

Human Anatomy: Internal Organs

Code: 101934
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	FB	2	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: Yes
Some groups entirely in Spanish: No

Teachers

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Prerequisites

Even though there's no incompatibilities established officially, it's recommended that students have overcome the subjects "Human Anatomy: Locomotor system" and "Histology" and "General Physiology" of the first year of the degree in Biomedical Sciences.

Objectives and Contextualisation

The subject of Human Anatomy: Internal Organs is a subject given on the 2nd grade of the degree in Biomedical Science.

The general objectives of this subject are:

- The study of the anatomic structure of the different body systems in a state of health (respiratory system, digestive tract, urogenital system, sense organs and cranial nerves).
- The study of the organization of the different body systems in a state of health (respiratory system, digestive tract, urogenital system, sense organs and cranial nerves).

The general learning objectives of the subject are:

- Learn and use correctly the anatomical nomenclature of the different body systems.
- Understand the anatomic organization of the human body.
- Know how to identify the different anatomic structures that integrates the different body systems.
- Train the students to know how to applicate the knowledge about anatomy in the deduction of pathologies.
- Acquire practical skills.

Competences

- Apply knowledge acquired to the planning and implementation of research, development and innovation projects in a biomedical research laboratory, a clinical department laboratory or the biomedical industry.
- Contribute to public discussions on cultural matters.
- Describe biomedical problems in terms of causes, mechanisms and treatments.
- Develop critical thinking and reasoning and communicate ideas effectively, both in the mother tongue and in other languages.
- Develop independent learning habits and motivation to continue training at postgraduate level.
- Develop scientific knowledge, critical reasoning and creativity.
- Display knowledge of the bases and elements applicable to the development and validation of diagnostic and therapeutic techniques.
- Display knowledge of the basic life processes on several levels of organisation: molecular, cellular, tissues, organs, individual and populations.
- Display knowledge of the concepts and language of biomedical sciences in order to follow biomedical literature correctly.
- Generate innovative and competitive proposals for research and professional activities.
- Identify and understand the advances and challenges of research.
- Plan and implement laboratory analysis experiments and procedures belonging to the biomedical field.
- Show respect for the ethical and legal aspects of research and professional activities.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Learning Outcomes

1. Apply acquired knowledge of anatomy to the production of well-structured review articles.
2. Contribute to public discussions on cultural matters.
3. Correctly use the international anatomical nomenclature.
4. Describe the anatomical organisation of the digestive system.
5. Describe the anatomical organisation of the respiratory apparatus.
6. Describe the anatomical organisation of the urogenital apparatus.
7. Describe the general anatomical organisation of the systems of the human body in a healthy state.
8. Develop critical thinking and reasoning and communicate ideas effectively, both in the mother tongue and in other languages.
9. Develop independent learning habits and motivation to continue training at postgraduate level.
10. Develop scientific knowledge, critical reasoning and creativity.
11. Distinguish between normal anatomical structures by using different imaging diagnostic techniques.
12. Explain the formation of the digestive system and of its principal disorders.
13. Explain the formation of the respiratory apparatus and of its principal disorders.
14. Explain the formation of the urogenital apparatus and of its principal disorders.
15. Generate innovative and competitive proposals for research and professional activities.
16. Identify and understand the advances and challenges of research.
17. Identify the anatomical structures that constitute the different systems in a healthy state in the main stages in an individual's life cycle.
18. Identify the principal techniques used in an anatomy laboratory.
19. Show respect for the ethical and legal aspects of research and professional activities.
20. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

Unit 1- Generalities: Thoracic cavity. Abdomino-pelvic cavity.

Unit 2- Respiratory system: Nose, nasal cavity and paranasal sinuses. Larynx. Trachea and bronchi. Lungs. Pleura and pleural cavities. Mediastinum. Innervation, vascular supply and lymphatic drainage of the respiratory system. Topographic, clinical and radiological anatomy of the respiratory system.

Unit 3- Urogenital apparatus:

Urinary system: kidneys, ureter, bladder, male and female urethra. Vascularization and innervation of the urinary apparatus.

Male reproductive system: Testes and epididymis, vas deferens and ejaculatory ducts. Spermatic cords. Accessory glandular structures: prostate, seminal vesicles, and bulbourethral glands. Scrotum, Penis. Innervation, vascular supply and lymphatic drainage of the male reproductive system.

Female reproductive system: Ovaries, uterine tubes, uterus, vagina and female external genital organs. Vagina. Vascularization and innervation of the female reproductive system.

Unit 4- Digestive system: Oral cavity: cheeks, lips, oral vestibule, mouth, palate, tongue, teeth and salivary glands. Thyroid, parathyroid and thymus glands. Pharynx. Oesophagus. Stomach. Peritoneum and peritoneal cavity. Small intestine: duodenum, jejunum and ileum. Large intestine: caecum, vermiform appendix, colon (ascending, transverse, descending and sigmoid), rectum and anal canal. Hepatobiliary system: liver, gallbladder and biliary tree. Pancreas, spleen and suprarenal gland. Vascularization and innervation of the digestive system. Topographic, clinical and radiological anatomy of the digestive tract.

Unit 5- Sense organs:

Hearing: external ear. Tympanic membrane. Middle ear or eardrum box (bones, muscles, walls). Inner ear or labyrinth (cochlea, semi-circular ducts).

Vision: Orbital cavity. Membranes: external or fibrous, medium or uvea, internal or nervous. Transparent media: aqueous humour, lens and vitreous humour. Eyelids. Lacrimal apparatus. Extraocular musculature.

Unit 6- Cranial nerves: Generality of the nervous System. Generality of the cranial nerves. N.I- olfactory. N.II- optic. N.III- oculomotor. N.IV- trochlear. N.V- trigeminal. N.VI- abducens, N.VII- facial, N.VIII- vestibulocochlear, N.IX- glossopharyngeal, N.X- vagus, N.XI- accessory, N.XII- hypoglossal.

Unit 7- Compared anatomy.

Methodology

In accordance with the objectives of the subject, the teaching methodology of the course is based on the following activities:

DIRECTED ACTIVITIES

- Lectures (36 hours): Systematic exhibition of the subject, giving relevance to the most important concepts. The student acquires basic knowledge of the subject attending master classes and complementing them with personal study of the topics explained.
- Seminars (4 hours): Sessions with a smaller number of students.
- Practical Labs (14 hours): The students attend in small groups to the dissection room to study the different thematic contents of the subject in their respective sections. Students identify different anatomical structures in dissections, prosections and imaging techniques (radiology, computerized tomography, magnetic resonance imaging, ultrasound, etc.). The objective is to consolidate the knowledge acquired in lectures, tutorials and the autonomous activities.

SUPERVISED ACTIVITIES

- Tutorials: The tutorials will be made in a personalized way in the teacher's office (hours to be arranged). The aim of the tutorials is to clarify concepts, establish the knowledge acquired and facilitate the study by the students. They can also be used to solve doubts that the students have about the preparation of the seminars.

AUTONOMOUS ACTIVITIES

- Comprehensive reading of texts and articles. Personal study, schemes and summaries preparation. Conceptual assimilation of the contents of the subject.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practical Labs	14	0.56	19, 2, 4, 5, 6, 7, 10, 9, 8, 11, 16, 17, 18, 20, 3
Seminars	4	0.16	19, 1, 2, 10, 9, 8, 11, 12, 13, 14, 15, 16, 18, 20, 3
Theoretical lectures	36	1.44	4, 5, 6, 7, 10, 9, 8, 11, 16, 17
Type: Supervised			
Tutorials	14	0.56	19, 1, 2, 10, 9, 8, 11, 15, 16, 17, 18, 20, 3
Type: Autonomous			
Autonomous activities	74	2.96	19, 1, 2, 4, 5, 6, 7, 10, 9, 8, 11, 15, 16, 17, 18, 20, 3

Assessment

The competences of the subject are evaluated through two partial exams, each with a weight of 50% to the final grade of the subject. The subject of each partial exam can be eliminatory if the students reach a minimum grade of 5.00, both the theory exam as well as the practical. All students will have two opportunities to pass the two parts of the subject: partial exam (during the semester) and retrieval exam (at the end of the semester).

PARTIAL EXAMS:

In order to take these exams, it is mandatory for the student attend all practical labs and seminars programmed for each partial. Only 1 absence in each partial will be allowed without justification.

The subject will program 2 partial exams with a weight of 50% each.

- First partial: This partial exam will focus on the contents of the first part of the semester (lecturers, practical labs and seminars).
- Second partial: It will focus on the contents of the second part of the semester (lecturers, practical labs and seminars).

Each partial will consist of: written evaluations: objective tests based in lectures, SEM and PLAB contents.

- Theoretical evaluation - Multiple-choice questions: test with 5 answers, only 1 true and with a penalty of 0.25 points for incorrect answer. This test represents 70% of the partial mark.
- Practical evaluation - Restricted questions raised on preparations or anatomical images. Wrong or blank answers are not penalized. This test represents 30% of the partial mark.

The mark of each partial = theoretical evaluation (70%) + practical evaluation (30%). Provided that it fulfils with the two premises to eliminate partial matter.

To eliminate matter of a partial, it is necessary to fulfil the two premises:

1. Theoretical evaluation: minimum mark 5.00
2. Practical evaluation: minimum mark 5.00

In the event that a student has a good grade in one of the exams but in the other has a grade below 5.00, the student will NOT have eliminated partial matter (regardless of whether the weighted sum of the two types of exams are greater than or equal to 5.00). In these cases, the student will have to submit to the examination of recovery of the partial not eliminated.

RECOVERY EXAM:

The students who have eliminated subject in the partial evaluations will not be obligated to make the final evaluation or recovery.

The subject will schedule a final assessment, in accordance with the Faculty's teaching calendar. All those students enrolled in the subject can be presented, although they have not attend any of teaching activity programmed during the semester.

