1. OVERVIEW

Subject Area	Anatomy
Degree	Bachelor's Degree in Medicine
School/Faculty	Biomedical and Health Sciences
Ac. Year	First Year
ECTS	12 ECTS
Type	Core
Language(s)	Spanish
Delivery Mode	On campus
Semester	S1-S2

2. INTRODUCTION

Human Anatomy is a study of the structure of the human musculoskeletal system. It is an essential part of the core studies for any medical student.

We focus on the basics of human anatomy, the use of international anatomical terminology particularly regarding functional anatomy, and how diagnostic imaging techniques are used in terms of general anatomy (conventional radiology, computerised tomography, magnetic resonance and ultrasound).

We aim to provide students with thorough knowledge of the structure and functions of bones, joints and muscles so they can identify them in the context of clinical practice - using common imaging and clinical examination techniques.

First of all, we will cover basic subjects such as: biochemistry, genetics, biology, histology, physiology and anatomy. These are essential areas for future specialisations in the Degree course and students will learn how to integrate knowledge of each area. This ability to integrate knowledge provides a more interdisciplinary approach to understanding the basic subject areas, rather than viewing each subject as separate. All this provides students with a more all-encompassing view of the professional world. This has a very positive effect on the syllabus planning in groups of lecturers from different knowledge areas (horizontal integration) and even teams made up of standard and clinical-practising lecturers (vertical integration).

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by the acronym in Spanish):

- CB1: Students have demonstrated possession and understanding of knowledge in a study area that builds on general secondary education, and is typically at a level that, while supported by advanced textbooks, also includes aspects that involve knowledge from the forefront of their field of study.
- CB2: Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.

General skills (CG, as per the Spanish acronym):

- CG7: Understand and recognise the normal structure and function of the human body. This includes studies of molecules, cells, tissue, organs and systems in the different stages of life.

- CG11: Understand and recognise the effects of growth, development and ageing on the individual and the social environment.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT3: Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals, evaluate and integrate contributions from the rest of the group members and create a good working environment.
- CT8: Planning and organization: ability to set objectives and choose the right means to fulfil them through the efficient use of time and resources.
- CT9: Ability to put knowledge into practice, using the skills acquired in the classroom to mock situations based on real life experiences that occur in the relevant profession.
- CT10: Independent learning: the ability to govern your own development by choosing the most effective lines of action, strategies, tools and opportunities to independently learn and apply knowledge to practice.

Specific skills (CE, by the acronym in Spanish):

- CE 1.1.1: Recognising the structure and function of cells. Biomolecules. Metabolism. Metabolic regulation and integration.
- CE 1.1.2: Understanding the fundamentals of human nutrition. Cell communication. Excitable membranes. The Cell Cycle. Cellular differentiation and proliferation. Gene expression, information and regulation. Heredity. Embryo development and organogenesis.
- CE 1.2.1: Understanding the morphology, structure and function of the different systems and apparatus: cardiovascular, digestive, locomotor, reproductive, urinary, respiratory, endocrine, immune, integumentary, circulatory, and central and peripheral nervous systems. Growth, maturity and ageing of the different systems and apparatus. Homoeostasis. Adaptation to environment.
- CE 1.2.2: Using basic laboratory techniques and materials. Interpreting a normal analysis. Using macroscopic, microscopic and imaging techniques to recognise the morphology and structure of tissue, organs and systems. Performing functional tests and determining vital signs and how to interpret them. The basic physical examination.

Learning outcomes (RA, by the acronym in Spanish):

- Gain in-depth knowledge of the methods for studying anatomy.
- Understand and use the International Anatomical Terminology used to refer to different anatomical structures.
- Identify and understand the structure of the human musculoskeletal system: bones, joints, muscles, nerves and vascular health.
- Associate the structural characteristics of the musculoskeletal system with their functions.
- Associate the surface anatomy with its structural correlate.
- Understand how the different anatomical structures relate to each other.
- Understand the normal external structure of a living human and apply this structural and topographical knowledge to clinical exploration.
- Be aware of the macroscopic and imaging techniques to study the morphology and structure of organs and systems.
- Apply theoretical and practical knowledge of anatomy as a base to understand the different medical disciplines.
- Have the ability to understand and synthesise simple texts and publications on anatomy.

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The following table shows how the skills developed in the course match up with the intended learning outcomes:

Skills	Learning outcomes
CB1, CB2, CG7, CG11, CT8, CT10, CE 1.1.2, CE 1.2.1	Gain in-depth knowledge of the methods for studying anatomy.
CB1, CG7, CT0, CE 1.2.1	Understand and use the International Anatomical Terminology used to refer to different anatomical structures.
CB1, CG7, CT3, CT9, CT10, CE 1.2.1	Identify and understand the structure of the human musculoskeletal system: bones, joints, muscles, nerves and vascular health.
CB1, CB2, CG7, CG11, CT3, CT9, CT10, CE 1.2.1	Associate the structural characteristics of the musculoskeletal system with their functions.
CB1, CG7, CG11, CT3, CT9, CT10, CE 1.2.1, CE 1.2.2	Associate the surface anatomy with its structural correlate.
CB1, CG7, CG11, CT3, CT9, CT10, CE 1.2.1, CE 1.2.2	Understand how the different anatomical structures relate to each other.
CB1, CB2, CG7, CG11, CT3, CT8, CT9, CT10, CE 1.1.1, CE 1.2.1	Understand the normal external structure of a living human and apply this structural and topographical knowledge to clinical exploration.
CB1, CB2, CG7, CG11, CT3, CT8, CT9, CT10, CE 1.1.1, CE 1.2.1, CE 1.2.2	Be aware of the macroscopic and imaging techniques to study the morphology and structure of organs and systems.
CB1, CB2, CG7, CG11, CT3, CT8, CT9, CT10, CE 1.1.1, CE 1.2.1, CE 1.2.2	Apply theoretical and practical knowledge of anatomy as a base to understand the different medical disciplines.
CB1, CB2, CG7, CG11, CT9, CE 1.1.2, CE 1.2.1	Have the ability to understand and synthesise simple texts and publications on anatomy.

4. CONTENTS

The subject matter is divided into five units: Introduction, trunk, upper limbs, lower limbs and head. Each of these areas will be complemented by practical work in the laboratory, radiographic anatomy and dissection.

INTRODUCTION

1. Introduction to human anatomy.
2. General characteristics of vertebrates. Introduction to the study of embryology.
3. General embryology.
4. Induction. Morphogenetic fields. Projection areas.
5. Gastrulation. Germ layers and their derivatives.
6. Concept of growth and differentiation. Embryonic and foetal period.
7. General Aspects. Chronology of embryonic development.
8. Musculoskeletal system I: Osteology.

9. Musculoskeletal system II: Arthrology.
10. Musculoskeletal system III: Myology.
11. General view of the cardiovascular and lymphatic systems.
12. General view of the nervous system. Cranial nerves. Concept of plexus. Concept of peripheral nerves.

TRUNK

13. Study of the trunk. Development of the spine, ribs and sternum.
14. Spine.
15. Ribs, costal cartilages and sternum.
16. Bones of the skull. Occipital bone.
17. Joints of the vertebrae.
18. Costovertebral, costochondral, chondrochondral and chondrosternal joints.
19. Trunk muscles.
20. Thoracic wall muscles.
21. Abdominal wall muscles.
22. Diaphragm.
23. General view of the thorax. Thoracic kinematics. Innervation of the trunk.

HEAD

24. Views of the skull.
25. Neurocranium. Facial skeleton.
26. Cranial bones. Skull vessels and nerves.
27. Skull joints and sutures.
28. Craniofacial cavities and regions.
29. Head muscles.
30. Muscles of mastication. Innervation.
31. Fascia of the head.
32. Cervical plexus. Innervation of the head and neck.

UPPER LIMB

33. Development of the appendicular skeleton.
34. Anatomy of the shoulder girdle.
35. Sternocostoclavicular, acromioclavicular and glenohumeral joints.
36. Anatomy of the forearm.
37. Elbow complex - elbow joint.
38. Anatomy of the hand.
39. Radiocarpal, intercarpal, carpometacarpal, intermetacarpal, metacarpal phalangeal and interphalangeal joints.
40. Muscles of the upper limb.
41. Shoulder muscles. Innervation.
42. Anterior muscles of the arm.
43. Posterior muscles of the arm.
44. Muscles of the forearm.
45. Anterior, lateral and dorsal muscles of the forearm.
46. Medial, central and lateral muscles of the hand.
47. Vascularisation of the upper limb.
48. Cervical and brachial plexus. Innervation of the upper limb.

LOWER LIMB

49. Structure of the lower limb I. Pelvic girdle. Coxal bones. Bony pelvis. Sacroiliac joint. Pubic symphysis.
50. Study of the pelvis and its ligaments.
51. Femur. Coxofemoral joint.
52. Kneecap. Tibia. Fibula.

53. Knee joint.
54. Bones of the foot.
55. Tibiofibular joint. Tibiotalar joint.
56. Subtalar joint complex.
57. Muscles of the pelvic floor. Fascias.
58. Muscles of the lower limb.
59. Muscles of the gluteal region.
60. Fascial compartments of the thigh. Muscles of the thigh. Innervation. Vascularisation.
61. Muscles of the anterior thigh area.
62. Muscles of the medial thigh area.
63. Muscles of the dorsal thigh area.
64. Fascial compartments of the leg. Innervation. Vascularisation.
65. Anterior muscles of the leg.
66. Deep muscles of the posterior leg.
67. Fascial compartments of the foot. Innervation. Vascularisation.
68. Dorsal muscles of the foot. Plantar muscles of the foot.
69. Vascularisation of the lower limb.
70. Lumbar, sacral and coccygeal plexus. Innervation of the lower limb.

WORK PLACEMENT

Laboratory.-
International Anatomical **Terminology**. Anatomical terms.
Osteology of the trunk. Study of the vertebrae. Cervical, thoracic, lumbar, sacral and coxal vertebrae. Vertebral column as a whole. Ribs and sternum. Bony thorax as a whole.
Arthrology of the trunk. Joints models of the trunk.
Myology of the trunk. Muscle models of the trunk.
Osteology of the upper limb. Bones of the shoulder girdle: Humerus. Radius and ulna. Carpal bones and bones of the hand.
Arthrology of the upper limb. Joints models of the upper limb.
Myology of the upper limb. Muscle models of the upper limb
Vascularisation of the upper limb. Vascularisation models and models of the peripheral nerves of the upper limb.
Osteology of the lower limb. Coxal bones. Bony pelvis. Femur and kneecap. Tibia and fibula. Bony foot.
Arthrology of the lower limb. Joints models of the lower limb.
Myology of the lower limb. Muscle models of the lower limb.
Vascularisation of the lower limb. Vascularisation models and models of the peripheral nerves of the lower limb.
Bones of the skull. Views of the skull. Neurocranial bones. Facial bones. Sutures. Temporomandibular joint.
Dissection.-
Dissection. Introduction to dissection by region. Dissection: regions of the dorsum.
Dissection: regions of the anterolateral wall of the thorax. Dissection: regions of the head and neck.
Dissection: regions of the abdominal wall. Dissection: regions of the upper limb. Dissection: regions of the lower limb.

Radiologic Anatomy.- General overview
Imaging techniques. Standards for radiologic interpretation.

Radiology of the spine and trunk
X-ray, CT and NMR of:
- Spine, ribs and sternum.

- Trunk muscles.
- Neck. Spaces and muscles.

Radiology of the head and neck

X-ray and CT of the skull and face.

Radiology of the upper limb

X-ray, CT and MR of:
- Shoulder girdle, arm, forearm, carpus and hand.
- Joints of the upper limbs.
- Muscles of the upper limbs.

Conventional arteriography/venography, MR angiography of upper limbs.

Radiology of the lower limb

X-ray, CT and MR of:
- Pelvis (bones, ligaments).
- Bones and ligaments of the lower limbs.
- Muscles of the pelvis and lower limbs.

Conventional arteriography/venography, MR angiography of lower limbs.

5. TEACHING/LEARNING METHODS

- Problem-based learning: Analysis of scientific texts and documents, symposiums and presentations, directed debates, specialised individual and collective tutorials, and reaching a consensus.

- Case studies and problem solving: approach and solving cases and problems either as an individual or in small groups.

- Specialised seminars: literature research and debate on scientific data in small groups.

- Lectures: Classroom presentations by the lecturer on basic theory, encouraging debate and student participation.

- Skills learning in the classroom and simulation environments: Practical work with IT programs, anatomical models, human dissection and standardised patients.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On campus:

Learning activities	Hours
Theory/practical learning activities	137
Directed learning activities	33
Self-study	88
Tutorials	36

Knowledge tests	6
TOTAL	**300 h**

7. ASSESSMENT

This subject consists of theory and practice.
Theory and practice will be assessed independently:
Students must pass both theory and practical work to pass the subject.
There will be two examination periods: Ordinary (June) and Extraordinary (July).
The assessment methods, plus their weighting in the final grade for the course, are as follows:

On campus:

Assessment system	Weighting
Theory	70%
Internships	25%
Attitude	5%

The theory assessment (70%) includes evaluation of theoretical content (50%) and skills and knowledge acquired during the practical subject activities (20%). Assessment of the practical part (25%) includes the evaluation of each of the laboratory assignments (quick evaluation tests for each practical work and overall test in each block) and the evaluation of each dissection block. The practical assignments include a student attitude assessment (5%).

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

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