

**COURSE DATA****Data Subject**

<b>Code</b>	34444
<b>Name</b>	Special histology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2024 - 2025

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1204 - Degree in Medicine	Faculty of Medicine and Odontology	2	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1204 - Degree in Medicine	2 - Human anatomy II	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
MILIAN MEDINA, LARA	285 - Pathology

**SUMMARY**

The program of the subject Special Histology involves the study in depth of the organisation and structure of tissues and organs that form the human body in the health state, taking into account that in the subject of General Histology, coursed during the first year of the degree, the microscope structures of the basic tissues (epithelial, conjunctive, muscular and nervous) that form the organs are studied. Thus, in this subject a detailed study of the structural characteristics of the different organs and systems is made: central and peripheral nervous, respiratory, circulatory, hematology, endocrine, digestive, urinary, genital systems, tegumentary and sense organs.

**PREVIOUS KNOWLEDGE**



### Relationship to other subjects of the same degree

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

### Other requirements

General histology, cell biology, biochemistry, physiology and human anatomy.

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 1204 - Degree in Medicine

- 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.
- Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.
- 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.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.
- Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.
- 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.
- Organizar y planificar adecuadamente la carga de trabajo y el tiempo en las actividades profesionales.
- Capacidad para trabajar en equipo y para relacionarse con otras personas del mismo o distinto ámbito profesional.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Knows the cell structure and its function. Implication of biomolecules. Knows the metabolism, its regulation and metabolic integration.
- 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 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 processes of growth, maturation and aging of the different organs and systems. Homeostasis. Adaptation to the environment.
- Handles material and the use of basic laboratory techniques.
- Recognises the morphology and structure of tissue, organs and systems through macroscopic and microscopic methods, and image techniques.

## **LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)**

1. Knowledge of the concepts and structural characteristics of the different types of organs and systems. Morphological analysis of all their types.
2. The development of the ability to identify in images the structures of the morphological organisations described theoretically.
3. The acquisition of the ability to develop diagnostic skills at the microscopic level.

## **DESCRIPTION OF CONTENTS**

### **1. THEORY**

1. Brain. Cerebellum.
2. Spinal cord. Meningeal layers. Spinal ganglion. Autonomic nervous system. Autonomic ganglion. Peripheral nerve.
3. Sensory and motor nerve endings.
4. Respiratory system. Upper airways and olfactory system. Paranasal sinuses. Lung. Pulmonary spaces. Pulmonary alveolus. Pleura.
5. Cardio-circulatory system.
6. Lymphoid system. Timo. Bone marrow. Nodular and diffuse lymphoid tissue. Mucosa-associated lymphoid tissue.
7. Lymph node. Spleen.
8. Endocrine system. Hypophysis. Epiphysis.
9. Thyroid. Parathyroid. Diffuse neuroendocrine system.
10. Adrenal gland.
11. Oral cavity. Oral mucosa. Tongue. Teeth. Salivary glands.
12. General structure of the digestive tract. Pharynx. Esophagus. Stomach.
13. Small and large intestine. Appendix. Recto-anal canal. Pancreas.
14. Liver and biliary tract.
15. Kidney. Renal parenchyma. Nephron.
16. Renal vascularisation and juxtaglomerular apparatus. Renal interstitium. Urinary tract.
17. Genital system. Testicle. Spermatic ducts. Prostate. Male external genitals.
18. Ovary. Ovarian cycle. Fallopian tube.



19. Uterus. Endometrial cycle. Cervix. Vagina. Vaginal cycle. Female external genitals.
20. External tegumentary system. Epidermis. Dermis. Skin appendages. Mammary gland.
21. Eyeball.
22. Ear.

## 2. PRACTICES

### LABORATORY PRACTICES

1. Organs of the nervous, respiratory and circulatory systems.
2. Lymphoid and endocrine organs.
3. Organs of the digestive and urinary systems.
4. Genital organs and senses.
5. Practical exam.

### SEMINARS

1. Organs of the nervous, respiratory and hemolymphoid systems.
2. Organs of the endocrine and digestive systems.
3. Genitourinary organs, skin and senses organs.

### DIAGNOSIS WORK-ORIENTED TURORED GROUPS

Identification of histological structures in a collection of microphotographic laminas (optic and electronic microscope).

## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	25,00	100
Laboratory practices	10,00	100
Seminars	6,00	100
Tutorials	4,00	100
Development of group work	10,00	0
Development of individual work	10,00	0
Study and independent work	14,00	0
Readings supplementary material	2,00	0
Preparation of evaluation activities	14,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	7,50	0
<b>TOTAL</b>	<b>112,50</b>	



## TEACHING METHODOLOGY

In this subject, 22.5 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 organs 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, in order to develop the ability to work with new information, communication and bibliographic research technologies.

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

### 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 to try to make the students describe the images, thus facilitating their active participation. In order 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 supervised work groups, and guided diagnosis.

For the correct use of the same, students have available on the web <https://www.uv.es/histomed/> summaries of the histological preparations to be studied, explanatory videos about them, as well as an image bank in which they can locate 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 histological organs using the microscope. The 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 preparations 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 work group (usually 6-8 students), an image that is related with topics already studied in the theory lessons and the practice lessons of microscopy, 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. In this practice activity, self-learning is fostered, as well as the ability to work in teams, 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 forming that specific 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 or he has prepared and to answer any questions from her or his classmates and professors. The professors will assess the work done and the quality of the presentation of by each student.

Within the continuous evaluation, in each seminar session the students will be shown several histological images (of those studied that session, or described in previous seminars, of structures already studied in the microscopic practice sessions and, finally, of images deposited in an image bank in which there are structures that the students should already know). Students should recognize in these images various labeled histological structures.

### *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, divided into small groups, should analyze both the images proposed by the teacher and other related images that are complementary to those provided. This activity requires work to be done prior to the sessions and aims to stimulate the ability to critically search for information and teamwork. 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 true/3 false). 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 mean 40% of the final grade. It will be carried out through the evaluation of the observation and analysis of microscopic slides and images, the description of histological images and the continuous evaluation of the participation in the different activities. The acquisition of skills related to general and specific competences will be assessed:

- FINAL PRACTICAL EXAM
  - 1 point: recognition of 5 histological structures of the preparations studied in the microscopy practicals (0.2 points/structure), by means of a compulsory practical exam.
  - 0.8 points: examination of recognition of structures present in the images provided by the teacher in the tutored group sessions.
- 0.5 points maximum: continuous evaluation for the elaboration of a laboratory notebook.
- 0.6 points maximum, oral presentation of a histological image, carried out in the seminar sessions.
- 0.9 points: continuous evaluation, assessing the correct recognition of structures indicated in histological images shown in the seminar sessions as well as in images from the image bank.
- 0.2 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 it is achieved at least 3 points 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 at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

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



## REFERENCES

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