

**COURSE DATA****Data Subject**

<b>Code</b>	33001
<b>Name</b>	Human anatomy II
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1202 - Degree in Physiotherapy	Faculty of Physiotherapy	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1202 - Degree in Physiotherapy	1 - Human anatomy	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
GONZALEZ SOLER, EVA MARIA	17 - Human Anatomy and Embryology
PEREZ MOLTO, FCO JOSE	17 - Human Anatomy and Embryology

**SUMMARY**

The general objective of the subject Anatomía Humana II is to contribute to the alumna descriptive and topographical knowledge of the different organs and systems that allow the functioning of the human body. This subject studies the organs that make up the cardio-circulatory, respiratory, digestive, genitourinary and nervous systems, as well as the organs of the senses. The embryonic development of human organisms, the microscopic morphology of the tissues and the macroscopic morphology of the organs, the relationships they establish at topographic level with other structures and the main functional aspects of each organ and system will be worked on. The exhaustive knowledge of the morphological, relational and functional aspects of the different apparatuses and systems of the human body is essential in the training of the physiotherapist, as well as providing a solid and necessary foundation for the integration of the knowledge taught in the rest of the subjects throughout of his training as physiotherapists.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Previous knowledge is not required

## OUTCOMES

### 1202 - Degree in Physiotherapy

- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.
- Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.
- Know and understand people's morphology, physiology, pathology and behaviour under health and sickness in the natural and social environments
- Respect fundamental rights and equality between men and women.
- Recognise diversity, multiculturality, democratic values and peace culture.
- Recognise equal opportunity and accessibility for people with disability.
- Work in teams.
- Have the ability to organise and plan work.
- Know the human anatomy, especially the dynamic relationship among morphology, structure and function.
- Know the structural changes that may arise as a consequence of the physiotherapy application.
- Know the morphology, structure and function of the central nervous system, pyramidal and extrapyramidal tracts and their locomotive effects in order to know how to apply the appropriate physiotherapy .
- Know the morphology, structure and function of the senses, and the peripheral, sensitive and motor systems in order to be able to apply them in physiotherapy.



- Know the visceral system of the abdominal and thoracic cavities, their content, distribution and function related to the organic homeostasis in order to apply them in physiotherapy.

## LEARNING OUTCOMES

1. That the students be able to identify and describe the microscopic structure of the main tissues that make up the human body.
2. That the students be able to identify and describe the main stages of the embryonic development of the human organism.
3. That the students be able to identify and describe the elements that make up the sense organs and their driving directions.
4. That the students be able to identify and describe the elements that make up the nervous system.
5. That the students be able to identify and describe the elements that make up the cardiocirculatory, respiratory, digestive and genitourinary systems, as well as their topographic and main functions.
6. That the students be able to identify the different structures and systems studied by means of radiological image (Rx, TACO, RNM,...)

## DESCRIPTION OF CONTENTS

### 1. EMBRIOLOGY AND HISTOLOGY

- 1-Anatomy: concept, historical memory. Plan of the course. Organization of the human body. Concept of organs, organ systems. Life cycle.
- 2-Fabrics: concept, classification and types. Epithelial tissue. Glandular tissue.
- 3-Tissue bra: connective, cartilage and bone tissue. Muscle tissue.
- April.
- 4-Nervous tissue
- 5-Embryology. Germ phase; morula, blastula, gastrula (embryonic leaves) and neurula.
- 6-Embryology. Nesting human. Placenta and fetal annexes.
- 7-Embryology. Development of the nervous system.
- 8-Embryology. Somites and derivatives. Limb formation.

### 2. NERVOUS SYSTEM

- 9-Organs of sensory reception. Structural organization. Central and peripheral SN. Sympathetic and parasympathetic: autonomic nervous system.
- 10-Sensory reception organs: touch.
- 11-Sensory reception organs: vista.
- 12-Organs sensory reception: ear. hearing and balance.
- 13-Central nervous system: Study of whole brain and spinal cord.
- 14-Peripheral Nervous System: Nerve Fiber. Spinal and cranial nerves.
- 15-Descriptive anatomy of the spinal cord: structure of the gray matter and white matter.
- 16-Descriptive Peripheral Nervous System Anatomy: nerve root, spinal nerve. Nerve plexus. Spinal



reflex arc.

