



| Teaching Guide      |   |        |   |         |
|---------------------|---|--------|---|---------|
| Identifying Data    |   |        |   | 2021/22 |
| Subject (*)         | Human Physiology  | Code   | 750G02101                               |         |
| Study programme     | Grao en Podoloxía   |        |   |         |
| Descriptors         |   |        |   |         |
| Cycle               | Period  | Year   | Type                                    | Credits |
| Graduate            | Yearly  | First  | Basic training                          | 9       |
| Language            | SpanishGalicianEnglish  |        |   |         |
| Teaching method     | Face-to-face  |        |   |         |
| Prerequisites       |   |        |   |         |
| Department          | Fisioterapia, Medicina e Ciencias Biomédicas  |        |   |         |
| Coordinador         | Sangiao Alvarellos, Susana  | E-mail | susana.sangiao@udc.es                   |         |
| Lecturers           | Labra Pinedo, Carmen de<br>Sangiao Alvarellos, Susana   | E-mail | c.labra@udc.es<br>susana.sangiao@udc.es |         |
| Web                 | campusvirtual.udc.gal/  |        |   |         |
| General description | <p>The objective of this subject is to help the student to know and understand the physiological processes that take place in the human body. The student must assimilate and integrate various physiological concepts and with them build their notion about the functioning of the organism. In order to get it, we will work to understand the processes that take place in the different organs and systems, as well as the relationships that exist between them, and between them and the external environment.</p> <p>According to the Memory of the Degree in Podology, the descriptor of this subject is: Know the subjects of biophysics, physiology and biochemistry related to the human body. Immediate principles. Biochemistry and biophysics of the membranes, muscles and nerves. Acquire and know the functions and regulation of the different organs and systems of the human body.</p> |        |   |         |
| Contingency plan    | <ol style="list-style-type: none"> <li>1. Modifications to the contents</li> <li>2. Methodologies <ul style="list-style-type: none"> <li>*Teaching methodologies that are maintained</li> <li>*Teaching methodologies that are modified</li> </ul> </li> <li>3. Mechanisms for personalized attention to students</li> <li>4. Modifications in the evaluation <ul style="list-style-type: none"> <li>*Evaluation observations:</li> </ul> </li> <li>5. Modifications to the bibliography or webgraphy</li> </ol>  |        |   |         |

| Study programme competences / results |  |
|---------------------------------------|--|
| Code                                  | Study programme competences / results  |
| A68                                   | CE4 - Coñecer a biofísica, fisioloxía, bioquímica, funcións e regulación dos distintos órganos e sistemas do corpo humano e os principios inmediatos   |
| B25                                   | CB3 -- Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética |
| B26                                   | CB4 -Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado   |
| B27                                   | CB5 -Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía   |



|     |  |
|-----|--|
| 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  |
| C12 | CT04 -Desenvolver o exercicio dunha cidadanía respectuosa coa cultura democrática, os dereitos humanos e a perspectiva de xénero   |
| C14 | CT06 -Adquirir habilidades para a vida e hábitos, rutinas e estilos de vida saudables  |
| C15 | CT07 - Desenvolver a capacidade de traballar en equipos interdisciplinares ou transdisciplinares, para ofrecer propostas que contribúan a un desenvolvemento sustentable ambiental, económico, político e social   |

| Learning outcomes  |                                       |  |                                |
|--|---------------------------------------|--|--------------------------------|
| Learning outcomes  | Study programme competences / results |  |                                |
| Provide enough knowledge to understand and describe the functions of the systems and apparatus of the healthy organism in its different levels of organization, and the integration processes that give rise to homeostasis. All this as a basis for the subsequent understanding of the pathophysiology and the mechanisms of disease production, the bases of therapeutics and the means for the maintenance and prevention of health. | A68                                   | B25<br>B26<br>B27<br>B29<br>B35<br>B39 | C9<br>C11                      |
| To know the subjects of biophysics, physiology and biochemistry related to the human body. Immediate principles. Biochemistry and biophysics of the membranes, muscles and nerves. Acquire and know the functions and regulation of the different organs and systems of the human body.  | A68                                   | B25<br>B26<br>B27<br>B29<br>B35<br>B39 | C9<br>C11<br>C12<br>C14<br>C15 |

