Universitat Autònoma de Barcelona

2021/2022

Anatomical Pathology

Code: 101884
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OB	3	1

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.

Errata

In the Contents section, it should be indicated that the theoretical classes of this course will be given at the Vall d'Hebron teaching unit (not at the Sant Pau Hospital).

Contact

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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

Teachers

Angel García Jiménez
Santiago Jose Ramon Y Cajal Agüeras
Josep Castellvi Anguera
Irene Sansano Valero
Maria Eugenia Semidey Raven
Maria Carme Dinares Fernandez
Vicente Peg Camara
Elena Antima Martinez Saez
Maria Teresa Salcedo Allende
Carmela Iglesias Felip
Cleofe Romagosa Perez-Portabella

Prerequisites

It is highly recommended that the student has achieved some basic skills in:

Biochemistry
Biostatistics

Molecular biology
Biology heaven • lular
English

It is absolutely necessary to have achieved 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 of preserving the confidentiality and professional secrecy of the data that may have access due to the learning to the assistance services. Also in maintaining an attitude of professional ethics in all its actions.

Objectives and Contextualisation

The subject is scheduled in the third year of the Degree in Biomedical Sciences, within the period of stay in the Hospital Teaching Units, once basic knowledge about the structure and function of the human body has been reached and at the same time they are introduced in the study of the bases of clinical pathology.

Pathological Anatomy is a medical specialty that aims to determine the diagnosis and prognosis of diseases and predict their response to therapies, through morphological and molecular studies of tissues, dÃ © lÃ§ols or their products. The anatomopathological diagnosis integrates clinical, macroscopic, microscopic and molecular information, and provides the scientific basis for understanding the etiopathogenesis and pathophysiology of pathological processes.

The specific objectives will be:

1. To provide the student with a global knowledge of the morphological and molecular bases of the pathology of organs and systems.

- The student must be able to recognize the fundamental morphological alterations of the different tissues of the organism and interpret appropriately.

- In addition, the student should become familiar with the histopathology of the most frequent diseases.

2. To know the role of the pathologist in the staging of the disease, the evaluation of its prognosis and the taking of therapeutic decisions, as well as the use of the clinical-pathological correlation.

3. Achieve basic skills in the performance of the techniques of the Pathological Anatomy Laboratory and its interpretation and know the role of industry in technological innovation applied to Pathology

4. Know the possibilities provided by Pathology in basic and applied research.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Apply knowledge acquired to the planning and implementation of research, development and innovation projects in a biomedical research laboratory, a clinical department laboratory or the biomedical industry.
- Describe biomedical problems in terms of causes, mechanisms and treatments.
- Display knowledge of the bases and elements applicable to the development and validation of diagnostic and therapeutic techniques.
- Display knowledge of the concepts and language of biomedical sciences in order to follow biomedical literature correctly.
- 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. Display practical skills in the anatomopathological study of samples corresponding to different tissues and pathological processes.
5. Display understanding of changes in the organism and in its responses to disease with age.
6. Display understanding of the the basic mechanisms of cell and tissue responses to injury.
7. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
8. Perform common study techniques in biomedical diagnosis.
9. Propose research projects that are relevant to human pathology.
10. 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.
11. 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.
12. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
13. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
14. 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.
15. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
16. Understand scientific texts on pathology of the different systems and write review papers on these.
17. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

theoretical classes

The theoretical classes must provide knowledge of the morphological and molecular bases of the diseases and help the student to acquire specific knowledge about the etiology, histopathological diagnosis, gradation and prognosis of the most frequent diseases.

The classes will be taught by the teachers of the Teaching Unit of the "Santa Creu i San Pau" Hospital , according to the schedule prepared by Coordination and available on the website of the Degree and the Virtual Campus.

The detailed contents of the theoretical classes are specified at the end of this section.

seminars

The seminars will show with practical examples the role of the pathologist in the staging of the disease, the evaluation of its prognosis and the taking of therapeutic decisions, as well as the use of the clinical-pathological correlation. They will also help to know the possibilities provided by Pathology in basic and applied research.

