

**Human Anatomy: Cardiovascular, Head and Neck**

Code: 103594  
ECTS Credits: 4

Degree	Type	Year	Semester
2502442 Medicine	OB	1	2

### Contact

Name: Josep Reig Vilallonga  
Email: Josep.Reig@uab.cat

### 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 Cazal  
Silvia Inmaculada Martínez Herrada Fernandez  
Jordi Gascón Bayarri  
Sergi Call Caja  
Santiago Rojas Codina  
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).

### Objectives and Contextualisation

The subject Human Anatomy: Cardiovascular, head and Neck is attended during the second semester of the first year of the Degree of Medicine. 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 the head, and the systematic study of the anatomy of the cardiovascular system (including the study of the heart, the 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 subjects of anatomy of the second year, and 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, and know how to apply them to clinical problems.

### 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

### PROGRAM OF THE SUBJECT

Theoretical classes (21 hours)

### ITEM 1: DEVELOPMENT OF THE CARDIOVASCULAR SYSTEM

Phase prehogenic and morphogenetic phase. Cardiac tube: incurvation, septaceous and histodifferentiation processes.

Development of arctic arches. Development of vitellinal, umbilical and cardinal veins.

Development of the lymphatic system.

## SUBJECT 2: ANATOMY OF THE HEART

General considerations (form, weight, anatomical structure, location). External morphology of the heart: faces, base margins and apex. Internal morphology of the heart: fibrous skeleton, cardiac cavities. Specific heart tissue.

Miocardium work. Pericardium: fibrous pericardium, seric pericardium. Heart relations Livers, veins and lymphatic heart. Innervation of the heart: heart nerves and heart plexus.

## SUBJECT 3: ANATOMY OF THE VASCULAR SYSTEM

MINOR CIRCULATION (PULMONARY): ARTICLES AND PULMONARY VEINS: pulmonary trunk, right and left pulmonary arteries. Pulmonary artery segmentation. Pulmonary vein

MAJOR CIRCULATION (SISTEMIC): AORTA ARTERIE: ascending aorta artery, aortic arch and descending aorta artery (thoracic portion and abdominal portion): passage, relationships, collateral branches and terminal branches.

COMMON ILLIACH ARTERIES: journey, relationships and terminal branches. SUPRÒRTIC THREADS: brachiocephalic trunk, common left carotid artery and left subclavian artery: transverse, collateral and terminal relationships and branches. SUBCLAVIA ARTERIES: journey, relationships and collateral branches. CAROTID ARTERIES: Common carotid arteries: origin, path, relationships, collateral branches and terminal branches. Internal carotid arteries: origin, passage, relationships, collateral branches and terminal branches.

External carotid arteries: origin, path, relationships, collateral branches and terminal branches. Maxillary arteries: origin, passage, relationships, collateral branches and terminal branches. Superficial temporal arteries: origin, passage, relations, collateral branches and terminal branches.

VENA CAVA SUPERIOR SYSTEM: internal and external jugular veins: origin, path, relationships and tributaries.

Subclavian Venes and Anglo-Bolcular Angles: location and tributary. Brachiocephalic veins: origin, passage, relationships and tributaries. Vena cava superior: origin, passage, relations and tributaries. Vena Azaia: path origin, relations and tributaries. VENA CAVA INFERIOR SYSTEM: common iliac veins: origin, path, relationships and

tributaries Vena cava inferior: origin, path, relations and tributaries. Venous vertebral plexuses.

LIMFATIC SYSTEM: kilo cistern (from Pecquet): training and relationships. Thoracic conduct: origin, path and relationships. Right lymphatic duct: origin, path and relationships.

## SUBJECT 4: DEVELOPMENT OF THE HEAD

MORPHOGENESIA OF THE CRANE: dismocracy and wilderness. Neurocranial development

Development of the Viscerocracy: first and second Faring arches.

## TOPIC 5: ANATOMY OF THE HEAD AND NECK

ARTICLES OF THE CRANE: Sutures. Syncondrosis. Temporomandibular joint. Kinematics joint.

MASTIGATOR MUSCLES: temporary, masseter, medial pterigoidal and lateral pterygoid. SUPRAHIOID MUSCLE: digastric, milohioidal, genioidal and styloid.

