Universitat Autònoma de Barcelona

2021/2022

Histology

Code: 100870
ECTS Credits: 3

Degree	Type	Year	Semester
2500252 Biochemistry	OB	1	2

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

Name: Ignasi Roig Navarro
Email: Ignasi.Roig@uab.cat

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

Andros Maldonado Linares

Prerequisites

Master the contents of the first semester Cell Biology program.

Objectives and Contextualisation

This is a compulsory first-course subject that introduces students to the fundamentals of the tissue organization of vertebrates. The central goal of Histology is the study of the cellular organization that make animal tissues and their correlation with the tissue function. This subject has been designed assuming that the student has the basic knowledge of Cell Biology.

Specific objectives of the subject:

1. To know the diversity of animal cells broadly.
2. To know how to distinguish the cytophysiological characteristics that define the different animal tissues.

Competences

- Be able to self-evaluate.
- Collaborate with other work colleagues.
- Combine research and and the generation of knowledge with problem-solving in one's own field, showing sensibility to ethical and social questions.
- Describe the structural, physiological and biochemical characteristics of the different types of cells and explain how their properties fit in with their biological function.
- Manage information and the organisation and planning of work.
- Read specialised texts both in English and ones own language.
- Take responsibility for one's own learning after receiving general instructions.
- Think in an integrated manner and approach problems from different perspectives.

Learning Outcomes

1. Be able to self-evaluate.
2. Collaborate with other work colleagues.
3. Combine research and and the generation of knowledge with problem-solving in one's own field, showing sensibility to ethical and social questions.
4. Describe and identify the different types of animal cells and tissues.
5. Manage information and the organisation and planning of work.
6. Read specialised texts both in English and ones own language.
7. Take responsibility for one's own learning after receiving general instructions.
8. Think in an integrated manner and approach problems from different perspectives.

Content

Topic 1. Concept of animal tissue

Cellular and extracellular components. Intercellular relations: communication and coordination. Maintenance of tissue integrity. Classification of animal tissues.

Topic 2. Epithelial tissue

Differentiations of the surface of the epithelial cell. Cellular polarity and intercellular junctions. Basal sheet Epithelis of coating: structural and physiological characteristics. Types of epithelium coating. Glandular epithelials: secretory cell types. Classification and general properties of exocrine glands.

Topic 3. Conjunctive tissue

Extracellular matrix: fibers and essential substance. Fixed and free cells of the connective tissue. Fibroblast and fibrogenosis. Mastocytes. Plasmocytes. Macrophages and mononuclear phagocytic system. Varieties of connective tissue. Epithelial-conjunctive relationships.

Topic 4. Adipose tissue

Adipocyte Unilocular and multilocular adipose tissue: structure, function and distribution.

Topic 5. Cartilaginous tissue

Cartilaginous matrix. Chondrocyte Varieties of the cartilaginous tissue: hyaline, elastic and fibrous.

Topic 6. Bone tissue

Architectural organization of the bone. Bony matrix Osteoblasts-osteocytes: structure and function. Osteoclast and bone resorption. Histophysiology.

Varieties of bony tissue: laminar and non-laminar. Osteons, interstitial and circumferential systems. Osteogenesis.

Topic 7. Sang

Plasma blood forms elements. Erythrocyte: structure and function. Thrombocytes and platelets: blood clotting. Leukocytes Granulocytes: neutrophils, eosinophils and basophils. Agranulocytes: monocytes and lymphocytes.

Topic 8. Muscle tissue

Varieties of muscle tissue. Fluted muscular fiber. Contractile apparatus Miofibriles and sarcòmers. Cytophysiology of muscle contraction. Cardiac muscle fiber. Intercalary discs Smooth muscular fiber: contraction mechanism.

Topic 9. Nervous tissue

Neuron: morpho-functional regionalization. Axon flow Structural bases of the generation and propagation of the nervous impulse. Interneuronal synapse Neuroglia.

Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents.

Methodology

Lectures

The theory program will be taught in 18 classes. They will be made using audiovisual material prepared by the teacher, material that students will have at their disposal in the Virtual Campus. Some of these theory classes will follow an inverted class pattern where students will have to prepare a material before class to debate in the classroom.

Seminars

The 4 scheduled seminars are designed so that students work in small groups, acquire group work abilities and critical reasoning. The students will be divided into groups of 4 to 6 to work on a specific topic of the program for the subsequent oral presentation and collective discussion. The organization of the groups and the distribution of topics to be discussed will take place during the first seminar.

