Universitat Autònoma de Barcelona

2020/2021

Structural and Molecular Pathology

Code: 102927
ECTS Credits: 8

Degree	Type	Year	Semester
2502442 Medicine	OB	3	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

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

Teachers

Aurelio Ariza
Enrique Lerma Puertas
José Jerónimo Navas Palacios
Inés Maria de Torres Ramírez
José Luis Mate Sanz
Angel García Jiménez
Jose Castellvi Vives
Maria Rosa Bella Cueto
Santiago Jose Ramon Y Cajal Agüeras
Joan Carles Ferreres Piñas
Maria Nieves Combalia Soriano
Irmgard Costa Trachsel
Ana Mozos Rocafort
Laura Lopez Vilaro
Maria Carme Dinares Fernandez
Vicente Peg Camara
Elena Antima Martinez Saez
Justyna Adolfina Szafranska
Pedro Luis Fernandez Ruiz
Gustavo Tapia Melendo
Maria Rosa Escoda Giralt
Maria Teresa Salcedo Allende

Prerequisites

There are no prerequisites, but it is highly recommended that the student has achieved some basic competencies

1. Biochemistry

2. Biostatistics

3. Epidemiology

4. Molecular biology

5. Cell biology

6. English

It is also advisable to have gained sufficient knowledge in:

1. General and specific anatomy of the different organs and systems.

2. General and specific histology of different organs and systems

The student will acquire the commitment to preserve the confidentiality and professional secrecy of the data that

health care services. Also by maintaining an attitude of professional ethics in all its actions.

Objectives and Contextualisation

The subject is programmed in the third year of the Degree of Medicine, which corresponds to the beginning of the clinical period, once the basic knowledge about the structure and function of the human body has been obtained and before entering the study of the different medical and surgical pathologies and in clinical practice.

Pathology is the part of the medical sciences in which, through the correlation of structural alterations of organelles, cells, tissues, organs and systems with biochemical, genetic, molecular, clinics and radiology, provides the scientific basis for the understanding of etiopathogenesis and pathophysiology of pathological processes. From a practical point of view, Pathological Anatomy plays a significant role in the definitive diagnosis of a large number of diseases.

The specific objective is to provide the student with a global knowledge of the morphological and molecular bases of the pathology of the organs and systems, as well as the knowledge of the basic techniques used in Pathological Atomic Laboratories.
The student must be able to recognize the fundamental morphological alterations of the different tissues of the organism and interpret them properly. In addition, the student will have to become familiar with the histopathology of the most frequent illnesses, their gradation and their prognosis, as well as the use of the clinical-pathological correlation.

Competences

- Communicate clearly, orally and in writing, with other professionals and the media.
- Convey knowledge and techniques to professionals working in other fields.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate a sufficient command of English, both oral and written, for effective scientific and professional communication.
- Demonstrate understanding of the basic sciences and the principles underpinning them.
- Demonstrate understanding of the causal agents and the risk factors that determine states of health and the progression of illnesses.
- Demonstrate understanding of the functions and interrelationships of body systems at different levels of organisation, homeostatic and regulatory mechanisms, and how these can vary through interaction with the environment.
- Demonstrate understanding of the manifestations of the illness in the structure and function of the human body.
- Demonstrate understanding of the mechanisms of alterations to the structure and function of the systems of the organism in illness.
- Demonstrate understanding of the structure and function of the human organism in illness, at different stages in life and in both sexes.
- Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
- Engage in professional practice with respect for patients' autonomy, beliefs and culture, and for other healthcare professionals, showing an aptitude for teamwork.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Recognise the basic elements of the medical profession as the result of an evolving, scientific, social and cultural process, including ethical principles, legal responsibilities and patient-oriented professional practice.

Learning Outcomes

1. Communicate clearly, orally and in writing, with other professionals and the media.
2. Convey knowledge and techniques to professionals working in other fields.
3. Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
4. Critically interpret scientific texts.
5. Define the disorders of cell growth.
6. Demonstrate a sufficient command of English, both oral and written, for effective scientific and professional communication.
7. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
8. Describe the basic anatomopathological characteristics of infections and the factors that favour their development.