Students with the following criteria have to attend the final evaluation:

- Students who have not eliminated material in 1 or 2 partials (students who do not meet the two premises to eliminate matter of the partial).
- Students who have not submitted to any of the partial exams.
- Students who have eliminated material but want to upgrade of one or both partial exams. In these cases:
 - An email must be sent to the coordinator of the subject at least 1 week before the recovery exam.
 - The student will have to submit to the theoretical + practical evaluation of the partial (s) that wishes to upgrade mark
 - Although the student presents to the recovery exam to upgrade, it is mandatory to have a minimum grade of 5.0 on the theoretical examination and a minimum grade of 5.0 on practical examination of the recovery exam. Otherwise, the student will have suspended the subject.
 - Once the student has a minimum grade of 5.0 in both exams (theoretical and practical) of the recovery exam, the final grade will be calculated, using the highest score obtained by the student (between the partial and recovery exam).

The recovery exam of each partial will consist of written evaluations: objective tests based in lectures, SEM and PLAB contents.

- Theoretical evaluation: the coordinator at the time of the call will specify whether this evaluation will be test type or essay. This evaluation represents 70% of the partial mark.
- Practical evaluation - Restricted questions raised on preparations or anatomical images. Wrong or blank answers are not penalized. This test represents 30% of the partial mark.

The student who has to recover the 2 partials, will recover the 1st part (theoretical and practical) + the 2nd part (theoretical and practical). It will have, then, a partial note of recovery of the 1st part and another of the 2nd part.

To pass the recovery exam, it is necessary to fulfil these two premises for each partial:

1. Theoretical evaluation: minimum mark 5.0
2. Practical evaluation: minimum mark of 5.0

In case the student has a good grade in one part of the exam but the other does not have a minimum grade of 5.0, the student will NOT have approved the partial recovery exam and therefore the student will have suspended the subject.

STUDENTS REGISTERED MORE THAN ONCE (REPEATERS):

Students enrolled two or more times in the subject and have not eliminated the entire subject in the partial exams, can ask the coordinator (through email) for an essay test (instead of a multiple-choice test), at least 1 week before the recovery exam. The practical exam in the dissection room will be the same as the rest of the students enrolled in the subject.

GRADE OF THE SUBJECT:

Grade of the subject = Head, Respiratory, urogenital and digestive system (50%) + sense organs and nervous system (50%).

The final grade of the subject will have a numerical expression, with a decimal on the scale of 0-10 and with the qualitative equivalence in accordance with the criteria of the UAB, of "fail" (0-4.9), "pass" (5.0-6.9), "good" (7.0-8.9) and "excellent" (9.0-10.0). Following indications of the UAB will be rounded off to the nearest whole number when it is one tenth of a value that entails a qualitative change of qualification. "High honours" will be among students who have achieved an excellent qualification. The number of "High honours awarded" may not exceed 5% as established by the academic regulations of the UAB.

To pass the subject it is necessary to obtain a minimum grade of 5.0 in each partial. In case that a part has a good mark but in the other part the mark is less than 5.0, the student's mark will be 4.8 points maximum, although the weighted sum of the two parts is greater than or equal to 5.0. The mark of each part is that obtained in the partial exams or in the recovery exam.

It is considered non-evaluable student, who has NOT performed a minimum of two training activities (2 written assessments).

ANNOUNCEMENTS, REVISIONS:

Exams (day, hour, classroom ...) and revision of the marks will be announced through the UAB moodle. The procedure for reviewing marks will be in accordance with the current regulations of the UAB and in any case be individually.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
A) Written theoretical evaluation n° 1	35%	2	0.08	1, 2, 4, 5, 6, 7, 10, 8, 11, 12, 13, 14, 15, 16, 17, 18, 20, 3
B) Written practical evaluation n°1	15%	2	0.08	19, 1, 2, 4, 5, 6, 7, 10, 9, 8, 11, 12, 13, 15, 16, 17, 18, 3
C) Written theoretical evaluation n° 2	35%	2	0.08	1, 2, 4, 5, 6, 7, 10, 8, 11, 12, 13, 14, 15, 16, 17, 18, 20, 3
D) Written practical evaluation n°2	15%	2	0.08	19, 2, 4, 5, 6, 7, 10, 9, 8, 11, 12, 13, 14, 15, 16, 17, 18, 3

Bibliography

Text books:

- Drake RL, Vogl AW, Mitchell AWM (2013). Gray- Anatomía para estudiantes. 3ª2ª edición. Ed. Elsevier
- García-Porrero JA; Hurlé JM (2015). Anatomía Humana. Ed. McGraw-Hill. Interamericana. E-book en la biblioteca de la UAB.

Atlas:

- Gilroy AM, MacPherson BR, Ross LM (2013) Prometheus. Atlas de Anatomía. 2ª edición. Ed. Panamericana
- Rohen JW, Yokochi C, Lütjen-Drecoll E (2011) Atlas de Anatomía Humana. 7ª edición. Ed. Elsevier