| Contents                   |  |
|----------------------------|--|
| Topic                      | Sub-topic  |
| INTRODUCTION TO PHYSIOLOGY | Introduction. The cell. The water and the internal environment. Homeostasis and control systems. Diffusion. Osmosis. Mechanisms by which the substances pass through the cell membrane. Excitable cells. Membrane and action potential. Propagation of the action potential. |
| NERVOUS SYSTEM             | General description of the nervous system. Central Nervous System. Peripheral nervous system. General characteristics of the neuron. The synapse. Sensory systems. Attributes of sensations. Organization of sensory systems.  |
| MUSCULAR SYSTEM            | Types of muscle fibers. The skeletal muscle. The contractile cycle: excitation-contraction coupling in skeletal muscle. The neuromuscular junction.  |
| BLOOD AND IMMUNITY         | Functions and composition of blood. Physiology of erythrocytes. Physiology of leukocytes. Hemostasis and coagulation. Blood groups.  |
| CARDIOVASCULAR SYSTEM      | Generalities of the cardiovascular system. The pacemaker cells. Driving the action potential in the heart. The electrocardiogram. Cardiac cycle: electrical and mechanical events.   |
| RENAL SYSTEM               | General characteristics of renal function. Main functions and structure of the kidneys. Renal circulation. Glomerular filtration, resorption and secretion.  |



|                    |  |
|--------------------|--|
| RESPIRATORY SYSTEM | Introduction to the respiratory system. Mechanics of pulmonary ventilation. Volumes and lung capacities. Exchange and gaseous transport.   |
| DIGESTIVE SYSTEM   | General characteristics of the digestive system. Basic mechanisms of motility. Basic mechanisms of secretion. Digestion and absorption.  |
| ENDOCRINE SYSTEM   | General characteristics of hormones. Secretion and transport by blood. Action mechanisms. The hypothalamus and the hypophysis. Pancreas. Thyroid gland. Kidney glands. Sex hormones. |

| Planning                        |                                       |                                      |                               |             |
|---------------------------------|---------------------------------------|--------------------------------------|-------------------------------|-------------|
| Methodologies / tests           | Competencies / Results                | Teaching hours (in-person & virtual) | Student's personal work hours | Total hours |
| Guest lecture / keynote speech  | A68 B25 B27 B29 C9<br>C11 C14 C15     | 67.5                                 | 135                           | 202.5       |
| Supervised projects             | A68 B26 B27 B29<br>B35 B39 C9 C11 C12 | 18.5                                 | 0                             | 18.5        |
| Mixed objective/subjective test | A68 B25 B29 C9                        | 4                                    | 0                             | 4           |
| Personalized attention          |                                       | 0                                    | 0                             | 0           |

(\*)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  | Oral presentation (using audiovisual material and student interaction) designed to transmit knowledge and encourage learning. Presentations of this type are variously referred to as 'expository method?', 'guest lectures?' or 'keynote speeches?'. (The term 'keynote?' refers only to a type of speech delivered on special occasions, for which the lecture sets the tone or establishes the underlying theme; it is characterised by its distinctive content, structure and purpose, and relies almost exclusively on the spoken word to communicate its ideas.) |
| Supervised projects             | Training activity oriented to the application of learning, in which different methodologies and tests can be combined, through which the student develops tasks on a specific topic, with support and supervision of the teaching staff.   |
| Mixed objective/subjective test | Mixed test consisting of essay-type and objective test questions. Essay section consists of open (extended answer) questions; objective test may contain multiple-choice, ordering and sequencing, short answer, binary, completion and/or multiple-matching questions.  |

