COURSE DATA

DATA SUBJECT

Code: 34443
Name: General histology
Cycle: Undergraduate Studies
ECTS Credits: 4.5
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Facultat de Medicina i Odontologia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1204 - Degree in Medicine	Human anatomy II	COMPULSORY

COORDINATION

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SUMMARY

The subject General Histology involves the study in depth of the basic tissues and their variants, in state of health, which form the human body, taking into account that in the subject of Special Histology, taught in the second course of the degree, the organization of these tissues that form the organs and systems in our organism is studied.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

Basic Cell Biology, Biochemistry, Physiology and Human Anatomy

COMPETENCES / LEARNING OUTCOMES

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Acknowledge diversity and multiculturality.

Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.

Capacity for communicating with professional circles from other domains.

Consideration of ethics as a fundamental value in the professional practise.

Criticism and self-criticism skills.

Establish a good interpersonal communication which may allow professionals show empathy and talk to the patients efficiently,as well as to their relatives, the media and other professionals.

Handles material and the use of basic laboratory techniques.

In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.

Know how to use IT in clinical, therapeutic and preventive activities, and those of research.

Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.

Knows the cell structure and its function. Implication of biomolecules. Knows the metabolism, its regulation and metabolic integration.

Knows the morphology, structure and function of skin, blood, organs and body systems: circulatory, digestive, locomotor, reproductive, excretory and respiratory systems; endocrine system, immune system, central and peripheral nervous systems.

Knows the procedures in cell communication and the function of excitable cell membranes.

Knows the procedures which take place in the cell cycle. Cell differentiation and proliferation.

Knows the processes of growth, maturation and aging of the different organs and systems. Homeostasis. Adaptation to the environment.

Proper organisation and planning of the workload and timing in professional activities.

Recognises the morphology and structure of tissue, organs and systems through macroscopic and microscopic methods, and image techniques.

Team-working skills and engaging with other people in the same line of work or different.

Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.

Understand and recognise the structure and normal function of the human body, at the following levels:

molecular, tissue, organic, and of systems, in each phase of human life and in both sexes.

Working capacity to function in an international context.

DESCRIPTION OF CONTENTS

I. THEORETICAL ISSUES

1. Concept, classification and tissue differential morphological characters. Tissue engineering.
2. Epithelial tissue I. Lining epithelium.
3. Epithelial tissue II. Glandular epithelium. Exocrine glands.
4. Epithelial tissue III. Endocrine glands. Mixed glands. Epithelial renewal and regeneration.
5. Connective tissue I. General characters, cells and extracellular matrix.
6. Connective tissue II. Classification and connective tissue variants. Basement membrane.
7. Adipose tissue. Melanin pigment system.
8. Modeled connective tissue I. Cartilaginous tissue.
9. Modeled connective tissue II. Bone tissue. General structure. Cells and extracellular matrix.
10. Modeled connective tissue III. Histologic types of bone.
11. Modeled connective tissue IV. Ossification. Bone formation models. Remodeling.
12. Muscular tissue I. Skeletal striated muscle.
13. Muscular tissue II. Cardiac striated muscle. Smooth muscle.
14. Locomotor system.
15. Nervous tissue I. Neuron. Neuronal soma and dendrites.
16. Nervous tissue II. Axon. Synapse.
17. Nervous tissue III. Glial cells.
18. Nervous tissue IV. Myelinated and unmyelinated nerve fibers. Myelination.
19. Blood I. Erythrocyte. Platelet.
20. Blood II. Leukocytes: granulocytes and lymphocytes.
21. Blood III. Monocyte-macrophage system.
22. Blood IV. Hematopoiesis.
23. Formation, renewal and aging of tissues.

II. LABORATORY PRACTICES

1. Lining and glandular epithelial tissue.
2. Non modeled connective tissue.
3. Modeled connective tissues: cartilaginous and bone tissues.
4. Muscle and nerve tissues.
5. Practical exam.

III. SEMINARS

1. Epithelial tissue. Lining and glandular epithelial tissue.

2. Connective tissue. Non-modeled and modeled variants (cartilage and bone). Blood.
3. Muscle and nervous tissues.

IV. SUPERVISED WORK GROUPS OF GUIDED DIAGNOSIS

Identification of histological structures in a collection of microphotographic images (light and electron microscope).

