

**Biological basis of Pathology**

Code: 101883  
ECTS Credits: 12

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OB	3	1

## Contact

Name: Jordi Casademont Pou

Email: [jordi.casademont@uab.cat](mailto:jordi.casademont@uab.cat)

## Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

## Teachers

Jorge Sierra Gil

Olga Martinez Pasarell

Jordi Surralles Calonge

Rosa Corcoy Pla

Jose Pablo Maroto Rey

Silvia Gràcia García

Francisco Blanco Vaca

Nerea Hernandez De Sosa

Luis Guirado Perich

Maria Roser Torra Balcells

Elisabet Ars Criach

Maria Natividad de Benito Hernandez

Agusti Barnadas Molins

Joaquin Lopez Contreras Gonzalez

David Filella Agullo

Alba Maestro Benedicto

Teresa Ramon Y Cajal Asensio

Edilmar Alvarado Tapias

Rubén Osuna Gómez

Gerard Amoros Figueras

Alexandre Bejanin

Laia Matas Pericas

Cesar Diaz Torne  
Israel Fernandez Cadenas  
Ivan Castellvi Barranco  
Esther Francia Santamaria  
Ana Maria Laiz Alonso  
Jose Maria Guerra Ramos  
Olga Herminia Torres Bonafonte  
Montserrat Barceló Trias  
Eduard Gallardo Vigo

## **External teachers**

Clara Serra Juhe  
César Acebes Pinilla  
Sònia Sirisi Dolcet  
Yolanda Arce Terroba

## **Prerequisites**

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

It is 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 fundamental objective of the subject is to get in touch with the type of research that is carried out in a hospital environment. It is research that tries to answer questions aimed at understanding the general and basic aspects of diseases. Often these questions are formulated by clinicians, which allows the student to have the perspective of how clinicians, with whom he will most likely interact and collaborate in the future, see the disease. Other times they are formulated by more basic researchers from the Research Institutes of the university hospitals.

## **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 made up of a total of 45 topics that will address various topics related to the research that is carried out in hospital services. Classes will generally be taught by basic or clinical researchers, who will outline the research they are conducting and what their day-to-day life is like in the world of hospital-related research. Some classes will be more conceptual to understand concepts such as what the disease is, how the national health system works, etc.

The course was aimed at the most active research groups in the hospital environment of the UD de Sant Pau sharing their research field with the students.

The specific description of the syllabus and the time distribution will be included in the information provided at the beginning of the course.

### **CLASSROOM PRACTICES (PAUL)**

It includes 15 tutored sessions of 2 hours each in which students will discuss with the teacher, prior preparation, some clinical, physiopathological aspects, diagnostic procedures or interpretation of functional or laboratory tests in common medical situations in which a basic researcher can participate in it conceptually.

### **CLINICAL CASE SEMINARS (PREPARATION + PRESENTATION) (SCC)**

A teacher will meet with a small group of students who will be given a topic that the group will have to work on and make a formal presentation at the end of the year, a presentation that will form part of the student assessment. The typology is formally of "clinical cases", but the aim is not to address any clinical case, but rather theoretical aspects of the pathophysiology of some diseases. The presentation will be about 20' long in front of the whole class, and will be followed by a presentation in Kahoot format or similar that will have been prepared by the same group of students and will also be given to the whole class. The specific name of the students who will have to present each seminar will be provided when the final list of enrolled students is available.

### **CLINICAL CARE PRACTICES (PCA)**

They will take place in hospital units during a week in January, in groups of 1 or 2 students divided into different care teams.

Attendance at theory classes, practicals and seminars is mandatory. Any absence must be justified.

## **Methodology**

Master classes (TE typology). The student attends the exposition of a theoretical content, which will complement by means of the personal study of the topics explained. The classes are conceived as an essentially expository method, of transmitting knowledge from 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.

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

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

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

UD Parc Taulí: Dr. Albert Villoria Ferrer [avilloria@tauli.cat](mailto:avilloria@tauli.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

## Assessment

Attendance at theory classes, practicals and seminars is mandatory. Any absence must be justified.

The evaluation of the subject has a double aspect:

a.- Theoretical.

- First part, with a value of 35% of the overall grade: 30 test-type questions with 5 possible answers and only one correct option. Penalty of 0.25 x wrong question. Duration 40'. The first part will include the theory topics and the content corresponding to the classroom practices carried out until the mid-semester break. This part of the subject is considered passed with a grade  $\geq 5.0$

- Second part, with a value of 35% of the overall grade: 30 test-type questions with 5 possible answers and only one correct option. Penalty of 0.25 x wrong question. Duration 40'. The second part will include the topics and content of the remaining classes and classroom practices. This part of the subject is considered passed with a grade  $\geq 5.0$

- Summary or recovery exam. It will consist of two parts: one that will cover the same as the first partial and the other that will cover the same as the second partial. Each student must do the part(s) not released and it will also be necessary to get at least a 5 in each one. There will also be multiple choice questions (30+30) and short questions (5+5), which will represent 20% of the exam grade. The duration will be 60+60'. The test-type exam will include questions that will have 5 possible answers and only one correct option. Wrong answers will subtract 0.25 points.

The theory grade of the subject, whether obtained from the average of the two partials, a combination of a partial and part of the final or exclusively from the two parts of the final, will be a joint and unique grade, not differentiated in 1st partial and 2nd partial, and will be obtained by averaging the two partials. If one of the two partials has not been passed, the average will not be taken and the overall final grade for the theoretical part will be that of the grade for the failed partial.

- Students who pass any of the partial exams may take the final exam to improve their grade, having previously renounced in writing the grade obtained in the partials.

b.- Practice, with a value of 30% of the overall grade.

In order to be able to issue this grade, attendance at practices and seminars must be certified. Any absence must be justified and, in any case, attendance cannot be less than 80% of the sessions. Otherwise, the practical part will be considered as suspended (0).

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

Final qualification

Weighted average of theoretical knowledge (70%) and practical assessment (30%). It will not be possible to take the average between the theoretical assessment and the practical assessment if a minimum score of 5/10 is not obtained in both tests. In case of not being able to do the average, the final qualification of the subject will correspond to the lowest quantitative value of those obtained in the theoretical and practical evaluations. Partial parts of the subject will not be saved for subsequent courses.

CALCULATION OF THE FINAL GRADE OF THE SUBJECT: Theoretical (35%+35%) + Practical (C1+C2)/2 (30%)

This subject foresees the single assessment system. Anyone who accepts this modality must, in any case, attend the SCC and PAUL on a mandatory basis. The final exam will be the same (and will therefore take place on the same day) as the synthesis or recovery for continuous assessment students and will represent

100% of the grade as long as a minimum of 80% has been attended of SCC and PAUL. Otherwise, the final grade will be 0.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Clinical Care Practicum/Presentations	30%	0	0	1, 23, 2, 13, 14, 16, 20, 26, 3
First Test	35%	2.5	0.1	2, 25, 24, 13, 14, 5, 6, 7, 8, 11, 9, 12, 10, 4, 15, 17, 22, 21, 18, 19, 3
Second Test	35%	2.5	0.1	2, 13, 14, 5, 6, 7, 8, 9, 12, 4, 22, 21, 20, 18, 19

## Bibliography

- 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. 4ª ed. Elsevier España SL, Barcelona 2020
- Medicina Interna. Farreras-Rozman. 19ª ed. Elsevier, Barcelona 2020
- Harrison's Principles of Internal Medicine. 21ª ed. McGraw-Hill. NY 2021

## Software