1. BASIC DATA

Subject	ANATOMY I
Qualification	Degree in Physiotherapy
School/Faculty	School of Medicine, Health and Sport Sciences
Course	1º
ECTS	6 ECTS (150 hours)
Character	MANDATORY
Language/s	ENGLISH, FRENCH AND SPANISH
Modality	PRESENTIAL
Semester	1ST SEMESTER
Academic year	24-25
Coordinating teacher	Jaime Almazán / Charles Cotteret

2. PRESENTATION

In line with one of the general objectives of the University, which is to train professionals, knowledge of anatomy is essential to understand the language of health care. The anatomy of the locomotor apparatus and nervous system is the basis on which the scientific knowledge of the physiotherapist is based. The knowledge and skills developed in this subject are necessary to know and understand other subjects taught in the curricular development of the Degree and respond to the depth with which the contents referring to the acquisition and development of basic professional skills must be addressed. The approach to the anatomy of the musculoskeletal system from a multiple three-dimensional perspective, through the study of anatomical models and cadaveric models, new technologies such as virtual reality or three-dimensional anatomy platforms, as well as through imaging tests such as ultrasound or palpation, offer the possibility of facilitating anatomical knowledge from a practical and multifaceted point of view.

3. LEARNING OUTCOMES

Knowledge:

- CON3. Identify the different structures of organs and systems of the human body, as well as their function.
- CON6. Know and understand the morphology, physiology, pathology and behaviour of people, both healthy and ill, in the natural and social environment.

- CON7. Know and understand the sciences, models, techniques and instruments on which physiotherapy is based, articulated and developed.

Competences:

- COMP25. Use information and communication technologies for searching and analysing data, research, communication and learning.
- COMP27. Cooperate with others in the achievement of a shared academic or professional objective, participating actively and empathetically, listening actively and respecting all members.
- COMP30. Show ethical behaviour and social commitment in carrying out the activities of a profession, as well as sensitivity to inequality and diversity.

4. CONTENTS

The subject is organised into five learning units, which in turn are divided into themes:

THEMATIC BLOCK I: Trunk locomotor system (osteology, arthrology, myology, neuroanatomy, vascularisation):

General information on the locomotor system and the musculoskeletal system.

Topic 2. Spinal column.

General study of the spinal column. General, regional and individual characteristics of the vertebrae. Joints of the spinal column

Topic 3 . Skeleton of the thorax.

General. Ribs. Sternum. Joints of the thorax.

Item 4 . Pelvic girdle.

Sacroiliac joint. Symphysis pubis. Study of the pelvis and its ligaments.

Topic 5 . Neuroanatomy of the spine.

Spinal nerves. General information on the spinal cord, anatomical relationships, divisions of the spinal nerve, prevertebral ganglia and autonomic nervous system (general).

Item 6 . Overall study of the head.

Bones of the neurocranium. Bones of the spaclocranium. Cranial standards. Temporomandibular joint.

Topic 7 . Back Muscles

Superficial plane or extrinsic muscles of the spine, Deep plane: Intrinsic muscles of the spine and suboccipital region. Intermediate plane or respiratory muscles.

Item 8. Muscles of the neck.

Muscles of the anterior region of the neck (superficial plane, supra- and infra-hyoid muscles). Muscles of the posterior triangle of the neck.

Item 9 . Muscles of the head and mastication.

Generalities and classification. Masticatory muscles. Muscles of facial expression.

Topic 10 . Neuroanatomy of the head and neck region.

Cervical plexus: constitution. Collateral and terminal branches, anatomical relationships. Cranial nerves: constitution, description and distribution, general.

Item 11 . Thoracic Muscles

Extrinsic muscles of respiration, intercostal group and deep group. Diaphragm muscle.

Item 12 . Muscles of the Abdomen

Anterior group. Lateral group. Posterior group. Fascial anatomical relationships, compartments.

Item 13 . Pelvic Floor Muscles.

Deep group, pelvic diaphragm. Intermediate group, urogenital diaphragm. Superficial group, superficial muscles of the perineum. Fascial relations, ligaments of the pelvis and urogenital system.

THEMATIC BLOCK II: LOWER EXTREMITY (osteology, arthrology, myology, neuroanatomy, vascularisation):

Item 14 . Osteology of the lower extremity.

Coxal. Femur. Patella. Tibia and fibula. Bones of the foot. General morphology of the coxal, femur, tibia, fibula and foot bones, alignments, angles and spatial orientation.

Item 15 . Coxofemoral joint.

General. Articular surfaces. Means of attachment. Functional anatomy.

Topic 16. Knee joint.

General. Articular surfaces. Means of attachment. Functional anatomy.

Topic 17. Ankle joint complex.

General. Articular surfaces. Means of attachment. Functional anatomy.

Topic 18. Joints of the foot: Subtalar joint. Transverse tarsal or midtarsal joint (Chopart), Intertarsal joints of the second tarsal row, Tarsometatarsal joints (Lisfranc). Tarsometatarsal joints (Lisfranc) Intermetatarsal joints. Metatarsophalangeal joints. Interphalangeal joints, General. Articular surfaces. Means of attachment. Functional anatomy.

Muscles of the hip.

Generalities and classification. Anterior plane. Iliopsoas muscle. Deep gluteal region and pelvitrochanteric muscles.

Muscles of the thigh.

Generalities and classification of the thigh musculature. Anterior group. Medial group. Posterior group.

Item 21. Muscles of the leg.

General and classification. Anterior group. Lateral group. Posterior group.

Topic 22. Intrinsic musculature of the foot.

Generalities and classification. Dorsal muscles. Plantar muscles.

Topic 23. Functional anatomy of the foot.

Plantar vault. Support points of the foot. Functional anatomy of the motor muscles of the ankle joint and other joints of the foot.

Topic 24. Vascularisation of the lower limb.

Femoral and popliteal arteries. Arteries of the leg. Arteries of the foot and toes. Veins and lymphatics of the lower limb.

Innervation of the lower extremity.

Lumbar plexus, sacral plexus, distal divisions, neuroanatomical pathways, neuromechanical conflict points.

PRACTICE:

I. **Palpatory Anatomy of the Spine**

a. Bone reliefs and anatomical landmarks of the spine

b. Myology of the dorsum

II. Palpatory Anatomy of the Skull and Head

a. Bone reliefs and anatomical references of the skull and neck

b. Myology of the neck and the temporomandibular joint

c. Neural and superficial vascular anatomy of the head and posterior neck region (brachial plexus).

III. Palpatory Anatomy of the Abdomen and Pelvis Region

a. Bone reliefs of the pelvis

b. Myology of the abdomen and pelvis

c. Neural and vascular anatomy of the abdominal region and pelvis

IV. Palpatory Anatomy of the hip and anterior thigh region

a. Bone reliefs of the hip

b. Myology of the hip and anterior thigh compartment

c. Neural and vascular anatomy of the pelvis, hip, anterior thigh and posterior thigh.

V. Palpatory anatomy of the knee, posterior and lateral compartment of the thigh and lower leg

a. Bone reliefs of the knee

b. Myology of the posterior and medial aspect of the thigh

c. Myology of the anterolateral compartment of the leg

d. Neural and vascular anatomy of the knee

VI. Palpatory Anatomy of the Ankle/Foot

a. Bone reliefs of the ankle and foot

b. Myology of the posterior compartment of the lower leg

c. Myology of the sole of the foot

d. Neural and vascular anatomy of the leg and foot

5. TEACHING-LEARNING METHODOLOGIES

The following are the types of teaching-learning methodologies to be applied:

- Masterclass
- Case method
- Cooperative learning
- Workshop-based learning
- Simulation environments

6. TRAINING ACTIVITIES

The following identifies the types of training activities to be carried out and the student's dedication in hours to each of them:

Face-to-face mode:

Training activity	No. of hours	% of attendance	Total hours
Masterclasses	25	100	25
Practical application seminars	5	100	5
Analysis and resolution of cases	16	50	8
Reporting and writing	14	0	0
Activities in workshops and/or laboratories	12	100	12
Self-employment	56	0	0
Debates and colloquiums	8	100	8
Tutoring	12	100	12
Face-to-face assessment tests	2	100	2
TOTAL	**150**	**48**	**72**

Activity 1- Integration of theoretical knowledge.

- Master classes, debates and colloquiums.
- Teacher exposition in the classroom, with the aim of transmitting knowledge and activating cognitive processes in the student.
- Testing of the knowledge acquired on the syllabus developed in class.

Activity 2 (Scientific research) - Cooperative self-learning - elaboration, delivery and discussion.

- The students, in groups, will develop the knowledge to work on competences based on the introduction to the search of scientific documents in OPEN ACCESS through the use of scientific databases.
- Elaboration, delivery and discussion in the classroom (scientific article search activity, reading in English and selection of information, as well as cadaveric descriptive anatomical images).

Activity 3- Practical application seminars and workshop and/or laboratory activities: Laboratory practicals for station-based practical workshop skills and clinical seminars. Intermediate and final objective practical test.

- Physiotherapy laboratory practice in palpation of anatomical structures. Acquisition through practical sessions of manual dexterity, sensitivity to planes and knowledge of the topographical anatomy of the identification of bony, muscular, tendon, capsuloligamentous and vascular-nerve bundles.
- Structure and function laboratory practicals for the identification of anatomical structures through anatomical models, imaging models of complementary tests, live ultrasound, cadaveric models and virtual reality and 3D anatomy systems.
- Participation of students in an integrated session of clinical seminars with the rest of the basic subjects of the first year, clinical-pathological interaction and other integration subjects in the vertical. Clinical cases will be presented and solved jointly in class with the teacher with the aim of presenting different pathologies of the vertical and establishing the inter and multidisciplinary management of the clinical pathological management.

7. EVALUATION

The following is a list of the assessment systems and their weighting in the total grade for the course:

Face-to-face mode:

Evaluation system	Weight
Knowledge tests	50%
Implementation activities (Learning portfolio)	30%
Practical knowledge test	20%

On the Virtual Campus, when you access the course, you will be able to consult in detail the assessment activities to be carried out, as well as the delivery dates and the assessment procedures for each one of them.

7.1. Ordinary call for proposals

In order to pass the course in the ordinary exam, the **continuous assessment process** of the different training activities must be passed. The general evaluation scheme, divided by blocks, is as follows:

ASSESSABLE BLOCK	EVALUATION SYSTEMS	Weight (%)
1	Objective knowledge tests	50%
2	Application exercises: images and classroom activities	30%
3	Practical knowledge test	20%

It is essential that the **grade in assessable blocks 1, 2 and 3 is equal to or higher than 5** in each of them to pass the course. The student's final mark will be obtained from the weighting of the partial marks of each of the blocks, as indicated in the table below. In the case of not having passed the course, the grade in the minutes will always be that of the block with the lowest score. The grades published on the virtual campus will be **provisional** until the revision of the test has been carried out.

The assessment methodology for the three assessable blocks may be based on: multiple-choice questions, short questions, open questions with and without limitations on length, correspondence questions, questions with embedded answers, information synthesis tables, assignments, oral presentations, etc.

In the event of a **change in the** evaluation **date**, according to the application of the regulations for changing the date of evaluable tests, the format of the test may vary from that of the general examination.

7.2. Extraordinary call for applications

In order to pass the course in the Extraordinary Examination, all the requirements set out above for the Ordinary Examination must be met.

7.3. Description of Assessable Activities:

For the correct assessment of the competences and learning outcomes contained in each of the training activities developed in the subject, general assessment rubrics have been designed for each type of activity.

