1. BASIC INFORMATION

<table>
<thead>
<tr>
<th>Course</th>
<th>Cell &amp; Tissue Biology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree program</td>
<td>Physiotherapy Degree</td>
</tr>
<tr>
<td>School</td>
<td>Sports Sciences and Physiotherapy</td>
</tr>
<tr>
<td>Year</td>
<td>1st</td>
</tr>
<tr>
<td>ECTS</td>
<td>6</td>
</tr>
<tr>
<td>Credit type</td>
<td>Basic</td>
</tr>
<tr>
<td>Language(s)</td>
<td>Spanish, French, English</td>
</tr>
<tr>
<td>Delivery mode</td>
<td>Campus-based</td>
</tr>
<tr>
<td>Semester</td>
<td>1st</td>
</tr>
<tr>
<td>Academic year</td>
<td>2022-2023</td>
</tr>
<tr>
<td>Coordinating professor</td>
<td>Catalina Santiago Dorrego</td>
</tr>
<tr>
<td>Professor</td>
<td>Silvia de Vidania</td>
</tr>
</tbody>
</table>

2. PRESENTATION

The overall goal of this course is to provide graduates with knowledge about the fundamentals of cell biology and human tissues. The academic content is divided into 2 modules: module 1 is designed to show the structure and function of cellular components in a hierarchy-wise manner, as well as the main events of cell division. Once acquainted with cell basics, module 2 will guide the students through morphology and ultrastructure details of basic human tissues.

3. COMPETENCIES AND LEARNING OUTCOMES

Core competencies (CB):

- CB1: That students have shown to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level, which, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the forefront of their field of study.
- CB2: That students know how to apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defence of arguments and problem solving within their area of study.
- CB4: That students can transmit information, ideas, problems, and solutions to both specialized and non-specialized audiences.
- CB5: That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy

Cross-curricular competencias (CT) :

- CT3: Ability of organization and planning
- CT4: Ability of analysis and synthesis
- CT13: Critical thinking
- CT19: Autonomous learning
Specific competencias (CE):

- CE62. To know and understand the normal structure of cells and the different ways they can associate to form tissues.
- CE63. To know and understand the mechanisms of cell division and how they are used for tissue renewal and repair.
- CE64. To know and understand the normal function of cells and tissues throughout the different life stages.
- CE65. To know and understand the impact that structure and function alterations may have on a person’s state of health.
- CE66. To recognize the main structure and function differences among the different types of tissues.
- CE67. To know and understand how tissues associate to form organs and systems.
- CE68. To know and understand the concept “regenerative medicine”, as well as to recognize its worth in the field of physiotherapy.
- CE69. To describe and explain the components and function of the optic microscope.
- CE70. To have the ability to prepare simple microscope specimens.
- CE71. To have the ability to use an optic microscope correctly.
- CE72. To be able to recognize different types of cells and tissues by means of optic microscope observation.
- CE73. To have the ability to tell the differences between electronic and optic microscopy images.
- CE74. To have the ability to synthesize relevant information from simple scientific papers.

Learning outcomes (LO):

- LO1: To understand fundamental concepts related to the contents of the subject.
- LO2: To know the cell structure and composition.
- LO3: To tell the differences among human tissues.
- LO4: To use an optic microscope.
- LO5: To recognize different cell types and tissue by means of optic microscopy.
- LO6: To understand and synthesize course-related scientific literature.

The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB1, CB2, CB4, CB5, CT3, CT19, CE62, CE70, CE71</td>
<td>LO1: To understand fundamental concepts related to the contents of the subject.</td>
</tr>
<tr>
<td>CB1, CB2, CT3, CT4, CT13, CE62, CE63, CE64, CE65, CE68</td>
<td>LO2: To know the cell structure and composition</td>
</tr>
<tr>
<td>CB1, CB2, CB5, CT3, CT4, CT13, CT19, CE62, CE63, CE64, CE65, CE66, CE67, CE68</td>
<td>LO3: To tell the differences among human tissues</td>
</tr>
<tr>
<td>CB1, CB2, CT3, CT4, CE69, CE70</td>
<td>LO4: To use an optic microscope</td>
</tr>
<tr>
<td>CB1, CB2, CB5, CT3, CT4, CT13, CT19, CE66, CE72, CE73</td>
<td>LO5: To recognize different cell types and tissue by means of optic microscopy.</td>
</tr>
</tbody>
</table>
4. CONTENT