Objectives of teamwork and the presentation of this

The work will consist of designing a research project based on anatomopathology with human pathological samples, applying special or molecular techniques (histochemistry, immunohistochemistry, FISH, CISH ..), using an adequate methodology for the objective evaluation of the probable results.

Study through the teaching web

The preparation of seminars and practices through the teaching web will aim to facilitate the comprehension of the topics dealt with in these activities. Also on the teaching website you will find an extension of the information provided to the classes that will allow you to deepen and expand on the theoretical knowledge acquired.

Laboratory practices:

In the laboratory practices students will see the operation of the different areas and laboratories that are part of the departments of Pathology: Macroscopy, Biobank, General Laboratory, Microscopy, Immunohistochemistry Laboratory and Molecular Biology Laboratory.

NOTE: Thecontents will be the previously described, unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents

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Theoretical contents

1. Introduction to Pathological Anatomy.

2. Subcellular alterations. Intracellular deposits and pigments.

3. Pathology of Inflammation.

4. Mechanisms of regeneration and tissue repair.

5. Hemodynamic disorders.

6. Cardiovascular pathology.

7. Pathology of immune disorders and transplant pathology.

8. Immunodeficiencies. Acquired immunodeficiency syndrome.

9. Neoplasms: definitions and terminology. Cancer epidemiology

10. Pathological anatomy of cancer. Generalities

11. Hematopathology I.

12. Hematopathology II

13. Respiratory Apparatus.

14. Osteoarticular System and Soft Parts.

15. Arteriosclerosis and arterial hypertension. Nephropathology

16. uropathology.

17. Digestive System I: gastrointestinal tract (1)

18. Digestive System I: gastrointestinal tract (2)

19. Digestive System II. Liver and pancreas exocrine.

20. Endocrine system.

21. Female reproductive system and breast.

22. Cutaneous pathology.

23. Nervous system I.

24. Nervous system II.

Methodology

The objectives of the subject, the teaching methodology and the training activities of the course are based on the following activities:

Directed activities:

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 transmission of knowledge from the teacher to the student. There are programmed 24 hours of master classes that can be taught in Spanish, Catalan and English.

Seminars of clinical cases: Seminars for the presentation of practical examples of application of the knowledge of the Pathological Anatomy in the fields of diagnosis, research and obtaining prognostic data or with repercussion in the treatment or the Genetic Counsel. They are topics presented in a more interactive way than the lectures so that an open discussion on the subject can be created.

Previously, students should work autonomously a few dossiers that will contain the basic information to adequately follow the contents of the dissertation.

Six seminars are scheduled. This activity includes the preparation of seminars and practices through the teaching web that will aim to facilitate the understanding of the topics addressed in these activities.

Laboratory practices: In small groups (standard size of about 20 students) they will go to the Pathological Anatomy services where 15 hours of practices and 2 hours of continuous evaluation will be done, distributed as follows:

1.- General laboratory: Students will achieve basic skills in the realization of the techniques that are part of the general laboratory of Pathological Anatomy and its interpretation and will know the role of theindustry in the technological innovation applied to the Pathological Anatomy.

2.- Macroscopy Room and Biobank: Through these practices students should know thetechnique of inclusion of samples, as well as the importance of assessing the macroscopic findings and selecting samples, establishing an appropriate clinical-pathological correlation.

They should know the main procedures to perform depending on the types of samples (intraoperative studies, sentinel lymph node, renal biopsies, skin samples by immunofluorescence, etc.) You will also see the procedure for obtaining samples by Biobank and how it works.

3.- Microscopy: These practices should enable students to become familiar with the microscope and know its operation and its possibilities. They must also ensure that the student is able to recognize the different tissues microscopically, evaluate different histopathological and cytological alterations, know the functioning of intraoperative studies and the importance of performing an adequate clinical-pathological correlation.

4. Immunohistochemistry Laboratory: In addition to instructing the functioning of the Immunohistochemistry Laboratory, students should learn the immunohistochemical profiles of the main neoplasms and the application of immunohistochemistry in the diagnosis of non-neoplastic diseases.

