1. BASIC DATA

Subject	Biological Processes II
Titration	Bachelor's Degree in Physiotherapy
School/ Faculty	Medicine, Health and Sports
Course	First
ECTS	6
Character	Basic
Language/s	Spanish and/or French and/or English
Modality	Face
Semester	Second semester
Academic year	2024-2025
Coordinating Teacher	Catalina Santiago Dorrego / Silvia de Vidania Ballesteros

2. PRESENTATION

Biological Processes II is a basic subject that is taught in the first year of the Bachelor's Degree in Physiotherapy. Through its development, it is intended to instill in the student the details of the morphological and ultrastructural characteristics of the basic tissues that constitute the human body. Likewise, the student is provided with basic knowledge to understand the processes of regeneration and repair of the different tissues.

At the end of this course, the student will be able to identify the embryonic origin of the tissues of the human body and their structural characteristics, as well as differentiate the relationship between the cellular organization of the tissues and their functional characteristics. In addition, the student will be able to recognize basic human tissues through the light microscope, describe the processes of tissue repair and regeneration, and recognize the biological mechanisms by which human tissues regenerate.

3. KNOWLEDGE, SKILLS AND COMPETENCIES

Knowledge:

- **CON3.** Identify the different organ structures and systems of the human body, as well as their function.
- **CON6.** To know and understand the morphology, physiology, pathology and behaviour of people, both healthy and sick, in the natural and social environment.
- **CON 7.** To know and understand the sciences, models, techniques and instruments on which physiotherapy is based, articulated and developed.
- **CON 8.** To know the physiological and structural changes that may occur as a result of the application of physiotherapy.
- Identify the embryonic origin of the tissues of the human body.
- Identify the structural characteristics of the tissues of the human body.
- Differentiate the relationship between the cellular organization of tissues and their functional characteristics.
- Recognize basic human tissues through the light microscope.

- Describe the processes of tissue repair and regeneration.
- Recognize the biological mechanisms by which human tissues regenerate.

Competences:

- **COMP25.** Use information and communication technologies for data research and analysis, research, communication and learning.
- **COMP27.** Cooperate with others in the achievement of a shared academic or professional objective, participating actively, empathetically and exercising active listening and respect for all members.
- **COMP30.** To show ethical behaviors and social commitment in the performance of the activities of a profession, as well as sensitivity to inequality and diversity.

4. CONTENTS

The subject is organized into 7 theoretical learning units that include 20 Lessons of theoretical content and 6 laboratory practices for tissue recognition.

THEORY:

Unit 1 – Meiosis and embryonic development.
Lesson 1. The process of meiosis and human gametogenesis.
Lesson 2. Embryonic development.
Lesson 3. Introduction to histology.

Unit 2 –Non-specialized connective tissue and inflammation.
Lesson 4. Characteristics, structure and function of connective tissue: its cells and the extracellular matrix.
Lesson 5. Types of unspecialized connective tissue. Regeneration and repair.
Lesson 6. The process of inflammation.
Lesson 7. Difference between regeneration and repair. Types of repair.
Lesson 8. Stem cells. Therapeutic use.

Unit 3 – Epithelial tissue.
Lesson 9. Characteristics, structure and function of epithelial tissue.
Lesson 10. Lining tissue and glandular tissue.
Lesson 11. Regeneration and repair of epithelial tissue. Scars.

Unit 4 – Specialized connective tissue: characteristics, structure, function, regeneration and repair.
Lesson 12. Adipose tissue.
Lesson 13. Blood tissue.
Lesson 14. Cartilaginous tissue.
Lesson 15. Bone tissue.

Unit 5 – Muscle tissue.
Item 16. Characteristics, structure and function of muscle tissue.
Item 17. Skeletal, cardiac, and smooth muscle tissue.
Item 18. Regeneration and repair of muscle tissue.

Unit 6 – Nervous tissue.
Item 19. Characteristics, structure and function of nervous tissue.
Item 20. Regeneration and repair of nerve tissue.

LABORATORY PRACTICES:

Practice 1: Observation of blood smears
Practice 2: Observation of a histological section of the skin.

