

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

Code	33000
Name	Human anatomy I
Cycle	Grade
ECTS Credits	9.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1202 - Degree in Physiotherapy	Faculty of Physiotherapy	1	Annual

Subject-matter

Degree	Subject-matter	Character
1202 - Degree in Physiotherapy	1 - Human anatomy	Basic Training

Coordination

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

SUMMARY

The main objective of the subject Human Anatomy I is to provide the student with descriptive and topographic knowledge of the components of the human locomotor system (osteoarthrology musculature, vascularization and innervation), as well as its main mechanical actions.

Specific objectives:

1. Study the elements that make up the skeletal system and its main accidents.
2. Study the joint elements that allow the movement of the locomotor system and its joint ranges.
3. Study the muscular elements that compose the locomotor system, as well as its functions, its innervation and its vascularization.
4. Study the location, limits and content of the main topographic spaces.
5. Study the distribution of the cutaneous innervation of the human body.
6. Study the different structures of the locomotor system both with anatomy of the surface (bioscopic) and with radiological image (rx, CT, RNM, ...).



Accurate and comprehensive knowledge of the anatomy of the locomotor system is essential in the training of the physiotherapist. A good knowledge of anatomy will allow the student to have a solid base for the integration of the knowledge imparted in other subjects throughout their training. In addition, anatomical knowledge and its application are essential for the professional development of the physiotherapist.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

It is not necessary.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

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 peoples 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 neuromuscular systems, their morphology, distribution and function on the joints for their application in Physiotherapy.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

1. That the students are able to identify and describe the elements that make up the skeletal system and its main accidents.
2. That the students are able to identify and describe the articular elements that allow the movement of the locomotor apparatus, as well as to evaluate their joint ranges.
3. That the students are able to identify and describe the muscular elements that compose the locomotor system, as well as their functions, their innervation and their vascularization.
4. That the students are able to identify and describe the location, boundaries and content of the main topographic spaces.
5. That the students are able to describe the distribution of the cutaneous innervation of the human body.
6. That the students are able to identify the different structures of the locomotor system both with anatomy of the surface (bioscopic) and with radiological image (rx, CT, NRM,

DESCRIPTION OF CONTENTS

1. GENERALITIES

- 1.Introduction to the study of the locomotor system: Basic terminology. Concept of osteoarticular system and fixation means. Classification and types of joints.
- 2.Introduction to the study of the locomotor system: Types of Diarthrosis.
- 3.Introduction to the study of the locomotor system: Concept of peripheral motor innervation. Plexus concept. Neuromuscular system concept.

2. BACK

- 4.Osteology of the spine: regions and physiological and pathological curvatures.
- 5.Osteo-arthrology of the spine: differential characteristics of the vertebrae according to the regions of the spine. Study of the sacrum. Study of the intervertebral disc. Biomechanics of the disc.
- 6.Osteo-arthrology of the spine: Ligaments of intervertebral fixation and occipito-atlo-axoidea.
- 7.Musculature of the back (I): Extruded or extrinsic muscles. Innervation and functional dynamics.
- 8.Musculature of the back (II): Intrinsic or own musculature of the back. Multimérica and monometamérica musculature. Innervation and functional dynamics.
- 9.Musculature of the back (III): Intrinsic or own musculature of the back. Musculature of the neck.
- 10.Irrigation and innervation of the back.
- 11.Topographic spaces of the back.



3. TRUNK

- 12. Pelvic wall: Osteo.arthrology of the pelvis. Functional dynamics
- 13. Thoracic wall: Osteo.arthrology of the chest wall. Functional dynamics
- 14. Thoracic wall: Musculature of the chest wall. Intercostal musculature. Innervation and irrigation and functional dynamics.
- 15. Diaphragm. Innervation and irrigation. Functional dynamics
- 16. Abdominal wall (I): prevertebral musculature, rectus abdominis and abdominal girdle. Innervation and functional dynamics.
- 17. Abdominal wall (II): Inguinal canal.
- 18. Pelvic wall: Musculature of the pelvic floor. Innervation and irrigation. Functional importance.
- 19. Pelvic wall: perineal sphincter and urogenital muscles. Irrigation and innervation.