| Personalized attention |   |
|------------------------|---|
| Methodologies          | Description   |
| Supervised projects    | Personalized attention will be made through personalized direct and virtual tutoring. |

| Assessment                      |                                       |  |               |
|---------------------------------|---------------------------------------|--|---------------|
| Methodologies                   | Competencies / Results                | Description  | Qualification |
| Mixed objective/subjective test | A68 B25 B29 C9                        | Proba que integra preguntas tipo de probas de ensaio e preguntas tipo de probas obxectivas.<br>En canto a preguntas de ensaio, recolle preguntas abertas de desenvolvemento. Ademais, en canto a preguntas obxectivas, pode combinar preguntas de resposta múltiple, de ordenación, de resposta breve, de discriminación, de completar e/ou de asociación. | 80            |
| Supervised projects             | A68 B26 B27 B29<br>B35 B39 C9 C11 C12 | Os alumnos realizarán exercicios relacionados coas clases maxistras e presentación orais relacionadas con algún tema da materia. Isto, xunto coa realización de seminarios, suporá o 20% da cualificación final.   | 20            |



## Assessment comments

Assessment systems: First and second opportunity: Mixed objective/subjective test that will address the course syllabus (80% of the final grade) and supervised projects (20%). Advanced opportunity: Mixed objective/subjective test that will address the course syllabus. Partial enrollment: The students with partial enrollment will be evaluated of an individualized way, taking into account each individual case. It is recommended that students contact the teachers as quickly as possible. Not presented: It will be considered "not presented" to any student who does not attend any of the mixed objective/subjective test. Honor/special distinction: Students will be awarded the highest scores if they score excellent qualifications. Qualification systems: Numeric from 0 to 10, with 10 maximum qualification and 5 approved. The qualification system shall be expressed by numerical qualification in accordance with the provisions of art. 5 of Royal Decree 1125/2003 of September 5 (BOE / BOE September 18), establishing the European system of credits and the system of qualifications in university degrees of official character and valid throughout the national territory. Qualification system: 0-4.9 = Suspense 5-6.9 = Approved 7-8.9 = Notable 9-10 = Outstanding 9-10 Honor.

## Sources of information

|                      |  |
|----------------------|--|
| <b>Basic</b>         | <ul style="list-style-type: none"> <li>- Guyton y Hall (2016). Tratado de Fisiología Médica. Elsevier</li> <li>- Silverthorn (2014). Fisiología humana: un enfoque integrado. Médica panamericana</li> <li>- Berney Levi (2018). Fisiología. Elsevier</li> <li>- Gary A. Thibodeau e Kevin T. Patton (2009). Anatomía y Fisiología. Harcourt</li> <li>- Boron, Walter F. (2017). Fisiología Médica. Elsevier</li> <li>- Fox, Stuart (2017). Fisiología Humana. McGraw-Hill</li> <li>- Tresguerres, J.A.F. (2010). Fisiología humana. McGraw-Hill</li> </ul> <p><a href="https://www.udc.es/gl/biblioteca/recursos_informacion/libros_electronicos/libreria-pons_0001/">https://www.udc.es/gl/biblioteca/recursos_informacion/libros_electronicos/libreria-pons_0001/</a><br/>&lt;/p&gt; &lt;/td&gt; </p> |
| <b>Complementary</b> |  |

## Recommendations

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

### Subjects that are recommended to be taken simultaneously

### Subjects that continue the syllabus

### Other comments

Recommendations Sustainability Environment, Person and Gender Equality: To help achieve an immediate sustainable environment and meet the objective of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan": 1.- The delivery of the documentary works that are made in this matter will be done through Moodle, in digital format without the need to print them 2.- The importance of the ethical principles related to the values of the sustainability in the personal and professional behaviors must be taken into account 3. It will facilitate the full integration of students who for physical, sensory, psychological or socio-cultural reasons, experience difficulties to a suitable, equal and profitable access to university life

(\* )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.