The grade for the assessable block will be obtained by weighting based on the contents and competences developed in each of the activities.

1. **Practical and integrated application knowledge test" activities: Evaluable online test (30%**)

Attendance at the practical activities and the completion of the required tasks is compulsory in order to pass this block. The evaluation of the activities will be carried out by demonstrating the knowledge and competences acquired during the activities. Participation and delivery of the exercises on time is a necessary requirement to be assessed in this section by means of individual questionnaires. The integrated activities will be adjusted according to the particularities of each one of them and ensuring in all cases the appropriate correlation between learning methodology and assessment. The student will be informed of

the specific rubric for each of the assessable activities, reports and writings of the subject on the virtual campus. At the end of the two differentiated blocks of content (Block I, Spine, Block II, Lower Extremity), students will be assessed by means of the IDENTIFICATION OF ANATOMICAL STRUCTURES THROUGH AN IMAGE RECOGNITION TEST, with the images worked on in practical laboratory sessions and self-study.

The grade for the block "Practical and integrated application knowledge tests" will correspond to a weighted average of the VEVOX questionnaire activities carried out at the end of the practical sessions, complementary and integrated activities developed within the academic model (6%), the image recognition tests at the end of each block of contents (Block I, 12%; Block II + Mimicry and Skull Muscles, 12%). A minimum mark of 5 (weighted average) must be obtained in all the activities in this block.

Detailed information on each of these activities will be provided through the virtual campus.

Online test that can be evaluated:

Access to these activities will be through the virtual campus of the course during the timetable indicated. If the work is submitted after the deadline, the mark obtained will not be taken into account and the grade will be 0/10.The questions included in the tests are multiple-choice questions with 4 possible options and only one correct answer. Each correct answer is worth 1 point and each incorrect answer subtracts 0.333 points from a correct question.

Each test will have a variable number of questions on the learning units detailed in the test description, and an ex-post adjustment of the mark will be made to establish a final mark out of 10.

At the end of the test, students can consult their results through the virtual campus, which allows them to obtain immediate feedback on their level of knowledge. The results obtained will be taken into account in the weighting of the final mark for the subject.

2. **Activity "Objective tests of theoretical knowledge" (50%**)

As already indicated in section 7 of the learning guide, objective tests may combine different types of questions (short questions, multiple choice, open questions, matching questions, gap-fill questions, gap-fill text, outline or oral presentations, etc.). Each of the questions will be assigned a value which will be detailed in the corresponding statement.

In general, and unless otherwise stated in the specific rules of each test, the test questions will be worth 1 mark each. There is only one correct answer out of the 4 possible answers, so each wrong question will subtract -1/3 (0.333). In the event that the number of possible answers is 5, the penalty for error applied to each question will be -1/4 (0.25).

In the event that the test contains several different types of questions, the examination regulations shall indicate the value of the section of questions of each type for the total calculation of the mark obtained in the examination.

There will be two mid-term exams for the theoretical assessment. The first mid-term will assess the contents of **BLOCK I (20%)** and the second mid-term will assess the contents of **BLOCK II (30%)**, reserving **15% of questions for Block I (continuous assessment).**

In order to pass the evaluation of this section, students must obtain a mark equal to or higher than 5/10 in the weighted average of the theoretical tests. If they do not obtain this mark, they will have to resort to the extraordinary exam in order to pass.

3. **Activity "Practical assessment test" (ANATOMICAL MODELS**)

- Practical **laboratory**

This rubric is a general one for the subject's evaluable block of practicals. It will be adjusted according to the particularities of each one of them and ensuring in all cases the appropriate correlation between learning methodology and assessment. Students will be informed of the specific rubric for each of the practicals on the virtual campus.

For the correct development of the laboratory practices, it is compulsory:

- Respect the specific regulations of the PPE (gloves, goggles, pyjamas, etc.).
- Submit the printed/online activity dossier individually.
- Work autonomously prior to the practical session (reading previous study, answering questions and issues related to the practical activity, etc.).