9. Describe the biochemical, cytogenetic and molecular biology markers applied to clinical diagnosis of importance to anatomopathological diagnosis.
10. Describe the characteristics of tissues in the different situations of injury, adaptation and cell death.
11. Distinguish situations in which confidentiality must be applied to the results of pathological anatomy studies.
12. Explain the anatomopathological alterations of the commonest diseases in the different body systems, at different stages in life and in both sexes.
13. Explain the importance of accepting, evaluating fairly and integrating the opinions of fellow healthcare professionals when taking decisions.
14. Explain the mechanisms of anatomopathological alterations of the commonest diseases of the different body systems.
15. Explain the morphological characteristics of the different mechanisms of inflammation and repair.
16. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
17. Identify inflammations and alterations to cell growth.
18. Identify situations in which pathological anatomy diagnostic techniques require informed consent.
19. Identify situations in which the use of pathological anatomy studies for teaching and research requires informed consent.
20. Identify the degree of diagnostic uncertainty in every situation and identify situations in which a second opinion should be sought.
21. Identify the general and local factors that affect the development of diseases.
22. Identify the indications of anatomopathological tests.
23. Identify the indications of biochemical, haematological and anatomopathological tests.
24. Identify the mechanisms of inflammation and repair, and their causes, etiopathogenic mechanisms and evolution.
25. Obtain and process a biological sample to be studied through pathological anatomy.
26. Present scientific papers and/or professional reports orally and in writing.
27. Recognise the manifestations of the main pathologies on the structure and function of the human body.
28. Use biomedical information retrieval systems.

Content

The subject consists of two parts: a General, whose objective is the learning of the basic concepts, the language

diseases, and a specific one, that deals with the ethiopathogenic aspects basic, morphologic, diagnoses and prc

system.

Theoretical classes: 64 hours

I. General structural and molecular pathology:

1. Presentation. Introduction to Pathological Anatomy.

2. Cellular pathology I. Adaptation and differentiation.

3. Cellular pathology II. Cell injury and death.

4. Cellular pathology III. Types of necrosis. Apoptosis.

5. Cellular pathology IV. Subcellular alterations. Lipid deposits

6. Cellular pathology V. Protein and carbohydrate deposits. Pigments. Calcification

7. Inflammation I. Concept, hemodynamics, permeability.

8. Inflammation II. Exudation, chemotaxis, phagocytosis.

9. Inflammation III. Chemical intermediates for inflammation.

10. Inflammation IV. Granulomatous inflammation.

11. Inflammation V. Tissue repair.

12. Hemodynamics I. Hyperemia, edema, haemorrhage.

13. Hemodynamics II. Thrombosis, embolism, disseminated intravascular coagulation.

14. Hemodynamics III. Infarct and shock.

15. Hemodynamics IV. Arteriosclerosis and hypertension.

16. Immunopathology I. Pathology of immune disorders.

17. Immunopathology II. Immunodeficiencies Rejection of transplants.

18. Immunopathology III. Amyloidosis

19. Nephlasia I. Definitions, terminology and epidemiology. Benignity and malignity

20. Neoplasia II. Molecular cancer bases.

21. Neoplasia III. Physical, chemical and viral carcinogenesis.

22. Neoplasia IV. Biology of tumor growth.

23.Neoplasy V. Tumor-host interaction.

24. NEOPLASIA VI. Diagnosis and prognosis of neoplasms.

25. Introduction to clinical cytology.

26. Bacterial and fungal infectious diseases.

27. Infectious diseases for protozoa, helminths and viruses.

28. Malformative pathology. Hereditary diseases.

29. Perinatal pathology. Pediatric tumors

II. Specific structural and molecular pathology of organs and systems:

1. Cardiovascular pathology I. Ischemic heart disease.

2. Cardiovascular pathology II. Endocardial and valvular disorders. Heart tumors

3. Cardiovascular pathology III. Myocardiopathies Pathology of the pericardium.

4. Pulmonary pathology I. Chronic obstructive pulmonary disease.

5.Pulmonary pathology II. Restrictive pulmonary disease.