17-Descriptive Anatomy Trunk: motor, sensory and vegetative core. Systematization of the cranial nerves of the trunk.

18-Descriptive Anatomy Trunk: Nuclei involved in motor control: Substance Black, Red Nucleus, Nucleus Vestibular Nuclei and Bridge.

19-Descriptive anatomy of the cerebellum. Cortex and deep nuclei. Function of the cerebellum.

20-Diencephalon descriptive anatomy: anatomical and functional divisions. Thalamus nuclear systematization motor and sensory.

21-Descriptive anatomy of the brain: motor and sensory areas. Language Area

22-Descriptive anatomy of the brain subcortical structures involved in motor control. Basal nuclei. Role of the basal ganglia.

23-Structure of the white matter. Routes of association, projection and commissural.

24-Functional anatomy of the SN. Pyramidal and extrapyramidal motor pathways. Via final action on the lower motor neuron.

25-Sensitive routes.

26-Covers meningeal and spinal fluid circulation.

27-Irrigation CNS.

28-Neuroendocrine System: hypothalamus pituitary block: description and secretion. Target endocrine glands.

### **3. CARDIOVASCULAR SYSTEM**

29-External and internal morphology of the heart: pericardium, myocardium. Valvular Endocardium System.

30-Heart and great vessels. Sigmoid valves. Coronary Circulation.

31-Nerve conduction system and heart. Pulmonary Circulation.

32-Artery and pulmonary veins.

33-Cephalic circulation. Somatic Circulation.

34-Parietal and visceral branches of the thoracic and abdominal aorta. Source of irrigation large trunks of the extremities.

35-Lymphatic System: concept, systematic and anatomical function. Immune function of the spleen and thymus.

### **4. RESPIRATORY SYSTEM**

36-Upper respiratory tract: nasal cavity, paranasal sinuses. Structure and function of the larynx.

37-Lower respiratory tract: a socket main bronchus. Macroscopic structure of the lungs. Functional unit of the lung.



## **5. DIGESTIVE SYSTEM**

- 38-Oral cavity. Tooth system. Pharynx, esophagus and stomach.
- 39-Intestine. Intestine.
- 40-Glands Digestive System. Oral cavity 38. Tooth system. Pharynx, esophagus and stomach.
- 41-Irrigation: mesenteric artery and its branches. Portal Circulation.

## **6. SISTEMA UROGENITAL**

- 42-Kidney and urinary tract. Functional unit of the kidney.
- 43-Male genital.
- 44-Female genital.

## **7. PRACTICE SCHEDULE. 15 HOURS**

- 1-Embryology.
- 2-Nervous System (I). Spinal cord outer structure and Interna. Estudio with parts and anatomical models and medical images.
- 3-Nervous System (II): Trunk and cranial nerves. Cerebelo. Piezas and anatomical models and medical images.
- 4-Nervous System (III): Diencephalon. Cerebral hemispheres and subcortical structures and cortical areas. Studio pieces and anatomical models and medical images.
- 5-Nervous System (IV). Motor and somatosensory pathways. Diagrams, tutorials, medical imaging.
- 6-Thorax I: Mediastinum. Cardiocirculatory apparatus: external and internal morphology of the heart. Great vessels. Study with parts and anatomical models and medical images.
- 7-Thorax II: Respiratory. airways and lungs. Studio pieces and anatomical models and medical images.
- 8-Abdomen: Grid Anatomopathological Session. Gastroenterology. Studio pieces and anatomical models and medical images.
- 9-Apparatus Urogenital: Kidney and urinary tract. Female sexual organs. Male sex organs. External genitalia. Study with pieces and anatomical models and medical images.





## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	45,00	100
Laboratory practices	15,00	100
Development of group work	40,00	0
Study and independent work	30,00	0
Preparation of evaluation activities	20,00	0
<b>TOTAL</b>	<b>150,00</b>	

## TEACHING METHODOLOGY

Interactive teacher-student theory class.