If the above criteria are not met, in order to ensure the safety and correct learning of the student, the student will not be able to access the classroom session.

- **Final practical knowledge assessment test (ANATOMIC MODELS AND PALPATORY ANATOMY) (20%**)

Structure/element recognition test on **ANATOMICAL MODELS**. The student will be exposed to several anatomical models at the end of the semester and will have to find and identify the bone, joint, muscle and nerve structures present in these models. The grade will be given out of 10 points depending on the number of structures to be correctly identified in a limited time. A practical test of recognition of anatomical structures on **ANATOMICAL MODELS (10%)** will be given at the end of the semester for the evaluation of knowledge of Blocks I and II.

Examination of recognition of anatomical structures/elements through **PALPATORY ANATOMY**. The student will be assessed with a partner who will act as a real "model" for the identification of anatomical structures at the end of the semester and must find and identify bone, joint, muscle, nerve and vascular structures. The grade will be given out of 10 points depending on the number of structures to be correctly identified in a limited time, with the identification of a myotendinous, vascular, nervous and osteoarticular structure being required. A practical test of recognition of anatomical structures will be carried out on **REAL MODELS FOR PALPATORY ANATOMY (10%)** for the evaluation of knowledge of Blocks I and II at the end of the semester.

The grade for the block will correspond to the grade obtained in said tests (ANATOMIC MODELS + PALPATORY ANATOMY) which must be equal to or greater than 5/10 through the weighted average of

the two tests. The average will be made from a minimum grade of 4 in each test separately. In the event of not obtaining said grade, the extraordinary call will be used, evaluating the test not passed, so that each test must pass 5.

8. TIMETABLE

In this section you will find the timetable with dates for the delivery of evaluable activities of the subject:

Assessable activities	Date
Thematic Block I	Week 1-10
EVALUATION	Week 11
Thematic Block II	Week 12-15
EVALUATION	Week 15-16

This timetable may be subject to modifications for logistical reasons. Any modification will be notified to the student in due time and form.

9. BIBLIOGRAPHY

The reference work for the follow-up of the subject is:

The recommended bibliography is listed below:

SOBOTTA (2012) Atlas of human anatomy. General anatomy and locomotor system. 23rd edition. Elsevier.

PLATZER (2008) Atlas of anatomy with clinical correlation. Panamericana.

PROMETHEUS (2015) Anatomy. Student's handbook. Elsevier.

DRAKE (2013) Gray, Basic Anatomy. Elsevier.

GRAY (2015) Anatomy for Students. 3rd Edition. Elsevier.

TORTORA (2013) Principles of Anatomy and Physiology. 13th Edition. Panamericana.

THIBODEAU (2012). Structure and function of the human body 14th edition. Elsevier.

NETTER (2014). Anatomy colouring book 2nd edition. Elsevier.

CAEL (2013). Functional Anatomy. Structure, function and palpation of the locomotor system for manual therapists. Panamericana.

MOORE (2013) Anatomy with clinical orientation. 7th Edition. Wolters Kluer Health/Lippincott Williams & Wilkins.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit (ODI) we offer support to our students throughout their university life to help them achieve their academic achievements. Other pillars of our action are the inclusion of students with specific educational support needs, universal accessibility on the different campuses of the university and equal opportunities.

This unit offers students:

Accompaniment and follow-up through counselling and personalised plans for students who need to improve their academic performance.
In terms of attention to diversity, non-significant curricular adjustments are made, i.e. in terms of methodology and assessment, for those students with specific educational support needs, thus pursuing equal opportunities for all students.
We offer students different extracurricular training resources to develop various skills that will enrich their personal and professional development.
Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree programme.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to participate in satisfaction surveys to detect strengths and areas for improvement about the teaching staff, the degree and the teaching-learning process.

Surveys will be available in the survey area of your virtual campus or through your email.

Your assessment is necessary to improve the quality of the degree.

Thank you very much for your participation.