



Teaching Guide				
Identifying Data			2020/21	
Subject (*)	Biology		Code	750G02005
Study programme	Grao en Podoloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	SpanishGalicianEnglish			
Teaching method	Non-attendance			
Prerequisites				
Department	Biología			
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, histology and genetics, as well as cell pathology and mechanisms of tissue repair. In this sense, it sets the basic knowledge for understanding other subjects, such as Physiology, Microbiology, Farmacology and Anatomy.			



Contingency plan	<p>1. Modifications to the contents</p> <p>None</p> <p>2. Methodologies</p> <p>*Teaching methodologies that are maintained</p> <p>All</p> <p>*Teaching methodologies that are modified</p> <p>3. Mechanisms for personalized attention to students</p> <p>Teams and email</p> <p>4. Modifications in the evaluation</p> <p>Moodle</p> <p>*Evaluation observations:</p> <p>5. Modifications to the bibliography or webgraphy</p> <p>Cell biology and Genetics books can be accessed via PubMed-Books</p> <p>Histology:</p> <p>BX-91- Curtis, Helena- Invitación a la Biología</p> <p>https://covid.medicapanamericana.com/VisorEbookV2/Ebook/9789500694834?token=687b5cd0-d62e-4525-a897-115e5dded610#{%22Pagina%22:%221%22,%22Vista%22:%22Indice%22,%22Busqueda%22:%22%22}</p> <p>ANA 181- Junqueira, L.C. Histología básica.</p> <p>https://covid.medicapanamericana.com/VisorEbookV2/authentication/Register/9786079356682?demoMode=False%23%7B%2522Pagina%2522:%25221%2522,%2522Vista%2522:%2522Indice%2522,%2522Busqueda%2522:%2522%2522%7D</p> <p>BC-592 - Eynard, Aldo R.- Histología y embriología del ser humano.</p> <p>https://covid.medicapanamericana.com/VisorEbookV2/Ebook/9789500694872?token=7c2c47e7-8441-4ab8-9c63-563235fc424d#{%22Pagina%22:%221%22,%22Vista%22:%22Indice%22,%22Busqueda%22:%22%22}</p> <p>BC-310- Gartner, Leslie P.- Atlas en Color de Histología</p> <p>https://covid.medicapanamericana.com/VisorEbookV2/Ebook/9786079356668?token=aab52733-44a1-43c6-8d1f-90b75273a298#{%22Pagina%22:%221%22,%22Vista%22:%22Indice%22,%22Busqueda%22:%22%22}</p> <p>BC-552- Welsch, Ulrich- Sobotta: Histología</p> <p>https://covid.medicapanamericana.com/VisorEbookV2/Ebook/9786079356187?token=005b0a7f-6dc6-41a6-b973-ee02712c07f1#{%22Pagina%22:%221%22,%22Vista%22:%22Indice%22,%22Busqueda%22:%22%22}</p>
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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 the main characteristics of animal tissues and their biology.	A2 A5		
To know and understand the composition and organization for the different life forms.	A2		
To know the basis of molecular biology and genetic inheritance.	A2		
To identify cell and histological structures in photographs, schematics and drawings.	A2 A5		
To identify and name the type of tumor based on the tissue from which originates.	A5		
To establish the correlation between non infectious pathologies and their genetic and/or cell basis.	A2 A5	B1	
To know the role of cell cycle, cell differentiation and stem cells in tissue repair and pathological cell growth.	A5		
To communicate clearly using the right terminology and language in cell biology, histology and genetics.		B1 B5 B8	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.	2. The cell membrane: structure and composition. Functions of cell membrane. Endocytosis. Exocytosis. Cell pathology and clinical correlations. 3. The nucleus: general structure of the interfasic nucleus. Chromatin and chromosomes. Cell transcription and translation. Regulation of gene expression. Epigenetics and clinical correlation. 4. The cytoplasm. Structure and function of the cytosol. Cytoskeleton and cell motility. Structure and function of the endomembranous system: endoplasmic reticulum, golgi apparatus and lysosomes. Peroxisomes. Mitochondria structure and function. Clinical correlation. 5. The cell and its context. Extracellular matrix. Cell adhesion. Cell communication and signalling. Types of cell communication. General stages in cell communication. Clinical correlation. 6. Cell cycle and its regulation. DNA replication. Mitosis and Meiosis. Cell death. Apoptosis. Mechanisms of tissue repair. 7. Tumors and cancer. Nomenclature. Origin and development. Properties of cancer cells.
BLOCK III. GENETICS: INHERITANCE.	8. Cellular and molecular basis of inheritance. Mendelian inheritance. Changes in genetic material (mutations) and Evolution Theory.



BLOQUE IV. ANIMAL TISSUES

9. Introduction to animal tissues. Concept of tissue. General characteristics, functions and classification of animal tissues.

10. Histogenesis and cell differentiation. Stem cells. Embryologic origin of animal tissues.

11. Epithelial tissue. General characteristics and functions. Classification. Covering epithelia. Glandular epithelia.

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.

13. Muscle. General characteristics. Types. Skeletal muscle. Organization and structure. Miofibers. Structure of cardiac muscle. Structure and distribution of smooth muscle.

14. Nervous tissue. General characteristics and functions of the nervous tissue. Neuron. Glia. Fibers structure and types. Synapses: general characteristics. Types of synapses. Neurotransmitters.

Planning

Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Mixed objective/subjective test	A2 A5 B1 B5 B8 C1	2	138	140
Personalized attention		10	0	10

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

Methodologies

Methodologies	Description
Mixed objective/subjective test	Exam about the contents of the subject

Personalized attention

Methodologies	Description
	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
Mixed objective/subjective test	A2 A5 B1 B5 B8 C1	There will be a written exam at the end of the term. Exam will consist of different question types (e.g. multiple choice, true/false questions, short answer questions) about contents of the subject. In addition, students can pass the subject in the opportunity of July.	100

Assessment comments

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Sources of information

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

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

General Physiology/750G02003

Information and Communication Systems in Health Science/750G02010

Subjects that continue the syllabus

General Human Anatomy /750G02001

Specific Anatomy of the Lower Limb/750G02002

Physiology of Systems/750G02004

Microbiology and Parasitology/750G02007

General Pathology/750G02008

Other comments

As there is no classes, it is advised to have meetings to solve questions with the teacher. This can be organized by email, after the student's request.

(*)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.