Interactive seminars on visceral and nervous system imaging, clinical anatomy or any other that teacher considers interesting for the development of students.

Practical classes, in the dissection room, using cadavers and anatomical models. Groups of 16 students. Application of the concepts and knowledge acquired in the theoretical class. Relating concepts and acquiring skills, students, as a team, carry out a work on a practice, which they present to their classmates during the practices in the Dissection Room.

## EVALUATION

It will consist of a theoretical test, a practical test and continuous assessment activities. It is an essential requirement to pass each of the parts to average the final grade.

- **Theoretical part:** Its value corresponds to 70% of the final evaluation. It consists of:
  - *Theoretical test:* Objective test consisting of a battery of 50 multiple-choice questions with 4 possible answers. Correct questions will have a value of 1 point, and incorrect questions subtract 0.20 points (for every 5 questions answered incorrectly, 1 correct answer will be subtracted). It is necessary to obtain a grade of 5 out of 10 to pass this theory test. The content of the test will be the same for all groups of the subject. Its value is 65% of the final grade.
  - *Continuous assessment activities:* To be specified by the teaching staff. Its value will be 5% of the final grade.
- **Practical part:** It has a value of 30% of the final evaluation. It consists of:
  - *Practical test:* Questions will be asked about all the materials and concepts studied during the practices. Its value is 25% of the final grade. It is necessary to obtain a grade of 5 out of 10 to pass this test.
  - *Continuous assessment activities:* Preparation, elaboration, presentation and delivery of a group expository work (as a monitor), in which the student guides the classmates in a stipulated practice. It will be carried out in the presence of teachers. Its value will be 5% of the final grade. It is necessary to obtain a grade of 5 out of 10 to pass this test.



- **Attendance to Practices:** Attendance to practices is compulsory. The unjustified absence to more than 20% of the practices will suppose the impossibility of appearing in the practical exam of the subject.

## REFERENCES

### Basic

- CROSSMAN AR, NEARY D. (2015) Neuroanatomía ( 5ª edició). Ed. Elsevier Masson.
- DRAKE RL, VOLG AW, MITCHELL AWM. (2015) GRAY. Anatomía para estudiant (3ª edición). Editorial Elsevier.
- HAINES DI. (2014) Principis de Neurociencia (4ª edició). Editorial Elsevier Saunders.
- LANGMAN J, SADLER TW. (2016) Embriologia Mèdica: amb Orientació Clínica (13ª edició). Editorial Panamericana.
- MOORE Y AGUR. Fundamentos de Anatomía con Orientación Clínica. 8ª ed. Ed. Panamericana.
- PUTZ, REINHARD V. y PABST, REINHARD (2018), Sobotta Atlas de Anatomía Humana Vol 1, 2 y 3; 24ª ed. Ed. Elsevier.
- SCHUNKE M, SCHULTE E, SCHUMACHER U. (2017) Prometheus. Texto y Atlas de Anatomía, Vol. 2 y 3. 3a ed. Ed. Panamericana.

### Additional

- FENEIS H i DAUBER W. (2008) Nomenclatura Anatòmica Il·lustrada (5ª edició). Ed. Elsevier.
- KHALE W. (2008) Atles d' Anatomia en 3 toms. 3º Tom: Sistema Nerviós i òrgans dels sentits (9ª edició). Editorial Medica-Panamericana.
- NIELSEN M, MILLER S. (2012) Atles d'anatomía humana (1ª edición). Editorial Panamericana.
- NETTER, F.H (2019) Atlas de Anatomía Humana. 7ª ed. Ed. Elsevier
- PUELLES LÓPEZ. (2008) Neuroanatomía. Editorial Panamericana.
- Atlas anatómico interactivo en 3D: Human Biodigital (<https://human.biodigital.com>).
- Atlas de Anatomía Humana interactivo 3D PRIMAL Pictures. Acceso gratuito desde la UV (<http://www.anatomy.tv>).