Practice 3: Observation of a histological section of the trachea.
Practice 4: Observation of bone tissue under
Practice 5. Observation of skeletal, cardiac and smooth muscle tissue.
Practice 6: Observation of nervous tissue

5. TEACHING METHODOLOGIES

The following are the types of teaching-learning methodologies that will be applied:

- Master class.
- Case method.
- Cooperative learning.
- Learning based on workshop teachings.
- Simulation environments.

6. TRAINING ACTIVITIES

The types of training activities that will be carried out and the student's dedication in hours to each of them are identified below:

Face-to-face modality:

Training activity	Number of hours
Lectures	25 h
Practical application seminars	5 h
Analysis and resolution of cases	4 p.m.
Preparation of reports and writings	2 pm
Activities in workshops and/or laboratories	12 h
Freelance work	56 h
Debates and colloquia	8 h
Guardianship	12 h
Face-to-face assessment tests	2 h
TOTAL	**150 h**

The activities that will be developed in the subject are:

Activity 1 - Integration of theoretical knowledge.

- Master classes. Debates.
- Presentation by the teacher in the classroom, with the aim of transmitting knowledge and activating cognitive processes in the student.
- Verification of the knowledge acquired on the syllabus developed in class.

Activity 2- Cooperative and integrated self-learning: preparation of report, delivery and debate.

- The students, in groups, will delve into the structure and organization of tendons and ligaments and will integrate the knowledge about anatomical models of the subject of Anatomy II/Structure and Function of the Human Body: Systems II.

- Elaboration, delivery and debate in the classroom. Own signature.

Activity 3 - Laboratory practices.

- Acquisition through practical sessions of the ability to recognize and differentiate different types of tissues through the use of the light microscope.
- Participation of students in practical classes through the preparation of a document to solve the questions raised during the practice.

Activity 4 – Individual self-learning of theoretical and/or practical content through digital tools.

- Carrying out self-assessment activities through the virtual campus and/or different digital tools.

7. EVALUATION

The evaluation systems are listed below, as well as their weight on the total grade of the subject:

Face-to-face modality:

Evaluation system	Weight
Face-to-face assessment tests	60 %
Reports and Briefs	15 %
Case/Problem	15 %
Lab/workshop practice notebook	10 %

Ordinary call

To pass the subject in the ordinary call, the **process of continuous evaluation** of the different training activities must be passed. The evaluation will be carried out in 3 blocks.

Assessable block	Evaluation system	Weight
1	Objective Knowledge Tests	50%
2	Assessable training activities	30%
3	Laboratory Practices	20% • 25% Pretest • 25% Practice notebook • 50% Knowledge Test

It is essential that the **grade of each assessable block is equal to or greater than 5**. The student's final grade will be obtained from the weighting of the partial grades of each of the blocks, as indicated in the table and detailed below. The grades published on the virtual campus will be **provisional** until the test is reviewed.

The evaluation methodology for the three assessable blocks may be based on: multiple-choice questions, short questions, open questions with and without extension limitations, correspondence questions, questions with embedded answers, information synthesis tables, assignments, oral presentations, etc.

In the event of a **modification of the evaluation date** if necessary, the regulations for changing the date of assessable tests will be applied. The format of this test may vary from that of the general call.

The evaluation blocks are as follows:

- Evaluation of objective knowledge tests (50%):

  Two objective tests will be carried out **on the theoretical contents** studied throughout the subject. The pass is achieved with a weighted average of the two theoretical tests. To obtain this average, the grade of the first test will be multiplied by 1, the grade of the second test will be multiplied by 2, and the sum of both operations will be divided by 3 (the second test will include all the content seen throughout the development of the subject).

  It is necessary to obtain a minimum grade of 5 in this block to pass this section and to be able to average with the other two blocks of the subject.

- Evaluation of the assessable training activities (30%):

  Attendance at the activities and the preparation of reports or requested work is mandatory in order to pass this block. The evaluation of the activities will be carried out by demonstrating the knowledge and skills acquired during them. The assessable training activities include questionnaires and critical analysis of articles. The virtual campus will detail the evaluation modality of each of these activities before they are carried out.

