

Degree	Type	Year
2501230 Biomedical Sciences	FB	2

## Contact

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## Teachers

Gemma Manich Raventos

## Teaching groups languages

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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 2<sup>nd</sup> 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

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- 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.
- Describe biomedical problems in terms of causes, mechanisms and treatments.
- 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.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Read and critically analyse original and review papers on biomedical issues and assess and choose the appropriate methodological descriptions for biomedical laboratory research work.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

## Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Apply acquired knowledge of anatomy to the production of well-structured review articles.
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. Distinguish between normal anatomical structures by using different imaging diagnostic techniques.
9. Explain the formation of the digestive system and of its principal disorders.
10. Explain the formation of the respiratory apparatus and of its principal disorders.
11. Explain the formation of the urogenital apparatus and of its principal disorders.
12. Identify the anatomical structures that constitute the different systems in a healthy state in the main stages in an individual's life cycle.
13. Identify the principal techniques used in an anatomy laboratory.

14. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
15. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
16. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
17. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
18. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
19. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
20. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
21. 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- 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 4- 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. Mama.

Vascularization and innervation of the female reproductive system.

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.

## Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practical Labs	14	0.56	4, 5, 6, 7, 8, 12, 13, 21, 3
Seminars	4	0.16	2, 8, 9, 10, 11, 13, 21, 3
Theoretical lectures	36	1.44	4, 5, 6, 7, 8, 12
Type: Supervised			
Tutorials	14	0.56	2, 8, 12, 13, 21, 3
Type: Autonomous			
Autonomous activities	74	2.96	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 21, 3

NOTE: The proposed methodology may undergo some modification depending on the face-to-face restrictions in

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

### DIRECTED ACTIVITIES

- **Lectures** : 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** : Sessions with a smaller number of students.
- **Practical Labs**: 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.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Assessment

### Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
A) Written evaluation nº 1 (multiple choice test)	28.5%	1.5	0.06	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 21, 3
B) Written evaluation nº1 (no test)	19%	1.5	0.06	1, 20, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 19, 18, 17, 15, 16, 3
C) Written evaluation nº 2 (test)	28.5%	1.5	0.06	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 21, 3
D) Written evaluation nº2 (no test)	20%	1.5	0.06	1, 20, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 19, 18, 17, 15, 16, 3
E) Lab continuous assessment	5%	2	0.08	4, 5, 6, 7, 12, 18, 3

The competences of the subject are evaluated through two partial exams, each with a weight of 47.5% to the final

#### PARTIAL EXAMS:

The subject will program 2 partial exams with a weight of 47.5% 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 based on lectures, SEM and PLAB contents.

- Test evaluation - Multiple-choice questions: test with 5 answers, only 1 true and with a penalty of 0.25 points for incorrect answers. This test represents 60% of the partial mark.
- Written evaluation (no test) - This exam represents 40% of the partial mark.

The mark of each partial = test evaluation (60%) + no test evaluation (40%).

#### LAB CONTINUOUS ASSESSMENT

The lab continuous assessment represents 5% of the subject's grade. At the end of each PLAB1, 2, 4, 5 and 6, students will have to answer questions based on the identification of anatomical structures. The grade for this continuous assessment will be the sum of all the assessments performed in each PLAB throughout the semester. This grade will be given at the end of the course, after the recovery exam has been taken

#### SINGLE EVALUATION

The single assessment will consist of a written test that will be done on the day, time and place of the second partial. The test will contain two subtests or sections where the content equivalent to the first partial (Subtest 1) will be evaluated, and the content equivalent to the second partial (Subtest 2), respectively. The format and the scores of the two subtests will be equivalent to the format of the partial exams (Subtests 1 + 2). The score

will be calculated as follows: SCORE= 50% SUBTEST 1 + 50% SUBTEST 2. To pass the single assessment, you must have a minimum grade of 5.0 of each subtest. In case the test the student does not pass the test, the subject will be considered failed, and the content of the whole subject must be recovered. The single assessment can be recovered on the day of the recovery of the subject. Revisions will be made following the same procedure as in continuous evaluation.

#### RECOVERY EXAM:

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

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

- Students who have not eliminated material in 1 or 2 partials.
- Students who have not submitted to any of the partial exams.
- Students that failed the single evaluation.
- Students who have eliminated material but want to upgrade one or both partial exams. In these cases:  
1) An email must be sent to the coordinator of the subject at least 1 week before the recovery exam. 2) Although the student presents to the recovery exam to upgrade, it is mandatory to have a minimum grade of 5.0 on each partial exam, otherwise, the student will have failed the subject.

The recovery exam of each partial will consist of written evaluations objective tests based on lectures, SEM, and PLAB contents. The student who has to recover the 2 partials, will recover the 1st part + the 2nd part. 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 mandatory a minimum mark of 5.0. In case the student has a good grade in one partial exam but the other does not have a minimum grade of 5.0, the student will NOT have passed the partial recovery exam and therefore the student will have failed the subject.

#### GRADE OF THE SUBJECT:

Final grade mark of the subject = grade of the 1st part (47.5%) + grade of the 2nd part (47.5%) + 5% Lab continuous assessment.

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). The 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, after the recovery exam, a minimum grade of 5.0 in each partial, and minimum Final grade mark of the subject of 5.0. 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. If the student obtains a minimum mark of 5.0 in each midterm exam, but the final grade mark of the subject is lower than 5.0, the student will fail the subject.

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 all cases will be individually.

## Bibliography

Textbook (alphabetic order):

- Drake RL, Vogl W, Mitchell AW (2020). Gray- Anatomia para estudiantes. 4ª ed. Ed. Elsevier Science, Madrid. (2015 Edition in e-book at the UAB library)
- Garcia-Porrero JA, Hurlé JM (2020). Anatomia Humana. 2ª edición. Ed. Mc Graw Hill.
- Latarjet; Ruiz Liard; Pro. Colección Latarjet. 5a ed. Anatomía Humana Ed. Panamericana. E-book at the UAB library
- Moore KL, Dailey AF, Agur AMR (2018). Anatomía con orientación clínica. 8ª ed. Ed. Wolters-Kluwer-Lippincott-Williams. Barcelona. E-book at the UAB library

Atlas:

- Schünke, ES et al. PROMETHEUS Atlas de Anatomía (2021). 5ª ed. Ed. Panamericana: Buenos Aires. E-book at the UAB library
- Rohen JW, Yokochi C, Lütjen-Drecoll E (2022). Photographic atlas of Anatomy. 9th ed. Stuttgart : Wolters Kluwer.

## Software

For this subject we do not need any specific program

## Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	521	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	522	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	523	Catalan	first semester	morning-mixed
(SEM) Seminars	521	Catalan	first semester	morning-mixed
(SEM) Seminars	522	Catalan	first semester	morning-mixed
(TE) Theory	52	Catalan	first semester	afternoon