

## Human Anatomy I

Code: 102970  
ECTS Credits: 6

Degree	Type	Year	Semester
2500892 Physiotherapy	FB	1	1

### Contact

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### Use of Languages

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

### Teachers

Manuel Medina Hayas

### Prerequisites

Although there are no specific prerequisites, it is advisable that the student has achieved basic competences for self-learning and group work, as well as pre-university biology knowledge. Given that the student will practice in the dissection room, he will acquire the commitment to preserve the confidentiality and professional secrecy of the data that he can access and maintain an attitude of professional ethics in all his actions.

### Objectives and Contextualisation

The subject Human Anatomy I is attended in the first semester of the first year of the Degree in Physiotherapy and is part of the subjects of basic training of this degree.

The objectives of the subject are the study of the general anatomical organization of the human body, the principles of its initial development and the development of the locomotor apparatus and the study of the descriptive, topographical and functional anatomy of the Locomotive device (which will include the trunk and limbs) and the cardiovascular system (which will include the heart and the main vessels of the major and minor circulation systems, and the lymphatic system). The achievement of the objectives of the subject determines one of the fundamental pillars in the formation of the future professional of Physiotherapy, which will have its natural continuity in the second semester of the first year, with the subject Human Anatomy II, than complement other subjects of a basic and compulsory nature, such as Biomechanics, the Function of the Human Body, Semiology and Physiotherapy.

Students who have passed this subject must be able to describe and recognize, with international anatomical terminology, the anatomical organization of the human body, the principles of its development, the anatomical structures and the functional anatomy of the different parts that make up the locomotive device and the cardiovascular system in state of health.

### Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Analyse and synthesise.

- Display knowledge of the morphology, physiology, pathology and conduct of both healthy and sick people, in the natural and social environment.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

## Learning Outcomes

1. Analyse a situation and identify its points for improvement.
2. Analyse and synthesise.
3. Communicate using language that is not sexist.
4. Consider how gender stereotypes and roles impinge on the exercise of the profession.
5. Critically analyse the principles, values and procedures that govern the exercise of the profession.
6. Explain the explicit or implicit code of practice of one's own area of knowledge.
7. Explain the function of these anatomical structures.
8. Identify situations in which a change or improvement is needed.
9. Identify the social, economic and environmental implications of academic and professional activities within one's own area of knowledge.
10. Locate the different anatomical structures by surface palpation.
11. Propose new methods or well-founded alternative solutions.
12. Propose new ways to measure success or failure when implementing innovative proposals or ideas.
13. Propose projects and actions that incorporate the gender perspective.
14. Propose viable projects and actions to boost social, economic and environmental benefits.
15. Propose ways to evaluate projects and actions for improving sustainability.
16. Recognise the layout of anatomical structures in a living subject.
17. Weigh up the risks and opportunities of suggestions for improvement: one's own and those of others.

## Content

### PROGRAMME OF THE COURSE

1. LECTURES (type TE). 37 hours of theoretical classes are programmed.

### UNIT 1: GENERAL ANATOMY

Concept of anatomy and study techniques. Anatomical position. Terms of position and direction. International anatomical terminology. Biotypes. Levels of human body organization. General Osteology. General Arthrology. General myology. Biomechanics applied to the locomotor apparatus. Concepts of surface anatomy. General anatomical organization of cardiovascular and nervous systems.

### UNIT 2: ANATOMY OF THE UPPER LIMB

General organization of the upper extremity. Joints and muscles of the shoulder girdle. Articulation of the elbow and arm muscles. Topographic and functional anatomy of the shoulder girdle and arm. Wrist and hand joints. Forearm muscles and hand. Topographic and functional anatomy of the forearm and hand. Arteries, veins and lymphatics of the upper extremity. Brachial plexus: constitution, collateral branches and terminal branches. Surface anatomy of the upper extremity.