  The grade of the block will correspond to a weighted measure of all the activities included. It is necessary to obtain a minimum grade of 5 in this block to pass this section and to be able to average with the other two blocks of the subject.

- Evaluation of laboratory practices (20%):

  Attendance at laboratory practices is mandatory in order to pass this block of knowledge. The evaluation of the practices will be carried out by demonstrating the knowledge and skills acquired during the experiments carried out in the laboratory. The virtual campus will detail the evaluation modality of each of these internships.

  The grade of the block will correspond to a weighted measure of all the activities included. It is necessary to obtain a minimum grade of 5 in this block to pass this section and to be able to average with the other two blocks of the subject.

For the correct evaluation of the competencies and learning outcomes contained in each of the training activities developed in the subject, general evaluation rubrics have been designed for each type of activity.

The grade of the assessable block will be obtained by weighting based on the contents and skills developed in each of the activities.

Extraordinary call

To pass the subject in the extraordinary call, all the requirements set out above for the ordinary call must be met, that is, it will be necessary **to obtain a minimum grade of 5 in each pending block in order to be able to average with the other blocks of the subject.**

The evaluation of the theoretical content will be carried out through a single face-to-face test. Likewise, the evaluation of laboratory practices will be carried out through a single face-to-face test. On the other hand, the evaluation of the training activities will be carried out through the Virtual Campus.

8. SCHEDULE

This section indicates the schedule with delivery dates of assessable activities of the subject:

Assessable activities	Date
Laboratory practice	Week 2

Integrated workshop	Week 4
Laboratory practice	Week 7
Integrated workshop	Week 8
Laboratory practice	Week 8
Laboratory practice	Week 11
Integrated workshop	Week 12
Laboratory practice	Week 13
Laboratory practice	Week 15

This schedule may be modified for logistical reasons of the activities. Any modification will be notified to the student in a timely manner.

9. BIBLIOGRAPHY

The reference books for the follow-up of the subject are:

- JUNQUEIRA LC and CARNEIRO J, Basic Histology, 12th ed., Editorial Medica Panamericana, 2015.
- KIERSZENBAUM AL and TRES LL, Histology and Cell Biology: Introduction to Pathological Anatomy, 3rd ed., Elsevier Saunders Publishing, 2012.
- ROSS MH and PAWLINA W, Histology: text and high color with cellular and molecular biology, 6th ed., Editorial médica Panamericana, 2012.
- WHEATER PR et al, Weater's Functional Histology: Text and Color Discharges, 6th ed., Elsevier Publishing, 2014.
- ROSS MH et al, Atlas of Descriptive Histology, 1st ed., Editorial Médica Panamericana, 2012.
- BOYA J, Atlas of Histology and Microscopic Organography, 3rd ed., Editorial Médica Panamericana, 2011.
- GARTNER LP and HIATT JL, Color Atlas of Histology, 5th ed., Editorial Médica Panamericana, 2011.
- KÜHNEL W, Color Atlas of Cytology and Histology, 11th edition, Editorial Médica Panamericana, 2010.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit (ODI) we offer support to our students throughout their university life to help them achieve their academic achievements. Other pillars of our action are the inclusion of students with specific educational support needs, universal accessibility on the different campuses of the university and equal opportunities.
This Unit offers students:

1. Accompaniment and follow-up through the realization of personalized counseling and plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made, that is, at the level of methodology and evaluation, in those students with specific educational support needs, thus pursuing equality of opportunities for all students.
3. We offer students different extracurricular training resources to develop various skills that will enrich them in their personal and professional development.
4. Vocational guidance through the provision of tools and advice to students with vocational doubts or who believe that they have made a mistake in the choice of degree.

Students who need educational support can write to us at:
orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

The European University encourages you to participate in satisfaction surveys to detect strengths and areas for improvement in the teaching staff, the degree and the teaching-learning process.

The surveys will be available in the survey space of your virtual campus or through your email.

Your assessment is necessary to improve the quality of the degree.

Thank you very much for your participation.