6. Pulmonary pathology III. Pulmonary and pleural tumors.

7. Hematopathology I. Lymphadenitis.

8. Hematopathology II. Lymphomas not Hodgkin.

9. Hematopathology III. Hodgkin's lymphoma. Thymic pathology.

10. Pathology of the digestive tract I. Esophagus and stomach.

11. Pathology of the digestive tract II. Pillow pathology. Malabsortive pathology. Tumors

12. Pathology of the digestive tract III. Colon pathology. Inflammatory bowel disease. Tumors

13. Hepatic pathology I. Liver physiopathology. Cirrhosis Cholestasis

14. Hepatic pathology II. Primary and secondary hepatic diseases.

15. Hepatic pathology III. Hepatic tumors Pathology and biliary pathology.

16. NephropatologyI. Glomerulonephritis.

17. Nephropatology II. Renal vascular pathology. Kidney tumors

18. Urological pathology I. Uroteli pathology.

19. Urological pathology II. Pathology of the prostate and the testicle

20. Gynecological pathology I. Vulva, uterine vaginaand cervix.

21. Gynecological pathology II. Uterine body

22. Gynecological pathology III. Falopus and ovarian tube.

23. Pathology of the breast.

24. Endocrine pathology I. Hyphophilia, thyroid and parathyroid.

25. Endocrine Pathology II. Adrenal, endocrine pancreas. Multiple endocrine disease.

26. Non-tumoral cutaneous pathology.

27. Tumor cutaneous pathology.

28. Bone pathology.

29. Pathology of the soft parts.

30. Pathology of head and neck.

31. Neuropathology I: Cerebrovascular diseases. Traumatisms

32. Malformations Neuropathology II. Infections Toxic and metabolic lesions.

33. Neuropathology III. Neurodegenerative and demyelinating diseases.

34. Neuropathology IV. Tumors of the central nervous system. Facomatosis.

35. Neuropathology V. Pathology of the peripheral and muscle nerve

Seminars of clinical cases: 7 hours

1. Cardiovascular and pulmonary pathology
2. Lymphoid and digestive pathology
3. Renal and urological pathology
4. Gynecological and mammary pathology
5. Bone and soft tissue pathology
6. Skin and neck pathology
7. Endocrine pathology and neuropathology

Advanced Clinical Skills Practices: 5hours1. PAAF and histopathological correlation
2. Intraoperative biopsy / macroscopy-histology correlation

Clinical practices: 14 hours

1. Clinical Autopsy.
2. Assistance activity at the Pathological Anatomy Service: Surgical path

Methodology

This Guide describes the framework, contents, methodology and general norms of the subject, in accordance with the current curriculum. The final organization of the subject with regard to the number and size of groups, distribution in the calendar and dates of examinations, specific criteria of evaluation and review of exams, will be specified in each one of the Hospital Teaching Units (UDH), which will be explained through their web pages and the first day of class of each subject, through the teachers responsible for the subject at UDH.

For the present year, the professors appointed by the Departments as responsible for the subject at the Faculty level and the UDH are:

Department responsible: Morphological Sciences: Head of Faculty: Cleofé Romagosa Perez-Portabella Responsible

UDH: UD Vall d'Hebron: Santiago Ramón and Cajal Agüeras and Ines De Torres UD Germans Trias i Pujol: Aurelio Ariza Fernández UD Sant Pau: Enrique Lerma Puertas UD Parc Taulí: Maria Rosa Bella Cueto

DESCRIPTION OF THE TEACHING ACTIVITIES

Theoretical classes

Theoretical classes will have to provide knowledge about the morphological and molecular bases of illnesses and help the student acquire specific knowledge about the etiology, histopathological diagnosis, gradation and prognosis of the most frequent diseases. 64 sessions of 1 hour.

These classes will be blended, ensuring fairness and security to all the students.

Seminars of clinical cases* (clinical and pathological sessions)

Clinic-pathological sessions will provide the student with the necessary skills to use the knowledge acquired in the theoretical classes, by analyzing and solving a series of cases related to the different blocks of the subject, and familiarizing themselves with the process of clinical-pathological correlation. The subject matter can be evaluated to the theoretical-practical exam.7 hours.

Assistencial Clinical Practices*:

Through these practices students must obtain the knowledge of the autopsy technique, as well as know the procedure of study and management of the cytologies, biopsies and surgical specimens, their processes of technification, the applicability of the complementary and molecular techniques , and acquire some basic skills. 14 hours.

Practices of advanced clinical skills*

These practices must enable students to become acquainted with the pre-psychological manipulation, the study of the microscope and their operation and their possibilities. They must also ensure that the student is

able to recognize the different tissues microscopically, to evaluate different histopathological alterations and to perform an adequate clinical-pathological correlation. 5 hours.

