

| Degree              | Type | Year |
|---------------------|------|------|
| Biomedical Sciences | OB   | 3    |

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## Teaching groups languages

You can view this information at the [end](#) of this document.

## 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 haematopoietic 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 36 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 VHIR (Vall d'Hebron Hospital Campus), 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 10 (doubled, total=20 hours) tutored sessions of 1.5-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. The second part as a seminar's-like sessions, the 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.

## Activities and Methodology

| Title                           | Hours | ECTS | Learning Outcomes                                      |
|---------------------------------|-------|------|--|
| Type: Directed                  |       |      |  |
| Master classes                  | 36    | 1.44 | 2, 25, 24, 13, 5, 6, 7, 8, 11, 9, 12, 4, 10, 15, 17, 3 |
| Practical Activities: Classroom | 40    | 1.6  | 2, 24, 13, 5, 6, 7, 8, 11, 9, 12, 4, 10, 17, 26, 3     |
| Type: Autonomous                |       |      |  |
| Autostudy                       | 224   | 8.96 | 2, 24, 13, 26, 3                                       |

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. 36 hours are scheduled.

The classroom practice activities will be divided into two types:

- **PAUL\_Seminars.** For classroom practice, the class group will be divided into two: Group A and Group B. Ten seminars are scheduled, each taking place over two sessions of 90 minutes each. In each seminar, a topic selected according to the established program will be addressed, through the exchange of information and subsequent debate. In the first session, the teacher will present a topic and provide elements and ideas so that students can develop a related topic, which they will present in the second session, where different items outlined in the course presentation will be evaluated.

**PAUL\_Research.** The aim is to connect Biomedical Sciences students with basic biomedical researchers from the Vall d'Hebron Research Institute (VHIR). This activity will consist of four sessions of 2.5 hours each, led by basic researchers from VHIR

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.

## Assessment

### Continuous Assessment Activities

| Title  | Weighting | Hours | ECTS | Learning Outcomes  |
|--|-----------|-------|------|--|
| First Test   | 35%       | 0     | 0    | 2, 25, 24, 13, 14, 5, 6, 7, 8, 11, 9, 12, 4, 10, 15, 17, 22, 21, 18, 19, 3 |
| Laboratory Practices /Presentations Clinical seminars and laboratory / Ward seminars | 30%       | 0     | 0    | 1, 23, 2, 13, 14, 16, 20, 26, 3  |
| Second Test  | 35%       | 0     | 0    | 2, 13, 14, 5, 6, 7, 8, 9, 12, 4, 22, 21, 20, 18, 19                        |

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.

## 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 F.J. 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

## Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

| Name                          | Group | Language | Semester       | Turn          |
|-------------------------------|-------|----------|----------------|---------------|
| (PAUL) Classroom practices    | 301   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 301   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 302   | Catalan  | first semester | morning-mixed |
| (SCC) Clinical case seminars  | 301   | Catalan  | first semester | morning-mixed |
| (SCC) Clinical case seminars  | 302   | Catalan  | first semester | morning-mixed |
| (TE) Theory                   | 53    | Catalan  | first semester | morning-mixed |