in the doctor-patient relationship and the special characteristics of the stages of the disease.
- 2.- Pathophysiology of general base processes. 11 topics are grouped that address the most general aspects related to the pathological alteration of the organic function, such as inheritance and constitution, environmental factors, habits or psychic and social factors.
- 3.- Main dysfunctions of devices and systems. The remaining 34 sections include the topics that refer to the physiopathology, large clinical syndromes and functional exploration of the different systems and apparatus: pulmonary, pleura and mediastinum, cardiovascular, digestive, hematopoietic, neuromuscular, locomotor, kidney and genitourinary system, metabolism and endocrine system.

The specific description of the syllabus and the temporal distribution will be included in the information delivered at the beginning of each course.

### **SEMINARS (PAUL)**

Includes 15 tutorial sessions of 2 hours each in which the students will discuss with the teacher, after preparation, some clinical, pathophysiological aspects, diagnostic procedures or interpretation of functional or laboratory tests in usual medical situations. The contingutespecific of these sessions will be linked to specific topics of the theoretical program and will specify at the beginning of the course.

### **SEMINARS OF CLINICAL CASES (PREPARATION + PRESENTATION) (SCC)**

After 9 of the previous practices and for one hour, the teacher will discuss with a small group of students how to prepare some related topics, so that a formal presentation can be made at the end of the course, a presentation that will be part of the evaluation of the student body. The final title of the 9 corresponding subjects and the students in charge of the preparation and presentation will be provided when the course starts.

## **Methodology**

Master classes (TE typology). The student acquires the knowledge of the subject by attending master classes and complementing them with personal study of the topics explained. The lectures are conceived as an essentially expository method, of transmitting the knowledge of the teacher to the student. 45 hours are scheduled.

Practical Activities: Classroom (PAUL typology). In each practice a selected topic will be treated according to the established schedule, through the exchange of information and the ensuing debate. 15 practices of two hours duration are scheduled.

Some of these practices will serve as the basis for clinical case seminars.

Seminars of clinical cases (SCC typology) They are divided into two activities:

Preparation. All students, in small groups of 6-7, will prepare a presentation of 9 possible. After some classroom practices and for 60 minutes, each of these groups will discuss, together with the teacher, how to prepare the presentation of these problems.

Presentation. Each of the preceding groups must present the assigned seminar in a public manner. The description of the syndrome or disorder based on the main etiologies, pathophysiological organ, system or molecular alterations, as well as its syndromic expression will be taken into account in the presentation. It would be desirable to comment on the bibliographical sources consulted, as well as to answer adequately the questions that may arise from the classmates or the teacher.

Clinical care practices (PCA typology). They will be done in groups of 2 students. These will go to the hospital care facilities and participate in the clinical activity of the assigned tutors and their team, four hours a day, for five days.

The referent teachers for the clinical care practices will be:

UD Vall Hebron: Dr. Jaume Alijotas [jaime.alijotas@uab.cat](mailto:jaime.alijotas@uab.cat)

UD Sant Pau: Dr. Jordi Casademont [jcasademont@santpau.cat](mailto:jcasademont@santpau.cat)

UD Germans Trias i Pujol: Dr. Robert Muga [rmuga.germanstrias@gencat.cat](mailto:rmuga.germanstrias@gencat.cat)

Autonomous work. Comprehensive reading of texts and articles, study and realization of schemes, summary and conceptual assimilation of the contents. Preparation of presentations. Summary of the clinical experience.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Clinical Care Practices	25	1	2, 13, 15, 26, 3
Master classes	45	1.8	2, 25, 24, 13, 5, 6, 7, 8, 11, 9, 12, 10, 4, 15, 17, 3
Practical Activities: Classroom	30	1.2	2, 24, 13, 5, 6, 7, 8, 11, 9, 12, 10, 4, 17, 26, 3
Preparation of Clinical Cases	9	0.36	2, 24, 13, 26, 3
Seminars: Presentations	9	0.36	25, 24, 13, 5, 6, 7, 8, 11, 9, 12, 10, 4, 15, 17, 26, 3
Type: Autonomous			
Autostudy	177	7.08	2, 24, 13, 26, 3

## Assessment

Evaluation of the subject has a double aspect:

1.- Theoretical, with a value of 70% of the overall score.