### UNIT 3: ANATOMY OF THE INFERIOR LIMB

General organization of the lower extremity. Acetabulofemoral joint and pelvic girdle muscles. Knee joint and thigh muscles. Topographic and functional anatomy of the pelvic girdle and thigh. Ankle and foot joints. Muscles of the leg and foot. Topographic and functional anatomy of the leg and foot. Arteries, veins and lymphatics of the lower extremity. Lumbo-Sacral Plexus: Constitution, collateral branches and terminal branches. Surface anatomy of the lower extremity.

#### UNIT 4: ANATOMY OF THE CARDIOVASCULAR SYSTEM

Heart: external and internal morphology. Vessels and nerves of the heart. Pericardium. Arteries and pulmonary veins. Aorta: thoracic and abdominal part. Carotid arteries. Subclavian arteries. Iliac arteries: common, external and internal (hypogastric). System of the upper vein cava, system of the inferior vena cava and intercaval venous systems. General organization of the lymphatic system.

#### UNIT 5: GENERAL EMBRYOLOGY AND PRINCIPLES OF THE DEVELOPMENT OF THE LOCOMOTOR SYSTEM

Zygote, morula phase and blastula. Gastrulation. Formation of embryonic germ layers and their main derivatives. Principles of locomotor apparatus development.

#### UNIT 6: ANATOMY OF THE TRUNK

General organization of the trunk. Spine joints and craniovertebral joints. Autochthonous backmuscles. (erector column): Long and short muscles of the medial and lateral tracts. Functional anatomy of the rachis. Pelvis joints and ligaments. Pelvic cavity. Fascia and muscles of the perineum. Chest joints. Chest muscles. Respiratory mechanics. Abdominal muscles: anterior, lateral and posterior. Inguinal canal and weak points of the abdominal wall. Musculoaponeurotic organization of the cervical region. Neck muscles: scalenes, infrahyoid and prevertebral. Sternocleidomastoid muscle. Cervical triangles. Subclavian artery. Cervical plexus: constitution, collateral branches and terminal branches. Surface anatomy of the trunk.

1. SEMINARS (SESP typology). In small groups (standard size 20 students per group). 3 seminars of 2 hours each are programmed per group.

Seminar 1: Osteology and surface anatomy of the upper extremity.

Seminar 2: Osteology and surface anatomy of the lower extremity.

Seminar 3: Osteology and surface anatomy of the spine, the thorax and the pelvis.

1. PRACTICES IN THE DISSECTION ROOM (PLAB typology), in small groups (standard size of 20 students per group). Students will attend the dissection room to study, in anatomical preparations and diagnostic imaging, the subject's thematic contents. It is mandatory to wear white coat and gloves to access dissection practices and it is strictly forbidden to make any kind of pictures (photographs, videos, etc...) in the dissection room. 2 hours each per group are programmed.

Practice 1 (General anatomy): Identify the main techniques used in the study of anatomy. Recognize the type and different anatomical components of bones, joints and muscles. Recognize vessels and nerves at different anatomical preparations. Correlate anatomic anatomical structures with different imaging techniques and the surface anatomy. Identify and spatially orient the different topographic regions of the human body and apply the acquired knowledge with respect to anatomical axes and plans.

Practice 2 (upper extremity Anatomy): Identify and recognize, in anatomical preparations, the structures that make up each of the upper extremity joints. Identify and recognize, in anatomical preparations, muscles of the shoulder girdle, arm, forearm and hand. Identify and recognize in anatomical preparations, vessels and nerves of the upper extremity. Correlate anatomic anatomical structures with different imaging techniques and the surface anatomy.

Practice 3 (lower limb anatomy): Identify and recognize, in anatomical preparations, the structures that form each of the lower limb joints. Identify and recognize, in anatomical preparations, muscles of pelvic girdle, thigh, leg and foot. Identify and recognize in anatomical preparations, vessels and nerves of the lower extremity. Correlate anatomic anatomical structures with different imaging techniques and the surface anatomy.