5. Molecular Biology Laboratory: In addition to training in the operation of this laboratory, students will have to learn which molecular biology techniques are most used in Pathology (FISH, PCR, etc.). They will also learn the basics of the interpretation of these techniques and the most relevant alterations to the main pathologies.

(Autopsies: If an autopsy will be carried out during the internship stage in the Pathological Anatomy Services, students will be allowed to attend, as long as it does not involve the loss of any important activity. no compulsory case neither by the student nor by the teachers).

Autonomous activities:

Autonomous study: Review of classes and comprehensive reading of texts and articles. Personal study, realization of diagrams and summaries, conceptual assimilation of the contents of the subject. On the teaching website you will find an extension of the information provided to the classes that will allow you to deepen and expand on the theoretical knowledge acquired

Teamwork: It will be done in groups of about 5 students. The dossier written and edited must be submitted before January 15.

The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities

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			
Laboratory	15	0.6	2, 4, 5, 6, 8, 3
Masterclass	24	0.96	2, 5, 6, 3
Seminars	6	0.24	3
Type: Supervised			
preparation of seminars and laboratory	22	0.88	2, 5, 6
Type: Autonomous			

Autostudy	56	2.24	2, 16, 5, 6, 3
Groupwork	20	0.8	2, 16, 5, 6, 9, 17, 3

Assessment

The competences of the subject will be evaluated continuously by:

1.- Objective test, type test, of the knowledge acquired in the lectures and seminars (80%).

The subject will have a FIRST PARTIAL at the end of approximately the first half of the theoretical classes and a SECOND PARTIAL at the end, according to the official Coordination calendar:

- The questions will deal with the contents taught (theoretical classes and classroom seminars) until the date of the call, and will consist of an objective test type test with 5 answer options of which only 1 will be correct (answers answered) incorrectly discount 0.25).

- The minimum qualification necessary to overcome the two partial ones is 5 out of 10 (with the qualitative equivalence of suspense, approved, notable and outstanding, with the option of achieving the honor qualification grade).

The procedure for reviewing the test will be in accordance with current UAB regulations (the Virtual Campus will be informed of the date, time and place to review the exam).

2. Evaluation of the research work (10%)

The research group work will be scored from 0 to 10 and supossarà 10% of the overall score

3. Evaluation of the contents acquired in the laboratory practices (10%)

- The laboratory practices will be evaluated with a test at the end of the practices that will be carried out in the Teaching Unit where they are carried out. It will consist of 5 short questions. In the s"haurà practices have a minimum attendance of 80% of the teaching hours. The final test of practices will be scored from 0 to 10 and supossarà 10% of the overall score.

Students who have not passed the subject / module by means of partial exams, may take a final exam, according to the official Coordination calendar.

Final grade = average mark of the partial exams (80%) + note of evaluation of the dossier of the research work (10%) + note of continuous evaluation of the practices (10%).

Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continuous evaluation during the guided practices with a written test of 5 short questions.	10%	3	0.12	1, 15, 2, 4, 5, 6, 7, 12, 10, 8, 3
Research work	10%	0	0	2, 16, 5, 6, 7, 9, 14, 10, 17
Test	80%	4	0.16	2, 5, 6, 14, 13, 10, 11, 3

Bibliography

BIBLIOGRAPHY

Specific bibliography

- Kumar V, Abbas A, Fausto N, Aster J. Robbins and Cotran. Structural and Functional Pathology (9th edition + students consult). Sunders, Elsevier. ISBN 9788490228784

Madrid 2015

Reference bibliography

- Kumar V, Abbas, Aster J, Robbins Basic Pathology (10th edition + students consult) Elsevier 2018 ISBN 9780323394147

- Stevens A, Lowe J. Pathological Anatomy. Harcourt, Madrid, 2000.

- Tom Strachan and Andrew P Read. Human Molecular Genetics, 4th edition. Taylor & Francis, Inc. 2010

- Robert A. Weinberg. The Biology of Cancer 2nd Edition. Taylor & Francis, Inc. 2014

Internet resources

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

This address allows you to get in touch with numerous www related to Pathology.

Software

There is no specific software required for this subject.