First partial: 30 test questions of 5 possible answers and a single certain option. Penalty of 0.25 x wrong question. Duration 45 '. This part of the subject is considered passed with a grade  $\geq 5.0$ .

Second partial: 30 test questions of 5 possible answers and a single certain option. Penalty of 0.25 x wrong question. Duration 45 '. This part of the subject is considered passed with a grade  $\geq 5.0$ .

Exam of recovery: The students who have not obtained a grade  $\geq 5.0$  in each of the two partials will have to do it. It will consist of 60 multiple choice questions and 5 short questions that will represent 20% of the exam grade. The duration will be 90'. The test type test will include questions that will have 5 possible answers and a single certain option. The wrong answers will subtract 0.25 points.

To overcome the theoretical part of the subject is necessary:

- Obtain a grade  $\geq 5.0$  in each of the two partials. Or:
- Obtain a grade  $\geq 5.0$  in the recovery exam.

The final grade of the theoretical part will be a joint and unique note, not differentiated in 1st partial and 2nd partial. If in a partial exam the student does not obtain  $\geq 5.0$ , he/she will have to do the entire recovery exam. If he/she does not present to the recovery exam, the final grade of the subject will be the lowest of the partial to which he/she has been presented.

If the student does not show up in one of the partial exams, it will appear as "not presented" and will have to do the recovery exam. If a student wants to improve the grade obtained in the partial exams, he/she will have to resign in writing to the initial grade and take the recovery exam, where all the subject taught during the course will be evaluated.

2.- Practice, with a value of 30% of the global mark.

To be able to be evaluated of this part, attendance at practices and seminars must be accredited. Any absence must have been justified and, in any case, the presence can not be less than 80% of the sessions. Otherwise, the practical part will be considered as failed (0).

It will consist of the evaluation of the tutor (s) of the hospital practices (C1) (50%) and the presentation of seminars of clinical cases (C2) (50%).

Final grade: Weighted average of theoretical knowledge (70%) and practical evaluation (30%). The average between the theoretical evaluation and the practical evaluation can not be made if a minimum score of 5/10 is not obtained in both parts. In case of not being able to do the average, the final grade of the subject will correspond to the lowest quantitative value of those obtained in the theoretical and practical evaluations.

CALCULATION OF THE FINAL NOTE OF THE SUBJECT: Theoretical (70%) + Practical (C1 + C2) / 2 (30%)

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Clinical Care Practicum/Presentations	30%	0	0	1, 23, 2, 13, 14, 16, 20, 26, 3
Test	70%	5	0.2	2, 25, 24, 13, 14, 5, 6, 7, 8, 11, 9, 12, 10, 4, 15, 17, 22, 21, 18, 19, 3

## Bibliography

### BIOLOGICAL BASIS OF PATHOLOGY

•Sheila Grossman: Porth: Fisiopatología. Alteraciones de la salud. Conceptos básicos. 9ª Ed. Walters-Kluwer, Barcelona 2014

- Hammer i McPhee: Lange. Fisiopatología de la Enfermedad. 7ª Ed. McGraw Hill, Madrid 2015
- Laso FJ. Introducción a la Medicina Clínica: Fisiopatología y Semiología. 3ª ed. Elsevier España SL., Barcelona 2015.
- Pérez Arellano JL. Sisinio de Castro, Manual de Patología General. 7ª ed. Elsevier-Masson, Barcelona 2013.
- García-Conde J, Merino Sánchez J, González Macías J. Patología General: Introducción a la Medicina Clínica. 3ª edición. Marban Libros, Madrid 2015.
- Medicina Interna. Farreras-Rozman. 18ª ed. Elsevier, Barcelona 2016
- Harrison's Principles of Internal Medicine. 20ª ed. McGraw-Hill. NY 2018

## **Software**