

## 29303 - Cellular and histological biology

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 29303 - Cellular and histological biology

**Faculty / School:** 229 - Facultad de Ciencias de la Salud y del Deporte

**Degree:** 442 - Degree in Odontology

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject type:** Basic Education

**Module:**

### 1. General information

The Cell Biology and Histology subject aims to provide students with knowledge of the structure and the function of the cell and to be able to explain and schematize the anatomical development of the different tissues, especially those related to the oral-dental cavity, using a correct terminology for Health Science and being able to discern between different sources of information.

In addition, students will be able to acquire skills in the management of basic experimental techniques in the fields of Cell Biology and Histology.

### 2. Learning results

- Recognize and describe elementary cellular and molecular mechanisms. Identify, integrate and describe the origin, development, classification, microscopic structure and distribution of the elementary tissues of the human organism, as well as the structures of the stomatognathic apparatus, in the states of health.
- Know the historical and conceptual development of Cell Biology and Histology, the concept of structure and levels of organization, and the general characteristics of cells and tissues.
- Handle observation instruments and basic instrumental techniques. Know the practical operation of the optical microscope and the theoretical operation of the electron microscope, as well as the methods of study in Cytology and Histology.
- Explain, analyse and evaluate orally relevant and current theoretical information collected and related to the project to be developed in the subject..

### 3. Syllabus

#### **THEORETICAL PROGRAM:**

##### **CELL BIOLOGY**

1. Introduction to Cell Biology.
2. Cellular origin and evolution
3. Cell membranes
4. The core
5. Protein distribution and transport: ER, Golgi and lysosomes
6. Bioenergetics and Metabolism: Mitochondria, chloroplasts and peroxisomes
7. Cytoskeleton and cell movement
8. Cell cycle
9. Cellular Communication
10. Cell differentiation and tissue formation
11. Cancer cell biology

##### **HISTOLOGY**

-Unit 1: Introduction to Histology

- Units 2-5: Epithelial tissue
- Units 6-13: Connective and supporting tissues
- Topics 14-17: Muscle tissue
- Units 18-20: Blood

- Unit 21: Dental Histology

#### 4. Academic activities

- **Participative master classes:** 34 h. The theoretical foundations of the subject will be presented, and the material will be available in the ADD of UNIZAR.
- **Laboratory practices:** 16 h. They will take place in the microscopy laboratory, in sessions of 2 h.
- **Problem solving and case studies:** 7 h. Correspond to the area of Histology and will consist of discussions of optical and electron micrographs of histological preparations.
- **Teaching and other activities:** 13,5 h. It includes the evaluable teaching assignments and the elaboration of the laboratory practice reports.
- **Assessment tests.** 4,5 h
- **Personal work and study:** 75 h

#### 5. Assessment system

Continuous evaluation will be carried out by means of a mandatory periodic evaluation.

##### A) Students with Continuous Evaluation

- EXAMS (80%): 2 eliminating midterm exams of multiple choice (40 % + 40 %) of 30 questions with 5 options.

Incorrectly answered questions will not be subtracted. A passing grade will be obtained by answering 20 questions correctly.

- GROUP WORK (10 %): Bibliographic information research work with oral presentation in a voluntary class in groups of 2-3 people
- PRACTICES (10 %): will be evaluated through the presentation of a laboratory notebook. Non-attendance to practical classes implies passing them by means of an exam.

##### B) Students with Global Test

- EXAM (80%): Written test with short answer questions.
- GROUP WORK (10 %): Bibliographic information research work with oral presentation in a voluntary class in groups of 2-3 people
- PRACTICES (10 %): will be evaluated through the presentation of a laboratory notebook. Non-attendance to practical classes implies passing them by means of an exam.

In order to consider the grades for practices and assignments, it will be necessary to obtain a grade of  $\geq 4.8$  in the written tests.

Grades for passed assignments and practices will be saved for two academic years.

#### 6. Sustainable Development Goals

- 3 - Good Health & Well-Being
- 4 - Quality Education
- 12 - Responsible Production and Consumption