*All seminars and practices will be performed face to face. However, depending on the number of students, the size of the groups and the duration can be modified.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
ASSISTENCIAL CLINICAL PRACTICES (PCAh)	14	0.56	5, 9, 10, 11, 14, 15, 16, 24, 17, 22, 25, 27
Advanced clinical skill practices (PHCA)	5	0.2	7, 8, 10, 13, 12, 15, 24, 20, 17, 22, 25
CLINICAL CASES SEMINARS (SCC)	7	0.28	9, 14, 15, 24, 17, 23, 27
THEORY (TE)	64	2.56	9, 8, 13, 12, 14, 15, 21, 24, 17, 23, 19, 18, 25, 27
Type: Autonomous			
PERSONAL STUDY / READING OF ARTICLES / INTEREST REPORTS	90	3.6	4, 28, 3
Papers elaboration	10	0.4	1, 6, 7, 9, 2, 13, 26, 20, 23, 27, 3

Assessment

The competences of this subject will be evaluated with a relative weight of the theoretical examination of 75%, of

and of the accomplishment of works (narrative registries) of 5%;

The theoretical-practical exam will consist of items of multiple choice and
For multiple choice test questions, the wrong answers will be 0.25.
There will be a minimum of two partial exams (continuous evaluation), at
You must pass the partial evaluation with a score equal to or greater thar
Students who have not passed the subject through continuous assessme

previously evaluated in a set of activities whose weight equals to a minimum of two thirds of the total grade of the

In exceptional situations (manifest impossibility of attending the examinat

subject in the Teaching Unit), the possibility of doing a special oral examination is considered.

Non-evaluated students are considered those who do not submit to any a
Optionally, non-scheduled continuous assessment tests may be carried c

serve to raise notes, up to a maximum of 5% of the final grade. In no case will the note of the partial exams or th

downloaded.

Minimum requirements: to pass the subject, you must have attended 80%

(narrative record).

Evaluation of narrative registers: the presentation of the papers will be va

quality ofthe presentation.

Final grade: weighted sum of theoretical-practical evaluations of knowled
Qualification: not evaluable, suspense, approved, remarkable, excellent,
Exams review system: The review of the exam will be done individually w

where the review will be carried out will be indicated.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evaluation of narrative registries	5%	2	0.08	1, 6, 2, 13, 26, 20, 4, 28, 3
Practical evaluation through objective tests	20%	2	0.08	7, 12, 15, 16, 17, 23
Theoretical evaluation through objective tests	75%	6	0.24	5, 6, 9, 8, 10, 11, 12, 26, 14, 15, 21, 24, 17, 22, 19, 18, 4, 25, 27, 28, 3

Bibliography

BIBLIOGRAPHY

Specific bibliography:

- Kumar V, Abbas A, Fausto N, Aster J. Robbins y Cotran. Patología Estructural y Funcional (9ª edición + students consult). Barcelona. Saunders-Elsevier. 2015.

- Kumar V. Abbas A, Aster J. "Robbins". Patología Humana. Barcelona. Elsevier. 2013.

Consultation bibliography:

- GJ Netto, I. Schrijver. Genomic Applications in Pathology. New York. Springer. 2015.

- Rubin R, Strayer D, Rubin E. Patología. Fundamentos clinicopatológicos en medicina. &º ed. Philadelphia. Lippincott. 2012.

- Mohan. Patología. 6ª ed. Buenos Aires. Ed. Médica Panamericana. 2012.

- Klatt E. Robbins y Cotran. Atlas de Anatomía Patológica. 3ª ed. Barcelona. Elsevier. 2016.

- F.J. Pardo-Mindan. Mind Maps en Anatomía Patológica. Barcelona. Elsevier. 2010.

- Strachan T, Read AP. Human Molecular Genetics (4th ed). New York. Taylor & Francis Inc. 2010.

- Weinberg RA. The Biology of Cancer. (2nd ed.) New York. Taylor & Francis Inc. 2014.

Internet resources

https://accessmedicina-mhmedical-com.are.uab.cat/content.aspx dins d'aquest enllaç trobareu: Patología. PF Valencia Mayoral, J Ancer Rodriguez

http:/ www.acmcb.es/societats/anatomia

https://www.seap.es

http://www.telepatologia.es

https://webpath.med.utah.edu/

https://www.voxel-man.com/gallery/visible-human

https://www.le.ac.uk/pathology/teach/va/titlpag1.html

http://www.pathologylearning.org/trig/about

Aquestes adreces permeten entrar en contacte amb nombroses www relacionades amb l'Anatomia Patològica.