In the remaining seminars, some groups of students will have to deliver an essay about the subject proposed by the teacher. The same groups of students will orally present the subject to the rest of the class with the means available in the classroom.

The bibliography that students can use, as well as the scientific work related to the topics, will be collected in the Virtual Campus. Attendance at the seminars is mandatory.

Tutorials

The tutorials will be carried out in a personalized way in the office of the professor (schedule to be agreed). Tutorials should be used to clarify concepts, establish the knowledge acquired and facilitate study by students. They can also be used to solve the doubts that students have about the preparation of the seminars.

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			
Lectures	18	0.72	4, 6
Seminars	4	0.16	2, 4, 5, 6, 8, 3, 7, 1
Type: Supervised			
tutoring	3	0.12	4, 5, 8
Type: Autonomous			
Seminari preparation	12	0.48	2, 4, 5, 6, 8, 7, 1
Study	35	1.4	4, 6, 8

Assessment

The competences of this subject will be evaluated by means of continuous evaluation, which will include different tests, written works and public presentation.

The evaluation system is organized in two sections, each of which is assessed independently and will be assigned a specific weight in the final qualification of the module:

Final Exam (50% of the overall grade): This section evaluates individually with tests of the knowledge obtained by each student. A test will be performed at the end of the contents of the Histology program. Students who have obtained a grade of less than 4 (out of 10) in this test will not be able to ponder it with the mark obtained in the seminars or the reversed class, and therefore, they will have to complete the recovery exam, which will be taken same characteristics as the final test.

The students who have passed may improve the grade obtained by presenting themselves to the recovery exam, with the benefit that the presentation to the examination of recovery implies the resignation of the qualification obtained previously.

Reversed Class (10% of the overall grade): During this activity, students will have to answer a questionnaire that will be evaluated and will represent 15% of the mark of the subject.

Seminars (40% of the overall grade): This section evaluates the capacity for analysis and synthesis of the students of each group, as well as the skills of group work and oral presentation.

The seminars will be valued as follows:

Written work

50%

The teacher evaluates (about 10) the work delivered by each group of students (see deliveries)

Oral presentation

30%

The teacher evaluates (about 10) the skills of each group of students in the public presentation of their work

Inter-group qualification

10%

Each group of students evaluates (about 10) the groups that perform the oral presentation

Intra-group qualification

10%

Within each group, each student evaluates (about 10) their peers at the last seminar

TOTAL

100%

Attendance at the seminars is mandatory. If there is no justification left in class, there will be a penalty in the seminar note:

Absence 1 session = reduction of 20% of the note.
Absence 2 sessions = reduction of 40% of the note.
Absence $\geq$3 sessions = 80% reduction of the note.

Overcoming the subject

To pass the subject, at least 5 points out of 10 must be obtained in the overall computation of written theory and seminar tests.

A student will be considered "not evaluable", and therefore will not be evaluated, when it has not been presented to more than 67% of the evaluation activities programmed for the subject.

To participate in the recovery, the student must have been previously evaluated in a set of activities whose weight equals to a minimum of 67% of the grade of the subject

Repeating students

Regarding the passing of the subject by the repeaters, it will not be necessary to repeat the seminars again if the student had previously obtained a minimum grade of 5. This exemption will be maintained for a period of three additional tuition fees

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final Test	50%	1	0.04	4, 8
Inverted Class	10%	1	0.04	5, 6, 8, 3, 7, 1
Seminars	40%	1	0.04	2, 4, 5, 6, 8, 3, 7, 1

Bibliography

Alberts y col. : Biologia Molecular de la Célula (ed. Omega).

Gartner, L.P. Hiatt, J.L.: Texto atlas de Histología (ed. McGraw Hill).

Geneser, F.: Histología (ed. Panamericana).

Junqueira, L.C. y Carneiro, J.: Histología básica (ed. Masson).

Krstic, R.V.: Los tejidos del hombre y de los mamíferos (ed. McGraw Hill).

Ross, M.H. y Pawlina, W: Histología. Texto y atlas color con Biología celular y molecular (ed. Panamericana).

Stevens, A. y Lowe, J.: Histología humana (ed. Elsevier).

Welsch. U.: Sobotta Welsch Histología (ed. Panamericana).

https://histologyguide.org//index.html

Software

There is no specific software for this course