

Microscopic Structure of Systems

Code: 102955
ECTS Credits: 6

Degree	Type	Year	Semester
2502442 Medicine	FB	2	A

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

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Prerequisites

There are no official prerequisites.
It is recommended to have acquired the basic knowledge of the subjects of Cell Biology and Histology in order to fully acquire the proposed objectives.

Objectives and Contextualisation

To understand the cellular and tissular organization of the different body systems.
To recognize and microscopically identify the different bodies and body systems.
To relate the characteristics of the tissues and the cells of the organs and systems with the function.

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 knowledge and understanding of descriptive and functional anatomy, both macro- and microscopic, of different body systems, and topographic anatomy, its correlation with basic complementary examinations and its developmental mechanisms.
- Demonstrate knowledge of the principles and physical, biochemical and biological processes that help to understand the functioning of the organism and its disorders.
- Demonstrate understanding of the basic sciences and the principles underpinning them.

- 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 structure and function of the body systems of the normal human organism at different stages in life and in both sexes.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Use information and communication technologies in professional practice.

Learning Outcomes

1. Apply morphofunctional knowledge to the production of structures review texts.
2. Communicate clearly, orally and in writing, with other professionals and the media.
3. Convey knowledge and techniques to professionals working in other fields.
4. Describe the cell and tissue organisation of the different body organs and systems.
5. Describe the general organisation and function of the systems of the human body in health.
6. Describe the microscopic structure and formation mechanisms of blood and the blood-forming organs.
7. Describe the physiology of the different sense organs.
8. Describe these structures using different diagnostic imaging techniques.
9. Differentiate between tissue types from their histological and functional characteristics.
10. Explain the function and characteristics of the different components of blood.
11. Explain the functional mechanisms of metabolism.
12. Explain the role and mechanisms of regulation of the cardiovascular system, the respiratory system, the excretory system, the digestive system, the endocrine system, the male and female reproductive system and the nervous system and neural regulatory mechanisms.
13. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
14. Identify microscopically the different cell types and tissue structures that form the organs and systems of the body.
15. Identify the main techniques used in histology laboratories.
16. Identify the microscopic structures that constitute the different body systems in good health in the major stages of the life cycle and in both sexes.
17. Identify the scientific bases of human histology.
18. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
19. Make correct use of histological information sources, including textbooks, atlas images, internet resources and other specific bibliographic databases.
20. Make correct use of the international anatomical and histological nomenclature.
21. Relate the cell and tissue characteristics of the organs and systems of the body to their function.
22. Use information and communication technologies in professional practice.

Content

Thematic blocks:

First Semester:

- I. Cardiovascular system,
- II. Hematopoiesis: bone marrow
- III. Immune and lymphatic system
- IV. Respiratory track
- V. Urinary system
- VI. Digestive system

Second Semester:

- VII. Central and peripheral nervous system
- VIII. Sensory system

lix Tegumentary system
X. Endocrine system
XI. Male and female reproductive system

Methodology

Theoretical discussion sessions in the classroom or seminars

The objective of the discussion classes in the classroom is to help the students to reach the objectives of marked knowledge of each thematic block. The students will raise the doubts that have arisen when preparing each of the objectives.

Teaching material in the Virtual Campus

Through MOODLE students can communicate with the different teachers of the subject and find the following material:

- the learning objectives of each thematic block of the subject;
- slide presentations, texts, images and information used in the discussion sessions and practice sessions;
- exam notifications and grades;
- a forum of the subject where students can raise topics.

Bibliography

It is advisable to use books and other resources available on the Internet to prepare the topics and achieve the objectives set. It is important not to confuse between a textbook, which will help us achieve the objectives of knowledge, and an atlas of histological images, which will help us to achieve the objectives of recognition and identification of structures.

Online resource of Digital Practices

The software of Digital Practices allows the identification of organs, structures and cell types as if it were a microscope and a tray of preparations, but in digital format.

Practical sessions in the microscope classroom (M4-010)

The sessions of practices in the classroom of microscopes are designed so that the student reaches the objectives of abilities using the microscope and histological preparations of different organs. Students must have previously worked on the subject using teaching resources. It is advisable to take textbooks and histology atlases to practical classes.

The practice sessions will consist of three parts. In the first part will work images and group discussion of cases, students can self-evaluate the work done and the objectives of each practice. In the second part, by means of the use of the microscope, they will be able to influence the objectives that have not been understood and in the points of greatest interest of the practice. Finally, in the third part, by means of an evaluation by groups, the objectives fulfilled will be qualified. Each practice will be evaluated with 0.2 points and the mark obtained in the set of the 9 practices will correspond to a maximum of 2 points in the final grade of the microscope test.

The use of the microscope is subject to the health situation during the internship period

Computer rooms of the Faculty of Medicine

The computer rooms of the Teaching Unit of Basic Medical Sciences of the Faculty of Medicine are available to students during the school days of the course and online Digital Practices can be used.

