



## Information about the subject

**Degree:** Bachelor of Science Degree in Podiatry

**Faculty:** Faculty of Medicine and Health Sciences

**Code:** 471107 **Name:** Physiology

**Credits:** 6,00 **ECTS Year:** 1 **Semester:** 1

**Module:** BASIC TRAINING

**Subject Matter:** PHYSIOLOGY **Type:** Basic Formation

**Field of knowledge:** Health Sciences

**Department:** -

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

**Lecturer/-s:**



## Module organization

### BASIC TRAINING

| Subject Matter  | ECTS  | Subject                        | ECTS | Year/semester |
|-----------------|-------|--------------------------------|------|---------------|
| ANATOMY         | 12,00 | Anatomy                        | 6,00 | 1/1           |
|                 |       | Anatomy of the Lower Extremity | 6,00 | 1/2           |
| BIOLOGY         | 12,00 | Cellular and Tissular Biology  | 6,00 | 1/1           |
|                 |       | Microbiology                   | 6,00 | 1/2           |
| PHARMACOLOGY    | 6,00  | Pharmacology                   | 6,00 | 2/1           |
| MODERN LANGUAGE | 6,00  | English                        | 6,00 | 2/2           |
| STATISTICS      | 6,00  | Biostatistics                  | 6,00 | 1/1           |
| PSYCHOLOGY      | 6,00  | Psychology                     | 6,00 | 1/2           |
| PHYSIOLOGY      | 6,00  | Physiology                     | 6,00 | 1/1           |
| BIOCHEMICALS    | 6,00  | Biophysics and Biochemistry    | 6,00 | 1/1           |
| ANTHROPOLOGY    | 6,00  | Anthropology                   | 6,00 | 1/2           |

## Recommended knowledge

Pre-requisites: None established



## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1      Learns about the main disciplines that make up the physiological sciences, their foundations and areas of work.
- R2      Distinguishes the different levels of organization of systems in human beings.
- R3      The student uses different working techniques in the laboratory.
- R4      The student looks for bibliographic information from different sources and knows how to analyze it with a critical and constructive spirit.
- R5      Analyses his work critically.



## Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

| BASIC |  | Weighting |   |   |   |
|-------|--|-----------|---|---|---|
|       |  | 1         | 2 | 3 | 4 |
| CB1   | Students demonstrate knowledge and understanding in an area of study that is at the core of general secondary education, and is often at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study. |           |   | X |   |
| CB5   | Students develop those learning skills necessary to undertake further studies with a high degree of autonomy.  |           |   | X |   |

| GENERAL |   | Weighting |   |   |   |
|---------|---|-----------|---|---|---|
|         |   | 1         | 2 | 3 | 4 |
| CG2     | Students know the structure and function of the human body, especially of the lower limb, semiology, mechanisms, causes and general manifestations of the disease and diagnostic methods of medical and surgical pathological processes, interrelating general pathology with foot pathology.             |           | X |   |   |
| CG3     | Students develop the capacity, ability and skill necessary to diagnose, prescribe, indicate, perform and/or elaborate and evaluate any type of podiatric, orthopedic, chiropractic, podiatric surgery, physical, pharmacological, preventive and/or educational treatment, based on the clinical history. | X         |   |   |   |

| SPECIFIC |  | Weighting |   |   |   |
|----------|--|-----------|---|---|---|
|          |  | 1         | 2 | 3 | 4 |



CE24 Students know the embryological development in the different stages of formation; human anatomy and physiology. Students identify the different organs, apparatus and systems, vascular and nervous splanchnology; axes and body planes; and specific anatomy of the lower limb.

x

CE26 Students know the subjects of biophysics, physiology and biochemistry related to the human body Immediate principles. Biochemistry and biophysics of membranes, muscles and nerves. Acquire knowledge of the functions and regulation of the different organs and systems of the human body.

x

CE27 Students know the anatomical and functional concept of the disease and the classification of diseases. To describe the pathology of the different organs, apparatus and systems. Medical semiology. Dermatology. Rheumatology. Traumatology. Neurology. Endocrinology. Pathological vascular processes. Systemic pathologies with repercussions in the foot.

x

## TRANSVERSAL

### Weighting

1 2 3 4

CT1 Analytical capabilities

x

CT2 Organizational and planning skills

x

CT14 Critical Reasoning

x

CT16 Autonomous learning

x



## Assessment system for the acquisition of competencies and grading system

| Assessed learning outcomes | Granted percentage | Assessment method                            |
|----------------------------|--------------------|--|
| R1, R2, R5                 | 15,00%             | Open questions                               |
| R1, R2                     | 60,00%             | Tests  |
| R1, R2, R3, R4, R5         | 25,00%             | Practice (exercises, case studies, problems) |
|                            | 0,00%              | Class participation                          |