4. LOWER LIMB

- 20. Osteo-arthrology of the foot, plantar vault and ankle. Functional dynamics
- 21. Osteo-arthrology of the knee, leg, thigh and hip. Functional dynamics
- 22. Study of the lumbosacral plexus. Innervation territories and cutaneous nerves.
- 23. SNM Plantares. Musculature of the sole.
- 24. Tibial and sciatic SNM. Musculature of the posterior panorama of the leg and thigh.
- 25. SNMs of the nn. buttocks and the direct branches of the sacral plexus. Pelvitrochanteric musculature.
- 26. SNM Peroneum common. Musculature of the antero-lateral aspect of the leg and back of the foot.
- 27. SNM Femoral. Musculature of the anterior aspect of the thigh.
- 28. SNM Shutter.
- 29. Arterial irrigation
- 30. Venous Irrigation of the Lower Limb.
- 31. Cutaneous innervation, metamerism and dermoneural territories of the lower limb.
- 32. Topographic spaces of the lower limb.

5. UPPER LIMB

- 33. Osteo-arthrology of the hand and wrist. Functional dynamics
- 34. Osteo-arthrology of the elbow and shoulder. Functional dynamics
- 35. Study of the brachial plexus. Innervation territories and cutaneous nerves.
- 36. SNM Cubital. Musculature of the palm of the hand.
- 37. Medium SNM. Musculature of the anterior panorama of the forearm.
- 38. Musculocutaneous SNM. Musculature of the anterior panorama of the arm and anterior fixation of the shoulder.
- 39. Axial SNM and external rotators. Musculature of posterior fixation of the shoulder and musculature of the axillary nerve.
- 40. SNM Radial. Musculature of the posterior aspect of the arm and forearm.
- 41. Arterial irrigation of the upper limb.
- 42. Venous irrigation of the upper limb.
- 43. Metamerism and dermoneural territories of the superior member.
- 44. Topographic spaces of the upper limb.



6. NECK AND HEAD

- 45.Study of the Neurocranium: external cranial vault and base. Cranial orifices and contents.
- 46.Study of the Neurocranium: internal cranial base. Cranial orifices and contents.
- 47.Study of the Viscerocranial: orbital cavity.
- 48.Study of the Viscerocranium: nostrils.
- 49.Study of the Viscerocranium: Jaw and temporo.mandibular joint. Functional dynamics
- 50.Study of the Viscerocráneo: Temporal fossa. Infratemporal pit. Pterygopalatine fossa.
- 51.Study of the Viscerocranial: Oral cavity.
- 52.Musculature of the tongue.
- 53.Suprahyoid musculature.
- 54.Mandibular SNM. Musculature of chewing.
- 55.SNM Facial. Facial muscles
- 56.Ocular extrinsic musculature.
- 57.Cervical plexus. Hypoglossal handle and spinal handle.
- 58.Neck (I): Prevertebral and escalénica muscles.
- 59.Neck (II): Infrahyoid and sternocleidomastoid muscles.
- 60.Arterial irrigation of the neck and head.
- 61.Venous and lymphatic irrigation of the neck and head.
- 62.Sensitive innervation of the neck: Cutaneous branches of the cervical plexus.
- 62.Sensitive innervation of the face: trigeminal.
- 63.Sensitive innervation of the neck: Cutaneous branches of the cervical plexus.
- 64.Cervical aponeurosis and cervical topographic spaces

7. BIOSCOPUY ANATOMY AND STUDY OF RADIOLOGICAL MEDICAL IMAGING

- 65.Bioscopic anatomy and clinical anatomy of the back and trunk.
- 66.Study of the back and trunk using radiological medical imaging.
- 67.Bioscopic anatomy and clinical anatomy of the lower limb.
- 68.Study of the lower limb by medical radiological imaging.
- 69.Bioscopic anatomy and clinical anatomy of the upper limb.
- 70.Study of the upper limb by radiological medical imaging.