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	4,00
Theory	25,00
Seminar	6,00
Laboratory	10,00
Total hours	**45,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	16,00
Preparation of lessons	17,50
Preparation for assessment activities	14,00
Resolution of case studies	0,00
Total hours	**67,50**

TEACHING METHODOLOGY

In this subject, 23 hours of theory lessons and 20 hours of practice lessons are combined. In the theory credits, the teacher exposes the contents, methods and techniques required for the development of the knowledge and skills that students must acquire. In the practice lessons, activities of laboratory of microscopy are carried out, where visualization of histological preparations of the different tissues of our organism is performed. The training activities include the diagnosis of histological images, as well as the presentation and explanation of histological images by the students, to develop the ability to work with new information, communication and bibliographic research technologies.

Whenever possible, gender perspective, respect for diversity and the Sustainable Development Goals (SDGs) will be incorporated into teaching.

THEORY LESSONS

They consist of the explanation of a topic by the teacher for 50 to 55 minutes. Through these lessons, both verbal and iconographic information is provided to a large number of students, saving time and resources, emphasizing the important aspects of the subject and delving into the concepts of more difficult assimilation. In addition, in our discipline we can take advantage of the projection of histological images trying to get the students to describe the images, thus facilitating their active participation. To make easier the follow-up of the speech during the lesson, the teacher can provide the students with a summary of the class, which is uploaded to Aula Virtual before the lesson.

PRACTICE LESSONS

The practices provide the students with direct contact with the reality of the discipline, allowing them to learn the basic histological techniques and applying and developing the knowledge acquired in theory teaching, thus being useful at the same time to reinforce it. In our discipline, practice teaching acquires a major importance, given the morphological character of our subject, which requires a great visual learning. Therefore, the visualization of microscopic preparations and the handling of microscopic images, illustrations, diagrams and/or photographs help to understand the subject just as it does the text of a book or the theory lesson.

Within the practice teaching, there are various activities carried out in this subject: microscopy practices, seminars and tutored and diagnostic-oriented work groups.

For the correct use of the practice lessons, students have summaries of the histological slides to be studied available on the web [https://www.uv.es/histomed/], as well as explanatory videos regarding them, and an image bank in which they can identify histological structures in a playful way.

Microscopy practices

They constitute a teaching element of first order in our discipline since they allow the autonomous personal observation, although supervised, of the tissues and organs using the microscope. Microscopy practices are carried out in groups of 40 students, supervised by several teachers, which allows a more personalized and smoother teacher-student relationship. Each student has a microscope and a tray with the preparations that will be studied in each practice.

In these sessions, students must locate a series of objectives in the corresponding slides and, voluntarily, record them in a laboratory notebook that will be evaluated.

There are four microscopy practices, two-hours long each, which are carried out after the subject matter in each of the sessions has been exposed in the theory lessons.

Seminars

The seminar is based on the public presentation by each student of a histological images from a set of 6-8 that have been assigned to their workgroup (usually 6-8 students), an image that is related with topics already studied in the theory lessons and in the microscopy practices, covering either a histological structure itself or considering modifications and normal variants of these structures, related for example to

possible age variations or, from the point of view of gender perspective, potential differences depending on the sex of the individual. The structure of the seminars differs radically from the theory lessons, since the students are the speakers and therefore the active actors in the exchange of knowledge and, where appropriate, the discussion of what has been shown, always with the aim of stimulating participation and critical approaches. The students, as has been indicated previously, in groups of 6-8, prepare a set of images related to the subject of study (proposed by the teachers) and expose them (the professor design in the seminar session which image must be described by each student of that group) to their classmates and two teachers, who will assess it. Before the presentation, each group of students must send the professor a file with the images they will describe, highlighting the various histological structures they will explain during their presentation in the seminar. In this practice activity, self-learning is fostered, as well as the ability to work as a team, the critical search for contrasted information and communication skills. Although tutored and guided by the teacher, the students are those who have the initiative.

