



Teaching Guide				
Identifying Data				2016/17
Subject (*)	Biología	Code	750G02005	
Study programme	Grao en Podoloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	FB	6
Language	SpanishGalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Biología Celular e Molecular			
Coordinador	Folgueira Otero, Mónica	E-mail	m.folgueira@udc.es	
Lecturers	Folgueira Otero, Mónica	E-mail	m.folgueira@udc.es	
Web	moodle.udc.es			
General description	This subject is taught during the first term of the Podiatry Degree, studying the complex world of the cell and its higher levels of organization. In this sense, it sets the basic knowledge for understanding other subjects, such as Physiology and Anatomy.			

Study programme competences	
Code	Study programme competences
A2	Adquirir coñecementos sobre a bioloxía celular e tisular. Composición e organización da materia dos seres vivos. Histoloxía. Xenética.
A5	Coñecer a anatomía patolóxica. Patoloxía celular. Reparación tisular. Alteracións do crecemento celular. Nomenclatura e clasificación das neoplasias.
B1	Aprender a aprender.
B5	Traballar de forma colaborativa.
B8	Coñecer e apreciar a diversidade e a multiculturalidade.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.

Learning outcomes			
Learning outcomes	Study programme competences		
To know and understand the composition and organization for the different life forms.	A2	B1	
To know the main characteristics of animal tissues and their biology.	A2	B1	
	A5	B8	
To identify cell and histological structures in photographs, schematics and drawings.	A2	B1	
	A5	B8	
To know the basis of molecular biology and genetic inheritance.	A2	B1	C1
		B8	
To establish the correlation between non infectious pathologies and their genetic and/or cell basis.	A5	B1	C1
		B5	
To know the role of cell cycle, cell differentiation and stem cells in tissue repair and pathological cell growth.	A5	B1	
To identify and name the type of tumor based on the tissue from which originates.	A5		
To communicate clearly using the right terminology and language in cell biology, histology and genetics.			C1

Contents	
Topic	Sub-topic
BLOCK I. COMPOSITION AND ORGANIZATION OF LIVING ORGANISMS.	1. Introduction to Biology. Cell theory. Levels of organization of living organisms. Biomolecules: glucids, lipids, proteins and nucleic acids.



BLOQUE II. CELL BIOLOGY.	<p>2. The cell membrane: structure and composition. Functions of cell membrane. Endocytosis. Exocytosis.</p> <p>3. The nucleus: general structure of the interfasic nucleus. Cromatine y cromosomes. Cell transcription and translation. Regulation of gene expression.</p> <p>4. The cytoplasm. Structure and function of the citosol. Cytoskeleton and cell motility. Structure and function of the endomembranous system: endoplasmic reticulum, golgi apparatus and lysosomes. Peroxisomes. Mitochondria structure and function.</p> <p>5. The cell and its context: cell communication and signalling. Types of cell communication. General stages in cell communication.</p> <p>6. Cell cycle and its regulation. DNA replication. Mitosis and Meiosis. Cell death. Apoptosis.</p> <p>7. Tumors and cancer. Nomenclature. Origen and development. Properties of cancer cells.</p>
BLOCK III. GENETICS: INHERITANCE.	<p>8. Cellular and molecular basis of inheritance. Mendelian inheritance. Changes in genetic material (mutations) and Evolution Theory.</p>
BLOQUE IV. ANIMAL TISSUES	<p>9. Introduction to animal tissues. Concept of tissue. Cells and extracellular matrix. Cell adhesion. General characteristics, functions and classification of animal tissues.</p> <p>10. Histogenesis and cell differentiation. Embryologic origin of animal tissues.</p> <p>11. Epithelial tissue. General characteristics and functions. Classification. Covering epithelia. Glandular epithelia.</p> <p>12. Connective tissue. General characteristics. Types and extracellular matrix. Varieties. Adipose tissue: general characteristics and types. Cartilaginous tissue: general characteristics, histogenesis and varieties. Bone: general characteristics, microscopic structure and histogenesis. Blood: general characteristics and hematopoiesis.</p> <p>13. Muscle. General characteristics. Types. Skeletal muscle. Organization and structure. Miofibers. Structure of cardiac muscle. Structure and distribution of smooth muscle.</p> <p>14. Nervous tissue. General characteristics and functions of the nervous tissue. Neuron. Glia. Fibers structure and types. Synapses: general characteristics. Types of synapses. Neurotransmitters.</p>

