

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

<b>Code</b>	34441
<b>Name</b>	Anatomy of apparatus and systems
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2024 - 2025

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. Period</b>	<b>year</b>
1204 - Degree in Medicine	Faculty of Medicine and Odontology	1	Second term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1204 - Degree in Medicine	1 - Human anatomy	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
BLASCO SERRA, ARANTXA	17 - Human Anatomy and Embryology
ZARAGOZA COLOM, ROSA	17 - Human Anatomy and Embryology

**SUMMARY**

The study of Anatomy of Apparatus and Systems is fundamental in the training of a doctor, for it explains the different apparatus and systems of the human being in state of health or normality, why they are like this and what their function is.

It is the fundamental basis to address the study of other subjects in the first course (Physiology, Histology...) as well as Medical subjects (Digestive, Cardio-circulatory, Endocrine...) and Surgical ones, where the anatomical knowledge is essential (Digestive, cardiac, vascular surgery...).

Regarding the medical practice the anatomy provides the essential bases for any medical act from the exploration to the diagnoses. Currently, this is seen maximized when studying the anatomy with the new diagnoses techniques due to the image of the human shape that the study allows increasingly more precise and more real.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

### 1204 - Degree in Medicine

- Understand and recognise the structure and normal function of the human body, at the following levels: molecular, tissue, organic, and of systems, in each phase of human life and in both sexes.
- Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.
- Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.
- Establish a good interpersonal communication which may allow professionals show empathy and talk to the patients efficiently, as well as to their relatives, the media and other professionals.
- Organizar y planificar adecuadamente la carga de trabajo y el tiempo en las actividades profesionales.
- Capacidad para trabajar en equipo y para relacionarse con otras personas del mismo o distinto ámbito profesional.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Knows the morphology, structure and function of skin, blood, organs and body systems: circulatory, digestive, locomotor, reproductive, excretory and respiratory systems; endocrine system, immune system, central and peripheral nervous systems.
- Knows the processes of growth, maturation and aging of the different organs and systems. Homeostasis. Adaptation to the environment.
- Recognises the morphology and structure of tissue, organs and systems through macroscopic and microscopic methods, and image techniques.



1. Knowledge of the topographical, structural and functional organization of the apparatus and systems and their clinical applicability.
2. To know the spatial distribution of the apparatus and systems with the proper anatomical references.
3. To know and to apply the terminology of the subject
4. Acquisition of skills in the recognition of anatomical structures and their disposition.
5. To know the basic principles of the work, instrumental utility and protocol security in the practice of human dissection.

## DESCRIPTION OF CONTENTS

### 1. HEAD AND NECK

- 1.- Oral cavity. Stomatognathic system.
- 2.- Salivary glands.
- 3.- Cephalic autonomic nervous system.
- 4.- Tongue. Neuromuscular system of the hypoglossal nerve. Hyoid bone.
- 5.- Larynx (I). Cartilages, joints and neuromuscular system of the laryngeal nerves.
- 6.- Larynx (II). Internal configuration. Laryngeal spaces. Vascularization and innervation. Thyroid gland. Parathyroid glands. External configuration. Situation. Relations. Vascularization. Innervation.
- 7.- Pharynx. External configuration. Situation. Relations. Pharyngeal muscles. Vascularization and innervation. Maxillo-pharyngeal spaces.

### 2. THORAX

- 8.- Organization of the mediastinum. Mammary gland. Thymus.
- 9.- Heart (I). External configuration: situation. Fixation systems. Relations. Pericardium. Pericardial sinuses.
- 10.- Heart (II). Internal configuration: myocardium and endocardium. Heart chambers. Valves.
- 11.- Heart (III). Heart vascularization. Coronary arteries and veins. Vascular areas. Heart innervation. Cardiac plexus. Heart conduction system.
- 12.- Posterior mediastinum. Thoracic aorta. Azygos and hemiazygos veins. Thoracic duct. Oesophagus. Splanchnic nerves. Situation. Relations.
- 13.- Lungs (I). Trachea and main bronchi. Situation. Relations. Vascularization. Innervation.
- 14.- Lungs (II). External configuration. Situation. Relations. Vascularization. Innervation. Pleurae.