The seminars are held in groups of 40 students (those who correspond to a group of practices) and are developed in three sessions of two hours each, in which 40-50 histological images selected by the professors will be described (12-16 in each session, depending on the number of students in each group), chosen in a balanced way considering the syllabus and the moment in which the images should be both prepared and exposed. Each student has a maximum of 5 minutes to describe the image that she/he has prepared and to answer any questions from her or his classmates and professors. Professors will assess the quality and accuracy of the presentation made by each student.

Supervised work group and guided diagnosis

This practical work is developed in 3 sessions, each lasting 80 minutes. For the development of these sessions, the students will be provided in advance with a series of images obtained from preparations observed both by light and electron microscopy, with various staining techniques, both conventional and more specific and immunohistochemistry. During the three sessions, the students, randomly chosen by the professor, will describe one of the images from the batch corresponding to the session. This activity requires work to be done prior to the sessions and aims to stimulate the ability to critically search of information. This activity will be evaluated by the teachers.

EVALUATION

The final mark will be established by the joint evaluation of activities and written tests performed in relation to the theoretical and practical content. The content of the written test will be the same for all groups.

Theoretical assessment

It will be 60% of the final mark. It will be done by a written test about the content of the theoretical program, and it will aim to evaluate the acquisition of knowledge:

- 4 points: 40 multiple choice questions (4 possible answers, 1 correct/3 incorrect). Assessment criteria: 0.1 points/right answer, 0.1/3 points will be subtracted by each wrong answer.
- 2 points: 4 written questions of limited length. Assessment criteria: from 0 to 0.5

points/question.

Practical assessment

It will be the 40% of the final mark. It will be carried out by evaluating the observation and analysis of preparations and microscopic images, the description of histological images and the continuous evaluation of the participation on the several activities. The acquisition of skills related with the general and specific competencies will be valued:

- Final practical exam:

  - 1 point: recognition of 5 histological structures of the preparations studied in the microscopy practices (0.2 points/structure).
  - 1.5 points: recognition exam of structures present in the images provided by the teacher in the seminars and tutored groups, or similar images.

- 0.5 points: elaboration of a laboratory notebook.

- 0.6 points: oral presentation of a histological image, carried out in the seminar sessions.

- 0.4 points: evaluation of the oral exposition of histological images in the tutored group sessions.

The subject will be passed with a mark equal or greater than 5, as long as at least 3 points are achieved in the theoretical part and 2 points in the practical one. To qualify for Honors, it is mandatory that the student has presented the laboratory notebook and that it has been favorably qualified.

Attendance to the practical activities is mandatory. It is considered that the student complies with this requirement if he/she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to force majeure. It will be essential to comply with this requirement to pass the course.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

REFERENCES

Basics

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- BRÜEL A, CHRISTENSEN EI, TRANUM-JENSEN J, QVORTRUP K, GENESER F. Geneser Histología (4ª edición). Editorial Médica Panamericana, 2015.
- VILLARO AC. Histología para estudiantes. Editorial Médica Panamericana, 2021. - WELSCH U. Sobotta

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- KIERSZENBAUM AL, TRES LL. Histología y Biología Celular (5ª edición). Editorial Elsevier, 2020.
- RECURSOS e-Salut:

- ClinicalKey Student Medicina, Odontologia y Enfermería [https://uv-es.libguides.com/RecursosSalut]
- Acces Medicina [https://uv-es.libguides.com/Access_Medicina]
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Additional
Reference Books:
- GARTNER LP. Histología: Atlas en Color y Texto (7ª edición). Editorial Wolters Kluwer, 2018.
- JUNQUEIRA LC, CARNEIRO J. Histología Básica: Texto y Atlas (12ª edición). Editorial Médica Panamericana, 2015.
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- MARTÍN-LACAVE I, UTRILLA J, FERNÁNDEZ-SANTOS JM, GARCIA-CABALLERO T. Atlas de Histología. Microscopía óptica y electrónica. Editorial Universidad de Sevilla, 2020.
- MARTÍN-LACAVE I, GARCÍA-CABALLERO T. Atlas de Inmunohistoquímica (ebook). Editorial Díaz de Santos, 2012.

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