Practice 4 (Anatomy of the Cardiovascular System): Identify and recognize, in anatomical preparations, the external and internal morphology of the heart. Identify and recognize, in anatomical preparations, the vessels of the heart. Identify and recognize, in anatomical preparations, the pericardium and the relations of the heart. Identify and recognize, in anatomical preparations, the arteries and pulmonary veins. Identify and recognize, in anatomical preparations, the aorta artery (thoracic and abdominal), its main collateral branches and its

relationships. Identify and recognize, in anatomical preparations, the iliac arteries, the subclavian arteries and the carotid arteries, as well as their main branches and relationships. Identify and recognize, in anatomical preparations, the veins that make up the higher cava and cava inferior systems and the intercaval venous systems (azygous, vertebral plexuses). Identify and recognize, in anatomical preparations, the main groups of lymph nodes, the right lymphatic duct and thoracic duct. Correlate anatomical structures with different imaging techniques and the anatomy of the surface.

Practice 5 (Trunk anatomy): Identify and recognize, in anatomical preparations, the different structures that make up each of the joints of the trunk, the thorax and the pelvis. Identify and recognize, in anatomical preparations, the muscles of the trunk (erector trunci), thorax, abdomen, perineum and the cervical region. Identify and recognize in anatomical preparations, vessels and nerves of the trunk related to the musculoskeletal system. Correlate anatomic anatomical structures with different imaging techniques and the surface anatomy.

## Methodology

LECTURES (Typology TE): Teaching essentially expository character and is usually done in a classroom and at a schedule previously programmed. 37 hours of theoretical classes are programmed.

SPECIALISED SEMINARS (Typology SESP): Teaching conducted by a specialized professor in the study of different aspects of osteology, which the students will have previously prepared autonomously. In this activity human bones will be used from the bone collection of the unit of Anatomy and Human Embryology of the Faculty of Medicine. Three specialized seminars are programmed for 2 hours each.

LABORATORY PRACTICES (Type PLAB): Teaching that consists in carrying out practical activities in the dissection room of the Anatomy and Human Embryology Unit of the Faculty of Medicine, within a specific timetable, with the permanent assistance of the Professors. Five practices are programmed in the dissection room of 2 hours each.

VIRTUAL CLASSES (Type VIRT): Teaching without attending the classroom under the permanent and personalized supervision of the student and intensively using the information and communication technologies (ICT). This activity will be carried out by the student using material made to prepare the seminars and practices, as well as self-study material. This material will be found in the Virtual Campus of the course.

FREELANCE WORK: Comprehensive reading of texts and scientific articles. Study and realization of schemes, abstract and conceptual assimilation of the content of the course. Preparation and elaboration of practical activities.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
LABORATORY PRACTICES (PLAB)	10	0.4	2, 10
SPECIALIZED SEMINARS	6	0.24	2, 7, 10, 16
THEORY (T)	37	1.48	2, 7, 16
Type: Supervised			
TUTORIALS	13.32	0.53	2, 7

## Assessment

### EVALUATION OF THE SUBJECT

The evaluation of the course is composed of three mid-term exams. The first part includes the general anatomy embryology and the anatomy of the upper limb, the second mid-term exam includes the anatomy of the inferior limb and the third mid-term exam includes the anatomy of the trunk and the cardiovascular system.

All students will have two opportunities to overcome each of the three mid-term exams: the assessments programmed during the course and the recovery exam.

#### MID-TERM EXAMS:

The first mid-term exam represents 35% of the final grade, the second the 35% and the third the 30%.

Each mid-term exam will consist of:

A. Theoretical part: Represents 60% of the mid-term exam mark. The theoretical part will consist of two parts:

- An objective test (test type, true or false...). It will constitute 50% of the theoretical part.
- A written exam (short or long written questions). It will constitute 50% of the theoretical part.

B. Practical part: Represents 40% of the mid-term exam mark. Consisting of questions related to the practical aspect of the subject. (interpretation of images, resolution of issues from images, identification of structures, problem solving,....)

The mid-term exam mark - *Theoretical part mark (about 10) x 0.6 + Practical part mark (about 10) x 0.4*

Mid-term exam exceeded: A mid-term exam will have been exceeded when the mid-term exam mark is either > or 5.0

#### RECOVERY EXAM:

The course will schedule a recovery exam, in accordance with the faculty's teaching calendar. Students who have passed the three partial exams throughout the course will not be required to take the recovery exam.

