

Human Anatomy: Cardiovascular, Head and Neck

Code: 103594
ECTS Credits: 4

Degree	Type	Year	Semester
2502442 Medicine	OB	1	2

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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: Yes

Teachers

Jorge Casal
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Sergi Call Caja
Xavier Domingo Miró

Prerequisites

Although there are no official prerequisites, it is advisable that the student has achieved self-learning and group work skills and it is advisable that he has achieved the objectives of the subject Human anatomy: generalities and locomotor apparatus (first semester of first course). Because the student will do practices in the dissection lab, he will acquire the commitment to preserve the confidentiality and professional secrecy of the data to which they can access because of their learning activities and have taken the good practice test. He must also agree in maintaining an attitude of professional ethics throughout all his actions.

Objectives and Contextualisation

The general objective of the subject is the study of the general anatomical organization of the cardiovascular system, the head and neck, the principles of embryonic development of the cardiovascular system and of the head, and the systematic study of the anatomy of the cardiovascular system (heart, vessels of the major and minor circulation and the lymphatic system), the osteomusculoarticular organization of the head (including the organ of vision and hearing) and the musculoaponeurotic organization of the neck. This subject has its natural continuity with the second year anatomy subjects, and it is complemented by other basic and compulsory subjects such as Histology, Physiology and Pathophysiology and Clinical Semiology. The student who has passed this subject must be able to describe, with an international anatomical nomenclature, and to recognize the anatomical organization of the cardiovascular system, the head and neck, as well as the principles of their development.

Competences

- Be able to work in an international context.
- Communicate clearly, orally and in writing, with other professionals and the media.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate knowledge and understanding of descriptive and functional anatomy, both macro- and microscopic, of different body systems, and topographic anatomy, its correlation with basic complementary examinations and its developmental mechanisms.
- Demonstrate understanding of the basic sciences and the principles underpinning them.
- Demonstrate understanding of the causal agents and the risk factors that determine states of health and the progression of illnesses.
- Demonstrate understanding of the structure and function of the body systems of the normal human organism at different stages in life and in both sexes.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Organise and plan time and workload in professional activity.
- Use information and communication technologies in professional practice.

Learning Outcomes

1. Apply knowledge of anatomy to the production of structured review texts.
2. Be able to work in an international context.
3. Communicate clearly, orally and in writing, with other professionals and the media.
4. Describe anatomical structures through inspection, palpation and/or different diagnostic imaging techniques.
5. Describe anatomical structures, organisation and morphogenesis of the cardiovascular system, central nervous system and the sense organs.
6. Describe the factors that determine the form, general aspect and proportions of the human body in health at different stages in life and in both sexes.
7. Describe the fundamental scientific principles of human anatomy.
8. Describe the general anatomical organisation of the systems of the human body in health.
9. Explain the formation of the embryonic disc and its principal derivatives.
10. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
11. Identify the anatomical structures that constitute the different body systems in good health in the major stages of the life cycle and in both sexes.
12. Identify the anatomical structures that make up the cardiovascular system, the central nervous system, and the sense organs in health, by using inspection, palpation and/or macroscopic methods and different diagnostic imaging techniques.
13. Identify the main techniques used in a human anatomy laboratory.
14. Identify the morphogenetic mechanisms of the main alterations in the development of the cardiovascular system, the central nervous system and the sense organs.
15. Know and make correct use of the international anatomical nomenclature.
16. Organise and plan time and workload in professional activity.
17. Use information and communication technologies in professional practice.

Content

Theoretical classes program (21h/group)

UNIT 1: HEAD

General Organization of the bones: views or norms, cranial fossae, joints. Morphogenesis: desmocranium, chondrocranium. Development of the viscerocranium: first and second pharyngeal arches. Skull joints: syndesmosis, synchondrosis and synovial. Temporomandibular joint. Kinematics. Muscles of mastication: temporal, masseter, medial and lateral pterygoid muscles. Suprahyoid muscles: digastric, mylohyoid, geniohyoid and stylohyoid. Muscles of facial expression: general characteristics. Circumorbital and palpebral muscles. Nasal muscles. Buccolabial muscles.

UNIT 2: NECK

General organization: fasciae and cervical spaces. Triangles of the neck: limits and content. Infrahyoid muscles: sternohyoid, omohyoid, sternothyroid and thyrohyoid muscles. Lateral muscles: scaleni anterior, medium and posterior. Craniozonal muscles: sternocleidomastoid and trapezius muscles. Cervical plexus: constitution, terminal and collateral branches.

UNIT 3: EYE

Bony orbit. Anatomical constitution of the eye: Outer coat (sclera, cornea), Uvea (choroid, ciliary body, iris), Retina. Lens and humours. Lacrimal system. Extraocular muscles and fascial sheet.

UNIT 4: EAR

External ear: pinna, externa auditory canal. Middle ear: tympanic cavity, pharyngotympanic tube, mastoid cells. Inner ear: bony labyrinth (vestibule, semicircular canals, cochlea) and membranous labyrinth (utricle, saccule, semicircular ducts, endolymphatic duct and sac, cochlear duct).

UNIT 5: HEART

General organization: anatomical constitution, location, relationships. External morphology: base, apex, surfaces and borders. Internal morphology: fibrous skeleton, cavities. Myocardium. Conduction tissues. Vascular supply and lymphatics drainage. Innervation. Pericardium: fibrous and serous pericardium. Pericardial cavity and fluid.

UNIT 6: DEVELOPMENT OF THE HEART AND CIRCULATION

Morphogenesis of the heart: premorphogenetic and morphogenetic phases. Cardiac tube: looping, septation and histodifferentiation processes. Morphogenesis of the vascular system: development of the aortic arches, development of the vitelline, umbilical and cardinal veins. Development of the lymphatic system.

UNIT 7: VASCULAR SYSTEM

Minor circulation (pulmonary); pulmonary trunk, right and left pulmonary arteries, Pulmonary arterial segmentation. Pulmonary veins. Major circulation (systematic): ascending aorta, arch and descending aorta (thoracic and abdominal parts). Common iliac arteries. Supra-aortic trunks: brachiocephalic trunk, left common carotid artery and left subclavian artery. Subclavian arteries. Common carotid arteries: carotid bifurcation. Internal carotid arteries. External carotid arteries. Maxillary and superficial temporal arteries. Venous systems. Jugular veins (internal, external, anterior). Subclavian veins. Jugulosubclavian angles. Brachiocephalic veins. Superior vena cava. Iliac veins. Inferior vena cava. Intercaval venous systems: azygous and vertebral plexuses. Lymphatic system: cisterna chyli (Pecquet), thoracic duct and right lymphatic duct.

Seminar program (8h/group)

Seminar 1: Osteology of the skull (1). Bones of the neurocranium and bones of the viscerocranium (face). Adult and foetal skull. Sutures and fontanelles. Lateral view: bones and fossae. Main anthropometric points of the skull. Correlation of the osteology with diagnostic imaging techniques.

Seminar 2: Osteology of the skull (2). Frontal (anterior) view. Orbital cavity. Nasal cavity and paranasal sinuses. Correlation of the osteology with diagnostic imaging techniques.

Seminar 3: Osteology of the skull (3). Internal or cranial fossae of the skull: anterior, middle and posterior fossae and orifices. Correlation of the osteology with diagnostic imaging techniques.

Seminar 4: Development of the heart and circulation and its application to clinical cases.

Dissection practices (6h/group)

To access the dissection lab, it is mandatory to wear a gown, gloves and any other protective measure that is established, and to have the safety certificate. It is totally forbidden to make any type of image (photography, video, ..) in the dissection room.

Practice 1 (anatomy of the head and neck).

Contents: skull: views and cranial fossae. Sutures and fontanelles. Temporomandibular joint. Muscles of mastication. Muscles of facial expression. Muscles and fasciae of the neck. Cervical triangles: limits and contents. Cervical plexus. Correlation of the anatomical preparations with diagnostic imaging techniques.

Practice 2 (anatomy of the special senses).

Contents: orbital cavity, eyeball, ocular attachments (extraocular muscles, lacrimal system). Temporal bone and ear (inner, middle and external ear). Correlation of the anatomical preparations with diagnostic imaging techniques.

Practice 3 (anatomy of the cardiovascular system).

Contents: external morphology of the heart. Pericardium. Internal morphology of the heart: cardiac cavities and fibrous skeleton. Vascular supply (coronary arteries and cardiac veins and lymphatics). Nerves and cardiac plexuses. Heart relationships. Correlation of anatomical preparations of the heart with diagnostic imaging techniques. Vascular system: aorta. Pulmonary arteries and veins. Common iliac arteries. Carotid arteries: common, internal and external. Subclavian arteries and veins. Maxillary and superficial temporal arteries. Jugular veins and superior vena cava. Iliac veins and inferior vena cava. Intercaval anastomotic systems: azygous vein and vertebral plexuses. Lymphatic ducts: thoracic duct and right lymphatic duct. Correlation of anatomical preparations of the vascular system with diagnostic imaging techniques.

"Unless the restrictions imposed by the health authorities force a prioritization or reduction of these contents".

Methodology

METHODOLOGY

Directed activities

Classes to teach the theory program (TE) (21h)

Seminars (SEM) (8h) (didactic material in Virtual Campus of UAB)

Dissection lab practices (PLAB) (6h) (didactic material in Virtual Campus of UAB)

Supervised activities

Personalized and/or group tutoring, face-to-face or virtual

Tutorials on line

Autonomous activities

Reading of texts and articles, study and creation of diagrams, summaries and conceptual assimilation of the contents. Preparation of seminars and dissection activities.

"The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities".

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
LABORATORY PRACTICES (PLAB)	6	0.24	3, 15, 4, 10, 12, 11, 13, 16, 2, 17
SEMINARS (SEM)	8	0.32	3, 15, 7, 8, 4, 5, 9, 10, 12, 11, 16, 2, 17
THEORY (TE)	21	0.84	3, 15, 7, 8, 5, 9, 10, 12, 11, 16, 2, 17
Type: Supervised			
Queries with the tutors	11	0.44	3, 15, 7, 4, 5, 10, 12, 11, 13, 16, 2, 17
Type: Autonomous			
READING OF ARTICLES / REPORTS OF INTEREST / PERSONAL STUDY	48	1.92	1, 3, 15, 7, 8, 4, 5, 9, 10, 12, 11, 13, 16, 2, 17

Assessment

EVALUATION

The competences of the subject will be evaluated by means of two partial exams and a recovery exam.

First partial:

evaluation of the contents of the theoretical class program: objective test type of 30 questions with 4 answer options, only 1 valid, and they discount the incorrect answers at the rate of 1/3. The grade obtained from this part represents 27,5% of the final grade of the subject, if the requirements are met;

evaluation of the contents of the seminar program: objective test type of 10 questions with 4 answer options, only 1 valid, and they discount the incorrect answers at the rate of 1/3. To take this test it is essential to have justified attendance at the face-to-face sessions of each of the seminars. The grade obtained from this part represents 7,5% of the final grade of the subject, if the requirements are met;

To release the subject evaluated in the first partial (does not include evaluation of the practical part) it is necessary to have a grade equal to or greater than 5,0, applying the following weighting: theory test note x 0.7 + seminar test note x 0,3; provided that the following requirements are met (without exceptions): a minimum grade of 4,00 in the theory test and not having a grade of 0,00 in the seminars test. The qualification of this partial will be 'release' or 'not release'.

Second partial:

evaluation of the contents of the theoretical class program: objective test type of 30 questions with 4 answer options, only 1 valid, and they discount the incorrect answers at the rate of 1/3. The grade obtained from this part represents 27,5% of the final grade of the subject, if the requirements are met;

evaluation of the contents of the seminar program: objective test type of 10 questions with 4 answer options, only 1 valid, and they discount the incorrect answers at the rate of 1/3. To take this test it is essential to have justified attendance at the face-to-face sessions of each of the seminars. The grade obtained from this part represents 7,5% of the final grade of the subject, if the requirements are met;

evaluation of the contents of the dissection practice program: structured objective test -practical exam- of 12 questions related to structures indicated in different anatomical preparations. Each question is score with 1 or 0 point, the wrong or blank ones are not discounted, but to reach the 5,0 mark it is necessary to have 8 of the 12 points. The grade obtained in this part represents 30% of the final grade of the subject, if the requirements are met;

To release the subject evaluated in the second partial (include evaluation of the practical program) it is necessary to have a grade equal to or greater than 5,0, applying the following weighting: theory test note x 0.55 + seminar test note x 0,15 + practical note x 0,3, provided that the following requirements are met (without exceptions): a minimum grade of 4,00 in the theory test and not having a grade of 0,00 in the seminars test and/or in the practical exam. The qualification of this partial will be 'release' or 'not release'.

Calculation of the final grade for the subject if the two partials have been released: grades from the theory tests of the first and second partials (27,5 + 27,5 = 55%) + grades from the seminar tests of the first and of the second partials (7,5 + 7,5 = 15%) + mark of practical exam (30%).

Final exam (recovered).

For students who have to make up one or two partial exams, and for students who want to raise the grade of first and/or second partials (they have to renounce the grade obtained previously). The recovery exam will have the same structure (format, number of questions, ..) and the same criteria and percentages applied in each partial.

According to the UAB evaluation regulations: "*To participate in the recovery, students must have been previously evaluated in a set of activities, the weight of which is equals to a minimum of two thirds of the total qualification of the subject. Therefore, students will obtain the qualification of "Not evaluable" when the evaluation activities carried out have a weight lower than 67% in the final qualification*".

The students who have not been evaluated for seminars, due to lack of attendance, have the option to submit a written test of short answer questions in the recovery examination. Repeating students who have taken seminars in previous courses may request, within the established deadlines, the validation of this part, and they will be exempted from attending the sessions.

The final mark of the subject will have a numerical expression, with a decimal, on the 0-10 scale and with the qualitative equivalence in accordance with the criteria of the UAB, fail, pass, good and merit (with the option of obtaining honour distinction if the mark is equal to or greater than 9,3).

Partials and/or recovery revisions: location and dates will be announced through the UAB Campus Virtual. The revision process will always be done in accordance with current UAB regulations.