The academic content is divided into 2 modules:

MODULE I: CELL BIOLOGY
▪ Unit C1. Evolution and cell organization
▪ Unit C2. Cell membrane
▪ Unit C3. Cytoskeleton
▪ Unit C4. Mitochondria
▪ Unit C5. Endomembrane system
▪ Unit C6. Nucleus
▪ Unit C7. Ribosomes
▪ Unit C8. Cell division: mitosis
▪ Unit C9. Gametes formation: meiosis

MODULE II: TISSUE BIOLOGY
▪ Unit H1. Introduction to histology
▪ Unit H2. Epithelial tissue
▪ Unit H3. Connective tissue
▪ Unit H4. Adipose tissue
▪ Unit H5. Cartilage
▪ Unit H6. Osseous tissue
▪ Unit H7. Blood
▪ Unit H8. Muscle tissue
▪ Unit H9. Nervous tissue

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

• Master classes
• Self-learning
• Practical cases
• Virtual seminars
• Laboratory practice
• Tutorships
6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

**Campus-based mode:**

<table>
<thead>
<tr>
<th>Learning activity</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1: Master classes</td>
<td>30</td>
</tr>
<tr>
<td>Activity 2: Self-learning</td>
<td>50</td>
</tr>
<tr>
<td>Activity 3: Practical cases</td>
<td>15</td>
</tr>
<tr>
<td>Activity 4: Virtual seminars</td>
<td>20</td>
</tr>
<tr>
<td>Activity 5: Laboratory practice</td>
<td>25</td>
</tr>
<tr>
<td>Activity 6: Tutorships</td>
<td>10</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>150</strong></td>
</tr>
</tbody>
</table>

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade. To pass the course it is mandatory to pass each assessment system separately.

**Campus-based mode:**

<table>
<thead>
<tr>
<th>Assessment system</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical knowledge tests</td>
<td>50</td>
</tr>
<tr>
<td>Assessable activities</td>
<td>30</td>
</tr>
<tr>
<td>Laboratory practice</td>
<td>20</td>
</tr>
</tbody>
</table>

When you access the course on the *Campus Virtual*, you’ll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

7.1. First exam period

To pass the course in the first exam period, the following requirements must be met simultaneously:

- To obtain a grade of 5 in every assessment system in order for it to count towards the final grade.
  - To obtain a final course grade of at least 5 out of 10 (weighted average).
### 7.2. Second exam period

If one or more assessment system is failed, students will retake it on the second exam period. Details about how to repeat failed assessment systems will be given on Canvas when necessary.

To pass the course in the second exam period, the following requirements must be met simultaneously:

- To obtain a grade of 5 in **every assessment system** in order for it to count towards the final grade.
- To obtain a final course grade of at least 5 out of 10 (**weighted average**).

### 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

<table>
<thead>
<tr>
<th>Assessable activities</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory practice</td>
<td>Week 5</td>
</tr>
<tr>
<td>Laboratory practice</td>
<td>Week 10</td>
</tr>
<tr>
<td>Laboratory practice</td>
<td>Week 11</td>
</tr>
<tr>
<td>Laboratory practice</td>
<td>Week 13</td>
</tr>
<tr>
<td>Assessable activity I. Questionnaires and/or scientific papers study</td>
<td>Week 2, 3, 4, 6, 7, 9, 11, 13</td>
</tr>
<tr>
<td>Assessable activity II. Integrated activity</td>
<td>Week 6</td>
</tr>
</tbody>
</table>

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

### 9. BIBLIOGRAFÍA

The main reference work for this subject is (*):


(*) Most of the books listed above can also be found in English or French at the Library of Universidad Europea de Madrid

10. **DIVERSITY MANAGEMENT UNIT**

Students with specific learning support needs:

Curricular adaptations and adjustments for students with specific learning support needs, in order to guarantee equal opportunities, will be overseen by the Diversity Management Unit (UAD: Unidad de Atención a la Diversidad).

It is compulsory for this Unit to issue a curricular adaptation/adjustment report, and therefore students with specific learning support needs should contact the Unit at unidad.diversidad@universidadeuropea.es at the beginning of each semester.

11. **ONLINE SURVEYS**

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.