The students that must submit to the recovery exam are:

Students who have not passed one, two or three partial exams.

Students who have not submitted to any of the partial exams.

Students who have completed the partial but want to improve the grade of one, two or three of them. In this case, the student does not need to give up the grade obtained during the course, the final mark will be the highest of both (mid-term exam and recovery).

Features of the recovery exam:

The recovery exam will evaluate each mid-term exam separately. Each exam will be governed by the same rules, proportions and weightings that were performed during the course.

#### STUDENTS ENROLLED TWO OR MORE TIMES:

Students enrolled two or more times who have not passed the subject in the exams made during the course may be submitted to a "final synthesis exam". This examination should be requested to the coordinator of the

subject at least one week before the recovery exam. This "final synthesis exam" will be done instead of the multiple-choice exam, representing 60% of the partial grade. There will be a "final synthesis exam" for each part. The examination of recognition of anatomical structures (the remaining 40%) will do the same as the rest of the students who perform the recovery test.

**GRADE OF THE COURSE:**

The grade of the course corresponds to the weighted sum of the three mid-term exams (either obtained in the first instance or in the recovery exam).

Course Grade = 1st mid-term mark (out of 10) x 0.35 + 2nd mid-term mark (out of 10) x 0.35 + 3rd mid-term mark (out of 10) x 0.30.

To apply this formula it is necessary that the three mid-term exams had been passed (according to the conditions explained previously)

In the supposition that not all the partials are passed, it is not possible to pass the subject even if the weighted sum of the three partial is greater than 5. In this case the student's mark to the minutes will be of 4 points maximum.

The final mark will have a numerical expression, with a decimal, to scale 0-10 and the qualitative equivalence in accordance with the criteria of the UAB, of suspense (0-4.9), approved (5.0-6.9), notable (7.0-8.9) and excellent (9.0-10.0) (with the option to achieve the Qualification of With Honors). The number of honorary registrations granted may not exceed 5% as established in the academic regulations of the UAB.

A non-avaluable student is considered to be the one that has not been presented at least to two calls for evaluation.

**ANNOUNCEMENTS, REVISIONS:**

Exam Announcements (Day, time, classroom, etc...) and revision will be announced through the virtual campus of the UAB. The procedure for reviewing the tests will comply with the current regulations of the UAB and in any case will be individually with the student.

The results of the evaluation activities will be announced through the UAB's virtual campus.

**Assessment Activities**

Title	Weighting	Hours	ECTS	Learning Outcomes
Practical type evaluation through structured objective evaluation	40%	2.25	0.09	5, 2, 1, 3, 6, 7, 9, 8, 10, 17, 15, 12, 13, 14, 16, 4
Written evaluation through objective tests of selection: items of multiple choice and/or development	60%	4.13	0.17	2, 3, 7, 11, 16

**Bibliography**

**BIBLIOGRAPHY**

Embriology

- Sadler, T.W. (2016) Langman Embriología Médica. 13ª edición. Ed. Wolters Kluwer

Anatomy: textbooks

- Drake, R.L., Vogl, W., Mitchell, A.W.M. (2015) Gray - Anatomía para estudiantes. 3ª edición. Ed. Elsevier
- Drake, R.L., Vogl, W., Mitchell, A.W.M. (2013) Gray - Anatomía Básica. Ed. Elsevier
- Drenckhahn, D., Waschke, J. (2010) Benninghoff y Drenckhahn - Compendio de Anatomía. 1ª edición. Ed. Médica Panamericana SA
- Gilroy, A.M. (2015) Prometheus Anatomía Manual para el estudiante. 1ª edición. Ed. Médica Panamericana
- Lippert, H. (2010) Anatomía con orientación clínica para estudiantes. Ed. Marbán libros
- Moore, K.L., Dalley, A.F., Agur, A.M.R. (2013) Anatomía con orientación clínica. 7ª edición. Ed. Wolters Kluwer
- Pró, E.A. (2014) Anatomía Clínica. 2ª edición. Ed. Médica Panamericana
- Rouvière, H., Delmas, V., Delmas, A. (2005) Anatomía humana: descriptiva, topográfica y funcional. 11ª edición. Ed. Elsevier-Masson
- Schünke, M., Schulte, E., Schumacher, U. (2014) Prometheus - Texto y atlas de Anatomía. 3ª edición. Ed. Médica Panamericana
- Standring, S. (2015) Gray's Anatomy. The Anatomical Basis of Clinical Practice. 41th edition. Ed. Churchill Livingstone