"The proposed evaluation may undergo some modification depending on the face.to-face restrictions imposed by health authorities".

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Objective avaluation tipus test and/or short answers of the seminar progam contents	15%	1	0.04	1, 3, 15, 6, 7, 8, 4, 5, 9, 10, 14, 11, 16, 2, 17
Objective evaluation of content of the practical program	30%	2	0.08	3, 15, 4, 12, 11, 13, 16, 2, 17
Objective evaluation type test of the contents of the theoretical program	55%	3	0.12	1, 3, 15, 6, 7, 8, 4, 5, 9, 10, 14, 11, 16, 2

Bibliography

Embriology

- Carlson, B.M. (2019) Embriología humana y Biología del desarrollo. 6ª edición. Ed. Eseevier.
- Cochard, L.R. (2005) Netter - Atlas de Embriología humana. 1ª edición. Ed. Masson SA.
- Moore, K.L., Persaud, T.V.N., Torchia, M.G. (2020) Embriología clínica. 11ª edición. Ed. Elsevier.
- Sadler, T.W. (2019) Langman Embriología Médica. 14ª edición. Ed. Wolters Kluwer.
- Webster, S., de Wreede, R. (2013) Embriología. Lo esencial de un vistazo. Ed. Médica Panamericana.

Anatomy

- Anastasi, G.; Gaudio, E.; Tacchetti, C. (2018) Anatomía humana - atlas - (editor de la edición en español: Alfonso Rodríguez Baeza). 3 volúmenes. 1ª edición. Ed. Edi-Ermes.
- Anastasi, G.; Gaudio, E.; Tacchetti, C. (2020) Anatomía humana - atlas - (editor de la edición en español: Alfonso Rodríguez Baeza). 1 volumen. 1ª edición. Ed. Edi-Ermes.
- Dauber, W. (2021) Feneis Nomenclatura anatómica ilustrada. 11ª edición. Ed. Elsevier.
- Drake, R.L., Vogl, W., Mitchell, A.W.M. (2018) Gray - Anatomía básica. 2ª edición. Ed. Elsevier.
- Drake, R.L., Vogl, W., Mitchell, A.W.M. (2020) Gray - Anatomía para estudiantes. 4ª edición. Ed. Elsevier.
- Drenckhahn, D., Waschke, J. (2010) Benninghoff y Drenckhahn - Compendio de Anatomía. 1ª edición. Ed. Médica Panamericana.
- Fleckenstein, P., Trantum-Jensen, J. (2016) Bases anatómicas del diagnóstico por imagen. 3ª edición. Ed. Elsevier Science.
- Gilroy, A.M., Mandri, A. (2020) Prometheus. Anatomía. Manual para el estudiante. 2ª edición. Ed. Médica Panamericana.
- Gilroy, A.M., MacPherson, B.R., Ross, L.M. (2013) Prometheus Atlas de Anatomía. 2ª edición. Ed. Médica Panamericana.
- Loukas, M., Benninger, B., Shane Tubbs, R. (2019) Guía fotográfica de disección del cuerpo humano. 2ª edición. Ed. Elsevier.
- Moore, K.L., Dalley, A.F., Agur, A.M. (2018) Anatomía con orientación clínica. 8ª edición. Ed. Wolters Kluwers.
- Netter, F.H. (2019) Atlas de Anatomía humana. 7ª edición. Ed. Elsevier.
- Nielsen, M., Miller, S. (2012) Atlas de Anatomía Humana. 1ª edición. Ed. Médica Panamericana.
- Paulsen, F. Waschke J. (2018) Sobotta Atlas de Anatomía Humana. 24ª edición. Ed. Elsevier.
- Rohen, J.W., Yokochi, C., Lütjen-Drecoll, E. (2015) Atlas de Anatomía humana. 8ª edición. Ed. Elsevier Science.
- Schünke, M., Schulte, E., Schumacher, U. (2015) Prometheus - Texto y atlas de Anatomía. 3ª edición. Ed. Médica Panamericana.
- Spratt, J.D.; Salkowski, L.R.; Loukas, M. (2021) Weir y Abrahams. Atlas de Anatomía Humana por técnicas de imagen. 6ª edición. Ed. Elsevier.
- Standring, S. (2021) Gray's. Anatomy. The Anatomical Basis of Clinical Practice. 42th edition. Ed. Elsevier.

Waschke J, Koch M, Kurten S, Schulze-Tanzil G, Spittau B. (2018) Sobotta. Texto de Anatomía. 1ª edición. Ed. Elsevier.

Weber, E.D.; Vilensky, J.; Carmichael, S.W., Lee, K.S. (2015) Netter Anatomía Radiológica Esencial. 2ª edición. Ed. Elsevier.

Campus Virtual de la UAB

Software

Is not necessary specific programari