MUSIC OF FACIAL EXPRESSION (MINIMUMS): general characteristics. Periorbitary muscles: occipitoprantal, eyebrow corrugator, eyebrow depressor, prócer, orbicular of the eye (palpebral portion and orbicular portion). Perineal muscles: nasal (transverse portion and wing portion), mirtiform. Periauricular muscles: anterior, superior and posterior. Peribuccal muscles: orbicular (lip portion and marginal portion), zygomatic major and minor, buccinator, elevator of the upper lip, elevator of the upper lip and wing of the nose, canine, depressor of

the angle of the mouth (triangular) Risors, depressor of the lower lip (square), mental (chin chin), cutaneous neck (platysma).

TOPOGRAPHIC ANATOMY OF THE COLL: cervical spas and spaces. Systematization of the cervical triangles: limits and content. Straight muscles or hyoidal group

(infrahyoid): sternothyroid, thyroloidal, esternocleidohyal and omohyoidal. Systematization of the cervical triangles: limits and content. Cervical pleae: constitution, relationships, terminal branches and collateral branches.

ORBITARY CAVITY, EYE AND OCULAR ANNEXES: Orbital cavity: limits and communications. Ocular balloon: anatomical constitution (layers or tunicas, crystalline, anterior and posterior chamber, vesicle chamber) and attached structures (extrinsic muscles, facies, lacrimal apparatus).

TEMPORARY AND EAR: External ear (auricular pavilion and external auditory canal). Medium ear (shaft box, pharyngotonic tuba and mastoid cells). Internal ear: osseous labyrinth (lobby, semicircular canals and cochlea) and membranous labyrinth (utricle, sac, utriclesacular and endolymphatic duct, coclear duct).

SEMINARS (8 hours / group):

Seminar 1: development of the heart and its application to cases of cardiac malformations.

Seminar 2: rules and cranial pits. Sutures and main anthropometric points of the skull. Cranial osteology, deck bones .. Osteology correlation with diagnostic imaging techniques and application to clinical cases.

Seminar 3: Orbital cavity, nasal graves and sinuses. Etmoid and Esfenoid Bones. correlation with image diagnostic techniques and application to clinical cases.

Seminar 4: temporal and bones of the esplacnocrani. Correlation with diagnostic imaging techniques and application to clinical cases.

DISSECTION PRACTICES (6 hours / group):

Practice 1 (anatomy of the cardiovascular system):

Contents: external color morphology. Pericardi. Internal morphology of the heart: heart cavities, fibrous heart skeleton. Coronary arteries Cardiac veins. Heart lymph. Nerves and heart plexuses. Relationships of the heart (mediastine). Correlation of anatomical preparations of the heart with diagnostic imaging techniques.

Aortic artery and pulmonary artery. Pulmonary vein System of superior vena cava and lower vena cava.

Intercavals anastomotic systems. Common iliac arteries and veins. Carotid arteries: common, internal and external. Lymphatic ducts (thoracic duct and right lymphatic duct). Correlation of anatomical preparations with diagnostic imaging techniques.

Practice 2 (anatomy of the head and neck):

Content: muscles and fascia of the neck. Cervico-facial spaces. Cervical pleae Arteries: external carotid, subclavian, maxillary and superficial temporal. Upper vena cava system: jugular veins and subclavian vein.

Correlation of anatomical preparations with diagnostic imaging techniques. Cranial ditches and internal base of the skull. Sutures, fontanelles and anthropometric points of the skull. Correlation of anatomical preparations with diagnostic imaging techniques. Temporomandibular joint. Chewing muscles Muscles of facial expression.

Practice 3 (anatomy of the organs of the senses: eye and ear):

Content: orbital cavity, ocular balloon and ocular annexes. Correlation of anatomical preparations with diagnostic imaging techniques. The weather and ear. Correlation of anatomical preparations with diagnostic imaging techniques.

## Methodology

Organization of the subject:

3 theory groups, 16 groups of seminars and 16 groups for laboratory practices (dissection room).

#### ACTIVITIES CARRIED OUT:

Master classes (TE typology) The student acquires the own knowledge of the subject attending to

Theoretical classes and complement them with the personal study of the exposed topics. The theoretical classes are

conceived as an essentially expositive method, of transmitting knowledge from the teacher to the student. 21 hours of theoretical classes are scheduled.

Seminars (SESP typology) In small groups (standard size of 20-25 students). The seminars will be dealt with in a predetermined topic, in accordance with the subject's program, through the exchange of information and the subsequent debate. Four seminars of 2 hours each are organized per group. Attendance at seminars is not

compulsory (since there is an examination of its contents), but only those students who are duly registered with the PSG will be able to attend.

Dissection practices (PLAB type) In small groups (standard size of 20-25 students) will go to the dissection room to study the different thematic contents of the subject in anatomical preparations and, where appropriate, their correlation with diagnostic techniques by image. IT IS MANDATORY TO BRING LAB COAT AND GLOVES TO ACCESS THE DISSECTION PRACTICES. 3 practices of 2 hours each are programmed per group. Dissection practices are not compulsory (as there is a practice exam) but only those students who are duly registered with the PSG can attend.

VIRTUAL CLASSES (typology VIRT): individual work, or in group, for self-learning activities.

AUTONOMOUS WORK: Comprehensive reading of texts and articles. Study and execution of diagrams, summaries and conceptual assimilation of contents. Preparation of learning activities.

Learning activities

Type: Directed

LABORATORY PRACTICES (PLAB)

SPECIALIZED SEMINARS (SEM))

THEORY(TE)

Type: Supervised

VIRTUAL CLASSES (VIRT)

Type: Autonomous

READING OF ARTICLES / INTEREST REPORTS / PERSONAL STUDY

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
LABORATORY PRACTICES (PLAB)	6	0.24	3, 15, 4, 10, 12, 11, 13, 16, 2, 17
SPECIALIZED 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			
VIRTUAL CLASSES (VIRT)	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	50	2	1, 3, 15, 7, 8, 4, 5, 9, 10, 12, 11, 13, 16, 2, 17

## Assessment

### EVALUATION OF THE SUBJECT

The FINAL EVALUATION of the subject will consist of:

1.- THEORY: WRITTEN EVALUATION BY MEANS OF TWO OBJECTIVE TESTS. Assessment of the theoretical content of the subject and the content taught in the seminars, through two objective tests (multiple choice questions) of the contents taught both in the theoretical classes and in the seminars. It will consist of test type questions (with 5 answer options from the which only 1 will be correct and will deduct 0.25 the bad ones answered), proportional to each subject. There will be two partial tests

2.- PRACTICAL EVALUATION: OBJECTIVE AND STRUCTURED LONG EXAMINATION RECORD: evaluation of the contents of the dissection practices through a structured objective evaluation test in the dissection room. The number of questions will be between 15 and 20 (do not discount the wrong answers or the answers in white). To be able to submit to the practical exam of the subject, students must have obtained a grade equal to or greater than 5.0 in the theoretical exam.

The percentage of each part in the final grade of the subject will be:

35% mark of the first theory regimen, 35% mark of the second theory exam and 30% practical exam grade (dissection room)

To apply this weighting it will be essential to have a grade equal to or greater than 5.0 in each of the partial exams. That partial in which the note 5,0 is not obtained, will have to be recovered at the end of the course. The final grade will have a numerical expression, with a decimal, on scale 0-10 and with the qualitative equivalence of in accordance with the criteria of the UAB, suspended, approved, remarkable and excellent (with the option of obtaining the qualification of Honor Matrícula).

To pass the course students must obtain a grade equal to or greater than 5.0 in ALL exams (2 theoretical and practical exams)

The procedure for reviewing the tests will be in accordance with the current regulations of the UAB and in any case it will be individually with the student, upon written request within the established deadlines.

### RECOVERY EXAM.

According to the official UDCMB calendar, a recovery evaluation will be convened for students who have not passed the final assessment. In this assessment, all those students who have not obtained a mark equal or superior to 5.0 have to be presented to the final evaluation. This evaluation will have the same characteristics (format, percentages, etc.) that the final evaluation of the subject. It will be considered a NON EVALUABLE student who has not been submitted to a theory theory test.