#### Anatomy: atlas

- Agur, M.R., Dalley, F. (2007) Grant - Atlas de Anatomía. 11ª edición. Ed. Médica Panamericana
- Dauber, W. (2006) Feneis Nomenclatura anatómica ilustrada. 5ª edición. Ed. Masson SA
- Gilroy, A.M., MacPherson, B.R., Ross, L.M. (2014) Prometheus Atlas de Anatomía. 2ª edición. Ed. Médica Panamericana
- Llusà, M., Merí, À., Ruano, D. (2004) Manual y Atlas Fotográfico de Anatomía del Aparato locomotor. Ed. Médica Panamericana
- Netter, F.H. (2014) Atlas de Anatomía humana. 6ª edición. Ed. Elsevier
- Nielsen, M., Miller, S. (2012) Atlas de Anatomía Humana. Ed. Médica Panamericana
- Paulsen, F., Waschke, J. (2012) Sobotta Atlas de Anatomía humana. 23ª edición. Ed. Elsevier
- Rohen, J.W., Yokochi, C., Lütjen-Drecoll, E. (2011) Atlas de Anatomía humana. 7ª edición. Ed. Elsevier
- Weber, E.C., Vilensky, J.A., Carmichael, S.W. (2009) Netter. Anatomía Radiológica esencial. Ed. Elsevier
- Weir, J., Abrahams, P.H., Spratt, J.D., Salkowski, L.R. (2011) Atlas de Anatomía Humana por técnicas de imagen. 3ª edición. Ed. Elsevier-Mosby

#### Surface anatomy:

- Cael, Ch. (2013) Anatomía Funcional. Estructura, función y palpación para terapeutas manuales. 1ª edición. Ed. Médica Panamericana
- Souza, M.O. (2012) Anatomía Funcional Palpatoria. 1ª edición. Ed. Amolca
- Tixa, S. (2014) Atlas de Anatomía Palpatoria. 3ª edición. Ed. Elsevier

#### Net resources:

The Net resources will be regularly actualized in the subject's moodle.

## Videos

1. Canal de Anatomía Humana y Diseción [https://www.youtube.com/channel/UCw-oldhkk\\_2ftVa\\_PL0eoSQ](https://www.youtube.com/channel/UCw-oldhkk_2ftVa_PL0eoSQ)
2. Canal de Leonardo Coscarelli <https://www.youtube.com/user/leonardocoscarelli>

## Web pages

### 1. General anatomy

- a. Atlas of Human Anatomy in Cross Section  
<https://www.anatomyatlases.org/HumanAnatomy/CrossSectionAtlas.shtml>
- b. Innerbody <https://www.innerbody.com/htm/body.html>
- c. Plastination. The University of Viena. <http://www.meduniwien.ac.at/sysanat/plastination.html>
- d. Master Muscle List  
<http://www.meddean.luc.edu/lumen/MedEd/GrossAnatomy/dissector/muscles/muscles.html>

### 2. Embryology

- a. The Carnegie stages <http://www.embryology.ch/anglais/iperiodembry/carnegie02.html>
- b. Embryology UNSW Australia [https://embryology.med.unsw.edu.au/embryology/index.php/Main\\_Page](https://embryology.med.unsw.edu.au/embryology/index.php/Main_Page)

## **Software**

To follow the course, the microsoft office package is sufficient.