### 3. ABDOMEN

- 15.- Retroperitoneal vascular axis. Abdominal aorta and its branches. Inferior vena cava and its branches. Cisterna chyli or cistern of Pecquet. Solar plexus.
- 16.- Coeliac viscera (I). Liver and biliary tree.
- 17.- Coeliac viscera (II). Stomach.
- 18.- Coeliac viscera (III). Duodenum. Pancreas. Spleen.
- 19.- Intraperitoneal viscera. Jejunum and ileum. Colon.
- 20.- Retroperitoneal viscera (I). Kidney.
- 21.- Retroperitoneal viscera (II). Ureter and adrenal gland.
- 22.- Abdominal regions. Peritoneum. Peritoneal spaces.

### 4. PELVIS

- 23.- Pelvic cavity. Pelvic floor muscles. Perineal muscles.
- 24.- Pelvic viscera common to both genders (I). Bladder and urethra.
- 25.- Pelvic viscera common to both genders (II). Rectum, anal canal.
- 26.- Female genital system (I). Ovary. Fallopian tubes and uterus.
- 27.- Female genital system (II). Vagina and external genitalia.
- 28.- Male genital system(I). Testicles. Seminal pathway. Vas deferens. Seminal vesicles.
- 29.- Male genital system (II). Prostate. External genitalia: penis.
- 30.- Pelvic angiology. Internal iliac arteries and veins. Branches. Pelvic innervation. Pelvic autonomic innervation. Hypogastric plexus. Pelvic topographic spaces.

### 5. LABORATORY PRACTICES. DISSECTION ROOM.

- PRACTICAL SESSION 1: Cephalic autonomic nervous system.
- PRACTICAL SESSION 2: Dissection of the viscera of the head and neck: salivary glands, thyroid gland, larynx. Study of the skeleton and laryngeal muscles in models.
- PRACTICAL SESSION 3: Dissection of the thoracic viscera (I). Observation of the viscera in situ. Pericardium and pericardial sinuses. External cardiac morphology: surfaces and borders of the heart.
- PRACTICAL SESSION 4: Dissection of the thoracic viscera (II). Heart: heart chambers. Vascularization of the heart: coronary circulation and cardiac veins.
- PRACTICAL SESSION 5: Dissection of the thoracic viscera (III). Lungs and posterior mediastinum.
- PRACTICAL SESSION 6: Dissection of the abdominal viscera (I). Liver and coeliac viscera.
- PRACTICAL SESSION 7: Dissection of the abdominal viscera (II). Small intestine and colon. Abdominal aorta, inferior vena cava and its main branches. Retroperitoneal viscera: kidney and ureter.
- PRACTICAL SESSION 8: Dissection of the pelvic viscera. Models and sagittal sections of anatomical preparations of the male and female pelvis. Internal iliac artery and its main branches.
- PRACTICAL SESSION 9: Dissection of external genitalia. Male external genitalia: penis, scrotum, spermatic cord. Female external genitalia: labia majora, labia minora, mons pubis. Study in corpse and models.

**6. COMPUTER PRACTICES.**

- 1.- Radiology of head and neck. Thoracic radiology (RX,TAC,RM)
- 2.- Abdominal-pelvic radiology (RX, TAC,RM)

**7. TUTORED GROUPS.**

A group of students, with the tutorage of the teacher, attend a dissection sessions and carry out an assignment about it, which they present to their classmates during the practical sessions in the Dissection Room.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	33,00	100
Laboratory practices	19,00	100
Computer classroom practice	4,00	100
Tutorials	4,00	100
Development of individual work	5,00	0
Study and independent work	30,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	30,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

- Theoretical Lessons (30 Thematic Units). These lessons will be based on the master class method using the anatomical image that allows the recognition and the easy following of the theoretical description.
- Laboratory Practical Lessons (9 Thematic Units). The practical lessons will be based on the anatomical dissection of fixed cadaveric pieces, essential complement of theoretical lesson.
- Computer Practical Lessons (2 Thematic Units). They will be based on the study of the medical image with those aspects that allow to relate the anatomical knowledge with the clinical practice. X-ray images, magnetic resonance (MR) and computerized axial tomography (CAT) will be used.
- Tutored Groups. The lessons with these reduced groups will allow the precise formation in the dissection technique and in the preparation of practical descriptions to be exposed in the practical groups.



- The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

## EVALUATION

The final grade is established by means of the joint assessment of the activities, written and oral tests carried out in relation to the theoretical and practical content.

**Theoretical evaluation:** This part accounts for 60% of the overall grade of the course (6 points of 10). It will be carried out by means of a written test on the contents of the theoretical syllabus and its aim will be to assess the acquisition of knowledge. The contents of the test will be the same for all groups of the same subject.

It will consist of:

Evaluation of 60 multiple choice questions (4 answers, of which only 1 will be correct). Qualification criteria: 0.1 point/ correct answer. 0.033 points will be subtracted for each question answered incorrectly, in order to eliminate the effect of chance.

**Practical evaluation:** This part accounts for 40% of the overall grade of the course (4 points of 10). It will be carried out by means of the continuous evaluation of the participation in the different practical activities and the completion of a test which assesses the acquisition of knowledge related to the general and specific competences of the subject.

It will consist of:

1. Dissection Room practical sessions exam: 10 questions about the anatomical structures seen in the dissection room during the practical classes on the cadaver and anatomical preparations or models. This part represents 50% of the practical grade.
2. Computer practical sessions exam: 10 questions on anatomical structures studied by means of the different medical imaging techniques seen in computer seminars and / or practical classes. This part represents 20% of the practical grade.
3. Assessment of the Tutored Group practical sessions: assessment of the acquisition of general skills and the exposition of assignments carried out in the tutored classes in front of the teacher. This part represents 15% of the practical grade.
4. Continuous evaluation: Continuous evaluation activities may include assignments, questionnaires or other types of activities at the discretion of the teacher in charge, and may be carried out in person or by means of online resources. Continuous assessment activities ARE NOT RECOVERABLE. This part represents 15% of the practical evaluation.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.



To pass the course in the First Call:

- At least 50% of the maximum mark of the theoretical evaluation must be obtained.
- At least 50% of the maximum mark of the practical evaluation must be obtained, taking into account that, in the exams of the Dissection room and Computer practical sessions, and in the evaluation of the practical sessions of the Tutored Group, at least 40% of the maximum grade for each of these parts must be achieved.

To pass the course in the Second Call, the criteria will be the same applied in the First Call. Since continuous evaluation activities ARE NOT RECOVERABLE, the grades obtained in the First Call will be kept for the second call. In the case of not having fulfilled the minimum attendance requirement to the Dissection Room practical sessions, in order to take the exam of said practical sessions in the second call, a compensatory activity must be carried out at the discretion of the teacher in charge.

In both calls, to pass the course, the overall grade must be at least 50% of the maximum mark (5 points out of 10). Failure to reach any of the minimum percentages required in each teaching modality automatically implies not performing the calculation of the final grade and, therefore, not passing the subject.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

## REFERENCES

### Basic

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  - MOORE K.L.; DAILEY A.F.; AGUR A.M.R. (2018) Anatomía con orientación clínica. 8ª ed. Ed. Wolters Kluwer, 1.133 páginas.
  - DAILEY A.F.; AGUR A.M.R. (2022) Moores Clinically Oriented Anatomy, 9th Edition. Wolters Kluwer, 1200 pages.
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  - SCHÜNKE M.; SCHULTE E.; SCHUMACHER U. (2022) Prometheus. Texto y Atlas de Anatomía. 3 tomos: Anatomía general y aparato locomotor + Órganos internos + Cabeza, cuello y neuroanatomía. 5ª ed. Ed Medica Panamericana, 1742 páginas.
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