Teaching Guide				
Identifying Data				2021/22
Subject (*)	Biological Basis and Physical Human Movement		Code	750G02106
Study programme	Grao en Podoloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	BioloxíaEnxeñaría Naval e Industrial			
Coordinador	Folgueira Otero, Mónica	E-mail	m.folgueira@udc.es	
Lecturers	Cuadrado Aranda, Francisco Javier Folgueira Otero, Mónica Rey Rico, Ana	E-mail	javier.cuadrado@udc.es m.folgueira@udc.es ana.rey.rico@udc.es	
Web	campusvirtual.udc.gal/			
General description	Bases físicas: Proporcionaranse os coñecementos necesarios de mecánica para comprender a análise da marcha humana. Bases biolóxicas: proporinaranse os coñecementos sobre a celula e tecidos animais, patoloxía celular, tumores e cancro.			
Contingency plan	1. Modifications to the contents 2. Methodologies *Teaching methodologies that are maintained *Teaching methodologies that are modified 3. Mechanisms for personalized attention to students 4. Modifications in the evaluation *Evaluation observations: 5. Modifications to the bibliography or webgraphy			

Study programme competences / results	
Code	Study programme competences / results
A67	CE3 - Adquirir coñecementos sobre a composición e organización da materia dos seres vivos, bioloxía celular e tisular, histoloxía e xenética
A69	CE5 - Coñecer os principios físicos aplicables á marcha humana
A72	CE8 - Coñecer a patoloxía celular, as alteracións do crecemento celular e reparación tisular, os principios da anatomía patolóxica e a nomenclatura e clasificación das neoplasias
B23	CB1 - Que os estudantes demostrasen posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeral, e adóitase atopar a un nivel que, aínda que se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B29	CG02 - Coñecer a estrutura e función do corpo humano en especial da extremidade inferior, semioloxía, mecanismos, causas e manifestacións xerais da enfermidade e métodos de diagnóstico dos procesos patolóxicos médicos e cirúrxicos, interrelacionando a patoloxía xeral coa patoloxía do pé.

B35	CG08 - Adquirir habilidades de traballo nas contornas educativo e investigador, asistencial-sanitario, así como en equipos uniprofesionais e multiprofesionais. Asesorar na elaboración e execución de políticas de atención e educación sobre temas relacionados coa prevención e asistencia podolóxica
B39	CG12 -Capacidade para a cooperación, o traballo en equipo e a aprendizaxe colaborativo en contornas interdisciplinares
C9	CT01 - - Expresarse correctamente, tanto de forma oral como escrita, nas linguas oficiais da comunidade autónoma
C11	CT03 - Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida

Learning outcomes			
Learning outcomes	Study programme competences / results		
Know and understand the composition and organization of living things.	A67	B23	C9
Know the main characteristics of human tissues and their biology.	A69	B29	C11
Know the bases of genetic inheritance.	A72	B35	
Know the role of the cell cycle, cell differentiation, tissue repair and cell growth disorders.		B39	
Identify and name the type of neoplasm based on the tissue from which it originates.			
Know the physical-mechanical principles applicable to human walking.			
Identify and apply instrumental techniques for the analysis of forces.			

Contents	
Topic	Sub-topic
BLOQUE I. BIOLOXÍA DE CÉLULAS E TECIDOS	Composición e organización dos seres vivos. Bioloxía celular. Principios de histoloxía humana e anatomía patolóxica. Principios de xenética. Patoloxía celular, alteracións do crecemento celular e reparación de tecidos. Nomenclatura e clasificación das neoplasias.
BLOQUE II. BASES FÍSICAS DO MOVEMENTO HUMANO	Principios físicos aplicables á marcha humana. Cinemática. Dinámica. Traballo, enerxía e potencia mecánica. Tecnoloxías de análises de movemento 3D, captura de movemento e medición de forzas.

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Laboratory practice	A67 A69 B39 C9	9	3	12
Problem solving	A69 B23 B29	2	4	6
Supervised projects	A67 A69 A72 B23 B29 B35 B39 C9 C11	3	9	12
Mixed objective/subjective test	A67 A69 A72 B23 C9	5	1	6
Guest lecture / keynote speech	A67 A69 A72 B23 B29	42	70	112
Personalized attention		2	0	2
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description

Laboratory practice	Biological Bases: Use of the microscope. Observation and study of histological samples. Physical Bases: The students will attend a gait analysis session. They will first look at how reflective markers and EMG electrodes are placed on the body, how force plates are positioned, and how capture is performed. Next, you will see what results are obtained and what is the analysis of them. Subsequently, they must carry out, in groups, a report in which they explain what the gait analysis is, in their own words, taking internet resources, etc.
Problem solving	Problem resolution. The students take notes.
Supervised projects	Biological Bases: In groups, the students will make a presentation where they expose the cellular and genetic bases of a human pathology. Physical Bases: The students must carry out a work, in groups, in which some application of the gait analysis is shown. Later, work will be presented in class during one of the practical sessions.
Mixed objective/subjective test	Physical bases: consistent in solving problems. Biological bases: identification of structures in histological images, test questions with 3 options where only one of them is true and short questions. There will be a test in the middle of the first semester and a final test.
Guest lecture / keynote speech	The contents of the subject are exposed, with the help of digital media. Students must take notes and study the subject on their own, with the support of the teacher through tutorials. To determine the assimilation of the various concepts by the students, some brief tasks will be carried out during the master sessions and / or through moodle.