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A2 A5 B15 C8	21	42	63
Seminar	A2 A5 B1 B2 B3 B5 B8 B16 B19 C1	11	22	33
Directed discussion	A2 A5 B2 B3 B8 B19 C1 C6 C8	7	0	7
Mixed objective/subjective test	A2 A5 B1 B2 B3 B19 C1	2	28	30
Oral presentation	B8 B12 B19 C1	1	0	1
Laboratory practice	A2	1	0	1
Supervised projects	A2 A5 B4 B5 B12 B19 C1	0	11	11
Online forum	A2 A3 A5 B8 B11 B19 C1 C3	0	1	1
Workbook	A2 A5 B3 B9	0	2	2
Personalized attention		1	0	1



(\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	<p>There will be 14 lectures of 90 minutes. The teacher will present and explain the contents of the subject using both electronic resources and blackboard. Active participation from students is also expected. The teacher will also answer students questions.</p> <p>Students should take notes during the class. This material should be used later for studying and reviewing. Students will have in moodle reviewing questions to help to focus in the main concepts and for deeper learning.</p> <p>Prior to the class, it is advised that students get familiar with the material of next lecture.</p> <p>One of the classes will be used for a test.</p>
Seminar	There will be 14 seminars to which students will attend in small groups (about 20 students). Under the supervision of the teacher, students will perform different activities related with the contents of the subject (collaborative learning, problem solving, identification of structures in photographs, etc.)
Directed discussion	There will be 7 tutorials of 50 minutes. Questions and themes related with the contents of the subject will be discussed in the class in small groups (of about 10 students). In addition, they will apply theoretical knowledge for solving different problems.
Mixed objective/subjective test	During the course, students will be evaluated through various written tests. This will show students progress and, if necessary, it will allow identifying any problem and take actions to improve the development of the course. There will be a theoretical exam within the term, and a final exam at the end of the term.
Oral presentation	Students will present in the class an essay related with the contents of the course. This essay will be prepared in small groups (2/3 students)
Laboratory practice	There will be a laboratory practical in which students will use a microscope to observe and study histological sections.
Supervised projects	Students will write an essay in small groups (2/3 students). In this essay, they will explain the cell or genetic basis of a non infectious disease. It is recommended to ask the teacher if there is any doubt on the theme of the essay. The progress in the essay will be followed by using Moodle and email.
Online forum	There will be discussions in Moodle.
Workbook	During the term, students will read in the class texts related with the contents of the subject.

Personalized attention	
Methodologies	Description
Oral presentation Directed discussion Seminar	Students can ask questions during lectures, seminars and tutorials. They can also solve their doubts they may have in a one to one mode (see available time on Moodle). Students will also receive personalized attention during certain seminars (e.g. oral presentation) and directed discussions.

Assessment			
Methodologies	Competencies	Description	Qualification
Oral presentation	B8 B12 B19 C1	Students will present in the class an report related with the subject.	5
Mixed objective/subjective test	A2 A5 B1 B2 B3 B19 C1	There will be an written exam during the term and a final exam at the end of the term. Exams will consist of different question types (e.g. multiple choice, true/false questions, short answer questions) about contents of lectures, seminars and tutorials. In addition, students can pass the subject in the opportunity of July.	70
Seminar	A2 A5 B1 B2 B3 B5 B8 B16 B19 C1	Active participation in seminars and tutorials, as well as performing the requested activities.	15
Supervised projects	A2 A5 B4 B5 B12 B19 C1	Student must write a project regarding the cellular or genetic basis of a non infectious disease.	10

Assessment comments



To calculate the final grade, students must get a minimum of 5 in the written exam/s and in their essay, both at the end of the term and in July. At the end of the term and in order to calculate the final grade, the teacher will take into account the exam/s and participation in the different activities of the class. Part time students must present a document containing the evaluable activities, including the essay. The deadline for presenting this material will be the day of the final exam (first opportunity). In the early and second opportunity (July), students (part or full time) must pass a written exam (75% of the final grade) and submit an essay (25% of final grade).