Evaluation activities

Structured objective evaluation of the content of the practical activities 30%

First theoretical part: Written evaluation of the theoretical content of topics 1, 2 and 3 of the subject (Classes + Seminars) through an objective test with multiple choice questions - 35%

Second theoretical part: Written evaluation of the content of topics 4 and 5 (Classes + Seminars) through an objective test with multiple choice questions

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
First theoretical part: Written evaluation of the theoretical content of subjects 1, 2 and 3 of the subject (Classes + Seminars) through an objective test with multiple choice items	35%	1.5	0.06	1, 15, 6, 7, 8, 4, 5, 9, 10, 14, 11, 16, 2
Objective structured evaluation of the content of practical activities	35%	1.5	0.06	1, 3, 15, 6, 7, 8, 4, 5, 9, 10, 14, 11, 16, 2
Second theoretical part. Written evaluation of the content of topics 4 and 5 (Classes + seminars) through an objective test with multiple choice items	35%	1	0.04	3, 15, 12, 11, 13, 16, 2, 17

## Bibliography

### Embryological texts

- Carlson, B.M. (2009) Embriología humana y biología del desarrollo. 4ª edición. Ed. Mosby.
- Cochard, L.R. (2005) Netter - Atlas de Embriología humana. 1ª edición. Ed. Masson SA.
- Larsen, W.J. (2003) Embriología humana. 3ª edición. Ed. Elsevier Science.
- Sadler, T.W. (2012) Langman Embriología médica. 12ª edición. Ed. Wolters Kluwer.

### Anatomical texts

- Drake, R.L., Vogl, W., Mitchell, A.W.M. (2010) Gray - Anatomía para estudiantes. 2ª edición. Ed. Elsevier.
- Drenckhahn, D., Waschke, J. (2010) Benninghoff y Drenckhahn - Compendio de Anatomía. 1ª edición. Ed. Médica Panamericana.
- Latarjet, M., Ruiz Liard, A. (2004) Anatomía humana. 4ª edición. Ed. Médica Panamericana.
- Moore, K.L., Dalley, A.F., Agur, A.M. (2010) Anatomía con orientación clínica. 6ª edición. Ed. Wolters Kluwer.
- Rouvière, H., Delmas, V.; Delmas, A. (2005) Anatomía humana: descriptiva, topográfica y funcional. 11ª edición. Ed. Elsevier.
- Schünke, M., Schulte, E., Schumacher, U. (2011) Prometheus - Texto y atlas de Anatomía. 2ª edición. Ed. Médica Panamericana.

- Standring, S. (2008) Gray's Anatomy. The Anatomical Basis of Clinical Practice. 40th edition. Ed. Churchill Livingstone.

#### Anatomical Atlas

- Agur, M.R., Dalley, F. (2007) Grant - Atlas de Anatomía. 11ª edición. Ed. Médica Panamericana.

- Dauber, W. (2006) Feneis Nomenclatura anatómica ilustrada. 5ª edición. Ed. Masson SA.

- Fleckenstein, P., Trantum-Jensen, J. (2001) Bases anatómicas del diagnóstico por imagen. 2ª edición. Ed. Elsevier Science.

- Gilroy, A.M., MacPherson, B.R., Ross, L.M. (2013) Prometheus Atlas de Anatomía. 2ª edición. Ed. Médica Panamericana.

- Netter, F.H. (2011) Atlas de Anatomía humana. 5ª edición. Ed. Elsevier Masson.

- Nielsen, M., Miller, S. (2012) Atlas de Anatomía Humana. Ed. Médica Panamericana.

- Paulsen, F. Waschke J. (2012) Sobotta Atlas de Anatomía Humana. 23ª edición. Ed. Elsevier.

- Rohen JW, Yokochi C, Lütjen-Drecoll E (2011). Atlas de Anatomía Humana. Estudio fotográfico del cuerpo humano, 7ª ed. Ed Elsevier, Barcelona.

- Ullmann, H.F. (2009) Atlas de Anatomía. Ed. Tandem Verlag.

- Weber, E.D.; Vilensky, J.; Acarmichael, S.W. (2009) Netter Anatomía Radiológica Esencial. 1ª edición. Ed. Elsevier.

- Weir, J., Abrahams, P.H.; Spratt, J.D.; Salkowski, L.R. (2011) Atlas de Anatomía Humana por técnicas de imagen. 4ª edición. Ed. Elsevier.