Personalized attention	
Methodologies	**Description**
Laboratory practice Supervised projects	Biological Bases: In the tissue study laboratory practices, the student will have the help of the teacher to handle the microscope and the rest of the material used, as well as to identify structures in the various samples analyzed. To raise questions about the development of supervised work or the theory of the biological bases of human movement, students can go to tutorials. The student may also attend tutorials to raise doubts about the contents exposed in the master classes. Physical Bases: In the gait analysis laboratory practice, the student will have the availability of the teacher to clarify any doubts that may arise, either during the practical session or later, for the preparation of the report. In the same way, you will have the availability of the teacher to answer your questions during the preparation of the supervised work. In both cases you can go to the tutorials. In addition, in these tutorials, the student will also be able to pose the doubts that have arisen during the study of the theory and the preparation of the problems. In the case of students with academic dispensation, the student will be provided with the necessary material to study the subject, and the teacher will attend to the student during the tutorials whenever the student requests it, or at other times if he/she cannot attend the tutoring.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Mixed objective/subjective test	A67 A69 A72 B23 C9	The student's responses to the exams will be evaluated, which will consist of two parts: Biological bases: test questions and short questions; identification of structures in histological images. Physical basis: problem solving. Each of the exams (biological bases + physical bases) represents 40% of the final grade.	80
Laboratory practice	A67 A69 B39 C9	The report and / or tasks to be delivered by the students to the teacher will be evaluated.	10

Supervised projects	A67 A69 A72 B23 B29 B35 B39 C9 C11	The presentation will be evaluated.	10

Assessment comments
The evaluation system will be the same in the first and in the second opportunity. In the second opportunity, the oral presentation can be replaced by written work. In the advanced opportunity, a mixed exam will be carried out that covers all the contents of the subject. In the case of students with part-time enrollment, the evaluation system will be the same. This is true for both the first and second oportunities. Students with academic waivers may opt for exam-based gradingTo pass the exam, students must pass both the Biological Bases and the Physical Bases parts. To pass the subject, it is necessary to obtain a grade of 5 or higher in each block of the subject. It is also necessary to pass the Biological Bases exam/s. For the award "Matrícula de Honor", priority will be given to students who pass the subject at the first opportunity. In the first opportunity, it is considered "Not presented" when the student does not take the mixed tests or the supervised works. In the second opportunity and advanced opportunity, it is considered "Not presented" if the student does not goes for the exam.

Sources of information	
Basic	- Biología Celular:- Curtis, H; Barnes, NS; Schnek, A; Massarini, A. (2008). Biología. Ed. Médica Panamericana. 7ª Edición.- Freeman, S. (2010). Fundamentos de Biología. Ed. Pearson Internacional. - Biología Celular e Histología:- Paniagua, R; Nistal, M; Sesma, P; Álvarez-Uria, M; Anadón, R; Fraile, B; Sáez, FJ. Citología e Histología Vegetal y Animal. Ed. Interamericana McGraw-Hill.- cualquier edición- Histología:- Geneser, F. Histología . Ed. Médica Panamericana.- cualquier edición. - Junqueira, LC; Carneiro, J. Histología Básica. Texto y atlas. Ed. Elsevier.- cualquier edición.- Ross, MH; Pawlina W. Histología. Texto y Atlas Color con Biología Celular y Molecular. Ed. Médica Panamericana.- cualquier edición.- Welsch, U Histología. Ed. Médica Panamericana. 3ª edición.- cualquier edición.- Young, B; Heath, JW. Wheater´s Histología Funcional. Texto y Atlas en color. Ed. Elsevier. 4ª Edición - cualquier edición.- Mecánica:- Beer, FP; Johnston, ER; Clausen, WE. Mecánica Vectorial para Ingenieros. Ed. McGraw-Hill. 7ª edición.- Meriam, JL; Kraige, LG. Mecánica para Ingenieros. Ed. Reverté. 3ª edición.- Análise de Marcha:- Whittle, MW. Gait Analysis, An Introduction. Ed. Elsevier. 4ª edición.
Complementary	- Biología General y Celular:- Campbell, NA; Reece, JB; Taylor, MR; Simor, EJ; Dickey JL. (2009). Biology. Concepts and connections. Ed. Pearson. 6ª Edición.- Mader, SS. (2007). ?Essentials of Biology?. Editorial McGraw Hill International.Welsch, U. (2008). Histologia. Ed. Médica Panamericana.- Histología:- Cui, D (2012). Histología con correlaciones funcionales y clínicas. Ed. Wolters Kluver. - Kierszenbaum, A (2008). Histología y Biología Celular. Introducción a la anatomía patológica. Ed. Elsevier Mosby. 2ª Edición - Sepúlveda Saavedra, J (2012). Texto Atlas de Histología, Biología Celular y Tisular. Ed. McGraw-Hill.

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Biomechanics of the Lower Limb/750G02013 Human Physiology/750G02101 Microbiology and Parasitology/750G02107
Other comments

To help achieve an immediate and sustained contour and comply with the objective of action 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan":

A delivery of horses that are carried out in this matter:

- Request in virtual format and / or computer support.
- It will be done through the website of the subject, in digital format, without the need for printing.
- If necessary, make them on paper: no plastics will be used; double-sided prints will be made; take recycled paper; Avoid printing drafts.

A sustainable use must be made of two resources and the prevention of negative impacts on the natural environment.