Classroom multimedia-microscopes (Medical Histology Unit, M5-103)

In this room, students can use a microscope and histological preparations as well as a computer with the virtual microscope, or both at the same time, depending on the activity that they want to develop. In addition, they can use the tutoring and self-assessment practices programs.

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 AND VIRTUAL PRACTICES (PLAB)	26	1.04	1, 2, 8, 4, 7, 9, 3, 11, 12, 10, 13, 16, 14, 18, 21, 20, 19, 22
THEORY (TE)	27	1.08	1, 8, 4, 7, 9, 11, 12, 10, 16, 21, 20
Type: Autonomous			
PERSONAL STUDY / READING ARTICLES / REPORTS OF INTEREST	62.2	2.49	1, 2, 8, 4, 7, 9, 3, 11, 12, 10, 13, 18, 21, 20, 19, 22
PREPARATION OF DIAGNOSIS BY IMAGE	32	1.28	16, 14, 18, 20, 19, 22

Assessment

The evaluation of the subject to grant the final grade to the student will consist of three parts:

- A single test type test consisting of three subtests: basic knowledge, image recognition and case resolution. It consists of two partial exams (at the end of the first and second semester)
- A test for the location of structures using the microscope and histological preparations.
- Continuous assessment tests carried out during the practical sessions.

To pass the subject, the qualification obtained in the two test-type tests (of the first and of the second semester), as well as the qualification of the microscope test must be 5 or higher.

The calculation of the final qualification will be obtained by adding the result of the test-type grade (60%), the microscopic location test (25%) and continuous assessment tests (15%).

If, for health reasons, it is necessary to adapt the online assessment, students will be informed of the changes that are being made.

1.- Test. Written evaluation through objective tests.

It is essential to pass the test type test with an average grade equal to or greater than 5.

The student will have a total of 120 min. to answer the questions posed.

The value of each question and its penalty will be indicated in the essay writing.

The use of printed or printed material, electronic devices, such as agendas, computers, mobile phones, etc., will not be allowed.

- Subtest of basic knowledge. Selection items (alternative response items).

In this subtest, the student will have to answer questions (true / false) in which the basic knowledge of the subject will be required.

- Subtest of identification of printed images. Selection items (multiple response items).

In this subtest, the student will have to identify the organ, tissue, cell types or structures that are required.

- Subtest type test of resolution of cases. Selection items (multiple response items).

This test will consist of a test based on multiple choice questions (5 answer options, with one or more correct answers) in which questions and cases similar to those that will have been solved during the practical classes will be raised, in order to evaluate the integration of the knowledge acquired throughout the course.

In the case of not having been passed the test during the partial exams, the student will have the opportunity to perform a test of recovery of the partial missed.

2.- Test of location of structures with the microscope. Objective structured evaluation.

Each student will have a microscope, a tray of unidentified preparations and a questionnaire with 5 questions.

In these questions the student will be asked to search and identify an organ,

a structure or a cell type in different magnifications. Histological preparations may be different from those used in practices. The exam will last 20 minutes and will be done without the help of books, notes or any other material.

The completion of this test is mandatory to pass the subject.

3.- Tests of continuous evaluation. Objective structured evaluation

During the realization of practical classes students will be evaluated through the approach and resolution of issues corresponding to the topics covered in each practice.

It is necessary to take into account article 112 ter. Of the title IV: "To be able to participate in the recovery the alumnado must have been previously evaluated

in a set of activities the weight of which is equivalent to a minimum of two thirds of the total qualification of the subject".

The exams that present defects of form (lack of permutation, lack of NIU or name, imprecise marking on the answer sheet, etc.) will not be considered correction.

The students who do not perform the tests of evaluation type test and the test of location of structures under the microscope will be considered as not evaluated

and will exhaust the rights to the registration of the subject.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Objective structured evaluation	15%	0.5	0.02	8, 9, 16, 14, 20
Objective structured evaluation	25%	0.3	0.01	8, 9, 12, 16, 14, 20
Objective tests: Multiple choice test	60%	2	0.08	1, 2, 8, 5, 6, 4, 7, 9, 3, 11, 12, 10, 13, 17, 16, 15, 14, 18, 21, 20, 19, 22

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Books

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Atlas

GARTNER y Hiatt. Atlas en color y texto de Histología. Sexta edición. Editorial Panamericana, 2015.

BOYA. Atlas de Histología y Organografía Microscópica. Editorial Médica Panamericana. Primera edición, 1996.

WHEATER'S. Histología Funcional. Cuarta edición. Editorial Elsevier, 2000.

YOUNG y HEATH. Wheater's Histología Funcional. Texto y atlas en color. Harcourt Churchill Livingstone. 4ª ed, 2000.

Software

a specific programmes is not required for the course