8. PRACTICAL PROGRAM. 20 HOURS

BACK AND TRUNK Four hours:

- Practice 1 (1,5h) - Rachis: Study together. Vertebra type. Cervical regions Dorsal Lumbar, Sacra and Coccígea.
- Practice 2 (1,5h) - Back: Musculature.
- Practice 3 (1h) - Osteoarthritis and trunk musculature.

LOWER LIMB- Six hours:

- Practice 4 (1,5h) - Osteoarthritis of the lower limb
- Practice 5 (1,5h) - Posterior panorama of the lower limb: sole of the foot and posterior aspect of the leg.



- Practice 6 (1,5h) - Posterior panorama of the lower limb: posterior aspect of the thigh and gluteal region.
- Practice 7 (1,5h) - Anterior view of the lower limb: anterior aspect of the thigh and leg.

UPPER LIMB: Six hours:

- Practice 8 (1,5h) - Osteoarthritis of the upper limb.
- Practice 9 (1,5h) - Anterior view of the upper limb: front face of the hand and forearm.
- Practice 10 (1,5h) - Anterior view of the upper limb: front face of the arm and the armpit. Study of the brachial plexus.
- Practice 11 (1,5h) - Posterior panorama of the upper limb: posterior aspect of the shoulder, arm and forearm.

HEAD AND NECK Four hours:

- Practice 12 (1,5h)- Osteoarthritis of the skull.
- Practice 13 (1,5h) - Musculature of the head.
- Practice 14 (1h) - Musculature of the neck.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	70,00	100
Laboratory practices	20,00	100
Study and independent work	27,50	0
Preparation of evaluation activities	40,00	0
Preparing lectures	40,00	0
Preparation of practical classes and problem	27,50	0
TOTAL	225,00	

TEACHING METHODOLOGY

Interactive teacher-student class.

Practical classes on corpse, anatomy and image of anatomía vivo models. Attendance to practical classes will be mandatory. Unjustified non-attendance to more than 20% of the practices will imply the impossibility of attending the examination.

Interactive seminars of imaging, bioscopic anatomy, clinical anatomy or any other topic that the lecturer considers interesting for student development.



EVALUATION

It will consist of a theory test, 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 60% of the final evaluation. It consists of:
 - *An objective test* of 80 multiple choice questions with 4 possible answers. The correct questions will have a value of 1 point and the wrongly answered questions will subtract 0.20 points (for every 5 wrongly answered questions, 1 correct will be subtracted). The content of the test will be the same for all groups. In the event that two partials of the annual subject are made, each one of them with 40 multiple choice questions, a minimum mark of 4.5 will be required, which will be considered compensable with the mark of the other theoretical partial. It is necessary to obtain a grade of 5 out of 10 to pass this theory test. Its value is 50% of the final grade.
 - *An evaluation of 10 anatomical structures* from radiological images or bioscopic anatomy. It is necessary to obtain a grade of 5 out of 10 to pass this theory test. Its value will be 9.5% of the final grade.
 - *A continuous assessment activity* consisting of 7 partial controls distributed by blocks of the subject. This activity will have a value of 0.5% of the final grade.
- **Practical part:** It has a value of 40% of the final evaluation. It consists of:
 - *A practical test*, with a value of 35% of the final evaluation. It consists of a series of questions about all the materials and practical concepts that we have studied during the course. The practical exam will be held in the dissection room of the Faculty of Medicine and will be considered approved with a 5 out of 10.
 - *Continuous assessment activities:* Preparation, elaboration, presentation and delivery of a group expository work (as monitor-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 supposes the impossibility of appearing for the practical exam of the subject.

REFERENCES

Basic

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Additional

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- KAPANDJI AI (2012) Fisiología articular. 6ª Ed. Editorial Médica Panamericana.
- LOUKAS, BENNINGER, TUBBS. (2019). Gray. Guía fotográfica de disección del cuerpo humano 2ª ed. Ed. Elsevier.
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- 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>).