?No presentado? will be applied to students that did not participate in any activity that is part of the evaluation process.

?Matricula de Honor? will be awarded preferentially within students that pass at the end of the term, rather than in July.

### Sources of information

<b>Basic</b>	<ul style="list-style-type: none"> <li>- Curtis, H; Barnes, NS; Schnek, A; Massarini, A (2008). Biología. Ed. Médica Panamericana</li> <li>- Freeman, S. (2010). Fundamentos de Biología. Pearson</li> <li>- Paniagua, R; Nistal, M; Sesma, P; Álvarez-Uria, M; Anadón, R; Fraile, B; Sáez, FJ. (2007). Citología e Histología Vegetal y Animal. Ed. Interamericana McGraw-Hill</li> <li>- Geneser, F (2006). Histología. Ed. Médica Panamericana</li> <li>- Junqueira, LC; Carneiro, J. (2010). Histología Basica. Texto y atlas.. Elsevier</li> <li>- Ross, MH; Pawlina W. (2007). Histología. Texto y Atlas Color con Biología Celular y Molecular. Ed. Médica Panamericana</li> <li>- Welsch, U (2008). Histologia. Ed. Médica Panamericana</li> <li>- Young, B; Heath, JW (2000). Wheater´s Histología Funcional. Texto y Atlas en color.. Ed. Elsevier</li> </ul> <p>Recursos web: Animaciones de Biología            Celular: <a href="http://highered.mcgraw-hill.com/sites/dl/free/0072437316/120060/ravenanimation.html">http://highered.mcgraw-hill.com/sites/dl/free/0072437316/120060/ravenanimation.html</a> <a href="http://bcs.whfreeman.com/thelifewire/content/chp00/00020.html">http://bcs.whfreeman.com/thelifewire/content/chp00/00020.html</a> Videos y lecciones <a href="http://ed.ted.com/">http://ed.ted.com/</a> Texto y Atlas de Biología Celular e Histología: <a href="http://www.webs.uvigo.es/mmegias/inicio.html">http://www.webs.uvigo.es/mmegias/inicio.html</a> Atlas de Histología: <a href="http://fai.unne.edu.ar/biologia/cel_euca/index.htm">http://fai.unne.edu.ar/biologia/cel_euca/index.htm</a> <a href="http://www.kumc.edu/instruction/medicine/anatomy/histoweb/">http://www.kumc.edu/instruction/medicine/anatomy/histoweb/</a> <a href="http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html">http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html</a> <a href="http://www.udel.edu/Biology/Wags/histopage/histopage.htm">http://www.udel.edu/Biology/Wags/histopage/histopage.htm</a> <a href="http://escuela.med.puc.cl/publ/Histologia/Indice.html">http://escuela.med.puc.cl/publ/Histologia/Indice.html</a></p>
<b>Complementary</b>	<ul style="list-style-type: none"> <li>- ( ) . .</li> </ul> <p>BIBLIOGRAFÍA COMPLEMENTARIA</p>

### Recommendations

#### Subjects that it is recommended to have taken before

#### Subjects that are recommended to be taken simultaneously

Fisioloxía xeral/750G02003

Sistemas de Información e Comunicación en Ciencias da Saude/750G02010

#### Subjects that continue the syllabus

Anatomía humana xeral/750G02001

Anatomía específica do membro inferior/750G02002

Fisioloxía de sistemas/750G02004

Microbioloxía e parasitoloxía/750G02007

Patoloxía xeral/750G02008

#### Other comments

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.