### Observations

Minimum requirements:

The course will be divided into the following blocks for evaluation:

1. Theoretical exam based on all the theoretical program of the subject and consisting of multiple choice questions and questions briefly resolution. The rating of this review will be weighted with 75% of the overall mark. It will be necessary to exceed 50% of the exam to account for other qualifications. (1)
2. The percentage awarded to classroom activities as that obtained in conducting written tests in the classroom through which the progression and acquisition taught in classroom lectures will assess knowledge will be considered. They are not mandatory testing or qualifying matter but if the student decides not to run these tests, loses the percentage corresponding note (15%) (2)
3. A practical examination based on the knowledge acquired in workshops taught during the course (10% of the overall mark). You will need more than 30% of it to account for all other grades. (3)

The final grade for the course is the sum of the marks obtained in continuous assessment tests, theoretical exam and practical exam. The subject will be considered approved when the rating of 5 is exceeded.

### CRITERIA FOR THE AWARD OF DISTINCTION MENTION

The mention of Distinction will be awarded to students who have achieved a score equal to or greater than 9.0. The number of Distinctions granted will not exceed 5% of students enrolled in a subject in the corresponding academic year unless enrollment is under 20, in which case only one Distinction may be granted.

### ADDITIONAL INFORMATION:



## TEACHING OF THE SUBJECT IN SECOND AND SUBSEQUENT ENROLLMENTS:

There will be a specific group for non-primary students and a teacher in charge of this group. In this group there will be a number of follow-up and tutoring sessions established by the UCV (6 of 2 hours each) in which the work will be reinforced in the skills that the students of the group need to acquire to pass the course.

These sessions are included in the schedule attached to this guide and are detailed in the description of the units of the subject.

## MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 Theoretical classes (TC). Training activity preferably oriented to the acquisition of knowledge skills. It is characterised by the fact that students are spoken to. Also called master class or expository class, it refers to the oral exposition made by the teacher, (with the support of a blackboard, computer and cannon for the exposition of texts, graphics, etc.).
- M2 Seminars (S). Training activity preferably oriented to obtain knowledge application and research competences. Knowledge is built through interaction and activity. Consisting of supervised monographic sessions with shared participation (Teachers, students, experts). The size of the group is variable, from a large group to small groups, no less than 6 students for interaction. The evaluation will be made by means of follow-up records by the teacher. Participation and development of problem-solving skills should be taken into account.
- M3 Problems practice (CPP). Training activity oriented to group work for problem solving under the supervision of a teacher. The size of the group is variable, in a range of 10-20 students, to avoid confusion with a master class.



- M7      Tutorials (T). Set of activities carried out by the teacher with personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in the classes, seminars, readings, completion of assignments, etc. The aim is to ensure that education is truly a comprehensive training of the student and is not reduced to a transfer of information. It is, therefore, a personalized relationship of help in which the teacher-tutor attends, facilitates and guides one or more students in the formative process.
- M8      Evaluation (Ev). It is the set of processes that try to evaluate the learning results obtained by the students and expressed in terms of acquired knowledge, capacities, developed skills or abilities and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments,). It also includes Official Calls.
- M10    Estudio del alumno: Preparación individual de lecturas, ensayos, resolución de problemas, seminarios





## IN-CLASS LEARNING ACTIVITIES

|                           | LEARNING OUTCOMES  | HOURS        | ECTS        |
|---------------------------|--------------------|--------------|-------------|
| Theoretical lessons<br>M1 | R1, R2, R5         | 40,00        | 1,60        |
| Seminar<br>M2             | R1, R2, R4, R5     | 7,50         | 0,30        |
| Practice lessons<br>M3    | R1, R2, R3, R4, R5 | 5,00         | 0,20        |
| Office Hours<br>M7        | R1, R2             | 2,50         | 0,10        |
| Evaluation<br>M8          | R1, R2, R3, R4, R5 | 5,00         | 0,20        |
| <b>TOTAL</b>              |                    | <b>60,00</b> | <b>2,40</b> |

## LEARNING ACTIVITIES OF AUTONOMOUS WORK

|                        | LEARNING OUTCOMES  | HOURS        | ECTS        |
|------------------------|--------------------|--------------|-------------|
| Autonomous work<br>M10 | R1, R2             | 70,00        | 2,80        |
| Group work<br>M10      | R1, R2, R3, R4, R5 | 20,00        | 0,80        |
| <b>TOTAL</b>           |                    | <b>90,00</b> | <b>3,60</b> |



## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

| Content block              | Contents   |
|----------------------------|--|
| UNIT I: INTRODUCTION       | <ol style="list-style-type: none"><li>1. Introduction and Overview. Homeostasis</li><li>2. Cell physiology. Cell membrane structure. Transport through the cell membrane: simple diffusion, facilitated diffusion, osmosis, and active transport. Membrane potential. Action potential.</li></ol>  |
| UNIT II: NERVOUS SYSTEM    | <ol style="list-style-type: none"><li>3. Functional organization of the nervous system.</li><li>4. Higher Functions: central nervous system</li><li>5. Autonomic nervous system. Autonomous integration centers.</li><li>6. Sensory, motor and integrative systems. Physiology and receptors of special senses. Somatic sensations: touch, temperature, pain and proprioception. Physiology of pain.</li></ol> |
| UNIT III: ENDOCRINE SYSTEM | <ol style="list-style-type: none"><li>7. Overview of the endocrine system: autocrine, paracrine and endocrine communication. Exocrine and endocrine glands. Hormonal Classification.</li><li>8. Physiology of the hypothalamic-pituitary axis. Thyroid. Parathyroid. Endocrine pancreas. Adrenal glands.</li></ol>   |
| UNIT IV: MUSCULAR SYSTEM   | <ol style="list-style-type: none"><li>9. Overview of the muscular system. Physiology of skeletal muscle: contractile cycle. Physiology of smooth muscle: contractile cycle.</li><li>10. Metabolism of skeletal and smooth muscle. Control of muscle tension. Exercise and skeletal muscle tissue.</li></ol>  |



## UNIT V: CARDIOVASCULAR SYSTEM

11. Internal environment. Functions and properties of blood components and blood cell formation. Hemostasis: hemostatic control mechanism. Immunity. Gas transport  
12. Physiology of the cardiovascular system. Action potential in cardiac muscle. ECG and cardiac cycle. Cardiac output: regulation of stroke volume and heart rate. Hemodynamics. Microcirculation and capillary system. Arterial regulation mechanisms.

## UNIT VI: RESPIRATORY SYSTEM

13. Physiology of the respiratory system. Pulmonary ventilation. Physical principles of gas exchange. Regulation of breathing. Acid-base balance.

## UNIT VII: DIGESTIVE SYSTEM

14. Physiology of the gastrointestinal tract. General. Secretory processes. Gastrointestinal motility. Digestion and intestinal absorption.

## UNIT VIII: EXCRETION

15. Physiology of the renal system. Glomerular filtration. Reabsorption and tubular secretion. Production, transportation, storage and disposal of urine.

## UNIT IX: PRACTICAL CONTENTS

16. Initiation to the laboratory. Tests Sensory function.  
17. Basic vital constants: blood pressure, temperature, blood sugar. Glasgow functional assessment.



## Temporary organization of learning:

| Block of content              | Number of sessions | Hours |
|-------------------------------|--------------------|-------|
| UNIT I: INTRODUCTION          | 3,00               | 6,00  |
| UNIT II: NERVOUS SYSTEM       | 6,00               | 12,00 |
| UNIT III: ENDOCRINE SYSTEM    | 3,00               | 6,00  |
| UNIT IV: MUSCULAR SYSTEM      | 3,00               | 6,00  |
| UNIT V: CARDIOVASCULAR SYSTEM | 6,00               | 12,00 |
| UNIT VI: RESPIRATORY SYSTEM   | 2,50               | 5,00  |
| UNIT VII: DIGESTIVE SYSTEM    | 2,00               | 4,00  |
| UNIT VIII: EXCRETION          | 2,00               | 4,00  |
| UNIT IX: PRACTICAL CONTENTS   | 2,50               | 5,00  |

## References

1. Guyton and Hall Textbook of Medical Physiology 13th
2. Principles of Human Physiology, 5th Edition
3. Human Physiology by Stuart Ira Fox US 13TH Edition
4. Tortora's Principles of Anatomy and Physiology, 15th Edition



## Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

**Situation 1: Teaching without limited capacity** (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

**Situation 2: Teaching with limited capacity** (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

### 1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☐ Kaltura



## **Situation 3: Confinement due to a new State of Alarm.**

In this case, the following changes are made:

### **1. Educational Activities of Onsite Work:**

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☐ Kaltura

Explanation about the practical sessions:

Las sesiones prácticas se adaptarán de la forma más adecuada en función de las circunstancias.



## 2. System for Assessing the Acquisition of the competences and Assessment System

### ONSITE WORK

#### Regarding the Assessment Tools:

☒

The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☐

The following changes will be made to adapt the subject's assessment to the online teaching.

| Course guide    |                      | Adaptation                           |                     |
|-----------------|----------------------|--------------------------------------|---------------------|
| Assessment tool | Allocated percentage | Description of the suggested changes | Platform to be used |

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

#### Comments to the Assessment System: