



Universitat de Lleida

DEGREE CURRICULUM
**CARDIORESPIRATORY
SYSTEM**

Coordination: PRAT COROMINAS, JOAN

Academic year 2023-24

Subject's general information

Subject name	CARDIORESPIRATORY SYSTEM			
Code	100507			
Semester	PRIMER QUADRIMESTRE			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Medicine	2	COMPULSORY	Attendance-based
Course number of credits (ECTS)	9			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	2.7	0.9	5.4
	Number of groups	8	5	1
Coordination	PRAT COROMINAS, JOAN			
Department	EXPERIMENTAL MEDICINE			
Teaching load distribution between lectures and independent student work	H Face-to-face 90 H. Non-Contact 135			
Important information on data processing	Consult this link for more information.			
Language	Catalan and Spanish			
Distribution of credits	Theory: 5.4 (60%) Practice: 3.6 (40%)			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ABELLAN RODENAS, ANTONIO	antonio.abellan@udl.cat	2	
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Subject's extra information

Cardiorespiratory apparatus (ACR) is a core subject of the Degree in Medicine that is taken during the first semester of the second year, by teachers from the knowledge areas of Physiology, Anatomy, Medicine and Cellular Biology

The program provides the necessary information to properly understand, at the level of clinical reasoning and medical research needs, the functioning of the heart, the vascular system, the respiratory function and the functions of the blood, especially at the level of microcirculation, starting from the relevant morphological characteristics and functional properties of the organs and tissues that make up the cardiovascular and respiratory systems.

A second basic objective is the recognition and interpretation of normality in common analytical values in the clinical laboratory and their pathophysiological implications, as well as structural elements in clinical images, and semiology, to assess circulatory and respiratory function.

As a third basic objective, the subject aims to focus on the understanding of the functional mechanisms and the morphological aspects which alteration is at the basis of the most relevant pathology found in the corresponding clinical specialties, in particular cardiology and pneumology

EQUIPMENT FOR PRACTICAL ACTIVITIES

Participation in practical activities will be mandatory

--Wear a properly closed white robe. In no case will participation in a practice be accepted if this requirement is not met.

--Have perfectly fitted personal protective gloves (check before purchasing) in the user's hand. Preferably latex, if you are not allergic. At least 10 will be used. Information: https://www.lacasadelfisio.com/bloggin/19_3-tipos-de-guantes-sanitarios.html

- Personal stethoscope. It is a long-lasting device, which could be opportune to acquire thinking about future scenarios. Information: https://www.ortopediaymas.com/fonendoscopio-y-estetoscopio/#Consideraciones_a_tener_en_cuenta_a_la_hora_de_comprar_fonendoscopioestetoscopio

Learning objectives

A) Knowledge to acquire

A.1. The normal structure of the human respiratory system, and its correct description with anatomical terminology.

A.2. The normal development of the respiratory system, and the malformations that cause pathologies.

A.3. The normal functioning of the human respiratory system, and its correct description with physiological terminology.

A.4. The adaptation of the respiratory function to the different environments where the human being moves and its evolution throughout the life cycle

TO 5. The normal structure of the human circulatory system, and its correct description with anatomical terminology.

A.6. The normal development of the circulatory system, and the malformations that cause pathologies

A.7. The normal functioning of the human circulatory system, and its correct description with physiological terminology.

A.8. The adaptation of the circulatory function to the different environments where the human being moves and its evolution throughout the life cycle

A.9. The structure and functions of the blood

B) Attitudes and skills to acquire

B.1. Recognize and interpret respiratory structures in cadavers.

B.2. Recognize and interpret the respiratory anatomy using clinical imaging techniques: radiographs, CT and MRI

B.3. Interpret respiratory semiology

B.4. Interpret respiratory function tests: spirometry

B.5. Recognize and interpret the structures of the circulatory system in the cadaver

B.6. Recognize and interpret. Recognize and interpret the circulatory anatomy using clinical imaging techniques: radiographs, CT and MRI

B.7. Interpret circulatory semiology Know the auscultation points

B.8. Interpret basic circulatory functional tests: recognize heart sounds by auscultation, palpation of arterial pulses.

determine the value of blood pressure, assess the electrical activity of the myocardium by ECG.

B.12. Assess a normal analysis

C) Values

C.1. Recognize the importance of the functions of the circulatory and respiratory systems and their importance on the welfare and survival of the person.

C.2 Assess prevention actions and their importance on the preservation of the function of the respiratory and circulatory systems.

C.3 Recognize cardiovascular health as one of the hot spots of medical knowledge, and the need to update their knowledge on a regular basis.

Competences

Use the basic scientific language in relation to the anatomy, histology and physiology of the cardiocirculatory system

Understand and recognize the normal structure and function of the human body, at the molecular, cellular, tissue, organic and systems levels, in the different stages of life.

Know the morphology, structure and function of blood

Know the morphology, structure and function of the circulatory system

Know the morphology, structure and function of the respiratory system

Growth, maturation and aging of the different devices and systems

Material handling basic laboratory techniques

Interpret a normal analytic

Recognize with macroscopic and microscopic methods and imaging techniques the morphology and structure of tissue, organs and systems

Perform functional tests, determine vital parameters and interpret them

Describe the structure and function of the cardiocirculatory system of the human organism in health status using the anatomical, histological and physiological language

Describe the alterations of the structure and function of the organism mitigating anatomopathological and physiopathological language

Interpret plain chest radiography

Interpret the basic anatomy of the respiratory apparatus from CT and MRI images

Interpret the basic anatomy of the cardiocirculatory system from CT, Echo and MRI images

Interpret the basic tests of respiratory functionalism.

Interpret spirometry

Locate the focus of cardiac auscultation

Auscultate normal caries sorolls

auscultate a buf

Auscultate a freq

Determine blood pressure

I will turn on the peripheral arterial pole

Interpret a normal ECG and assess the basic alterations

Subject contents

THEORETICAL SYLLABUS:

Block 1: Anatomy of the respiratory system (Prof. J. Melé)

T1 Nasal fossae and paranasal sinuses m1,2

T2 Larynx m3,4

T3 Trachea, bronchi, lungs m5

T4 Development of the respiratory system m8,10

Block 2: Anatomy of the cardiovascular system (Prof. J. Melé)

T5 Adult heart: external and internal morphology m12,13

T6 Heart in situ. Pericardium. Coronary arteries m17,18

T7 Mediastino m20

T8 Major and minor arterial circulation m21,24,25,26

T9 Venous circulation m25,26,28,

T10 Lymphatic circulation m29

Block 3: Hemostasis (Prof. J. Prat)

T11 Physiology of red blood cells m6,7,9

Red series

T12 Physiology of hemostasis

Platelet function m11,14,15

Plasma coagulation m16,19,22

Block 4: Physiology of the cardiovascular system (Prof. J. Prat)

T13 Electrical activity of the heart. Electrocardiographic record m23,30,31,32,33,34,35

T14 Cardiac cycle m36,37,38

T15 Arterial and capillary circulation m39,40

T16 Venous circulation m41

T17 Regulation of cardiac function m42,43

T18 Microcirculation, capillary and lymphatic system m44,45,46

T19 Special circulations cerebral, renal, pulmonary, muscle, skin, spleen, vasa vasorum, door systems m47,48

T20 Cardiovascular adaptation to exercise. m49

Block 5: Physiology of the respiratory system (Prof. Jessica Gonzalez)

T21 General functioning of the respiratory system m50

T22 Ventilatory mechanics. Bronchial regulation m51,52

T23 Transport and exchange of gases and acid m53,54

T24 Alveolar ventilation and perfusion m55,56

T25 Regulation of the respiratory cycle m57

T26 Functional record, spirometry m58.59

PRACTICAL SYLLABUS:

a) Anatomy

P1 Nasal fossae and paranasal sinuses. Pharynx and larynx. Sectional anatomy and images. (S Hernandez and L. Medina)

P2 Trachea, bronchi and lungs. Sectional anatomy and images. (L. Medina and J. Melé)

P3 External morphology of the heart and large vessels. Recognitions of the cardiac silhouette in Rx. (M. Bermudez and J. Mele)

P4 Internal morphology of the heart. Opening of pork hearts (A. Abellan)

P5 Cor in situ. Pericardi. Coronary vessels. Mediastino. Sectional anatomy and images. (M. Bermudez and J. Melé)

b) Physiology (J. Prat)

P6 Hemostasis

P7 Determination of erythrocyte antigens

P8 Determination of hematocrit and globular resistance

P9 Determination of Blood Pressure

P10 Electrocardiography

P11 Spirometry (J. Gonzalez)

SEMINAR SYLLABUS:

a) Anatomy (Prof. M. Bermúdez)

S1 Anatomy of the respiratory system in X-ray, CT and MRI images

S2 Anatomy of the cardiovascular system in X-ray, CT and MRI images

b) Physiology (Profs J. Prat)

S3 Cordiology IAM

S4 Cardiology: ICC

S5 Cardiology: Arrhythmia

S6 Cardiology: ECG

Methodology

In order to achieve the objectives and acquire the competencies attributed to this subject in the Curriculum, the teaching staff has programmed various activities and resources that mainly include theory, practice sessions (demonstration or direct acquisition of competence) and seminars. participatory. These correspond to the 90 contact hours that contemplate the 9 credits of the subject (25-30% of the current ECTS credit in the EHEA) and that complement with the 100-200 h of autonomous dedication of the student (in function of his particular needs) to the achievement of objectives. This autonomous dedication involves between 2 and 3 hours of each working day of the semester, distributed according to the needs of the moment. The student's autonomous activity is essential for a correct and solid acquisition of the objectives and competencies that make this subject a very relevant training tool in the training of the medical professional.

Apart from the reflection and consolidation of the concepts and knowledge acquired in the contact hours, the student will have materials and learning instructions recommended or elaborated by the teaching staff for an optimal achievement of the objectives and competencies.

The teaching staff is available to the student both during the tutoring hours and at the end of each session, as well as via messaging on the Virtual Campus to provide in a personalized way all the information that the student needs.

Development plan

The subject is organized into different thematic blocks, dedicated to the anatomy, embryology and physiology of the respiratory and cardiovascular systems, including a block dedicated to haemostasis. Each block of theoretical classes will be accompanied by a series of practices and seminars, scheduled at the same time or after the corresponding theoretical classes. The objective of the practices and seminars is to reinforce the understanding of the subject and stimulate critical thinking. There will be control of attendance at practices and seminars, and continuous evaluation tests will be carried out, which will count for the final grade.

At the end of each block, exams of the theoretical and practical contents will be carried out, which will serve to check the degree of learning by the students.

Evaluation

EVALUATION SYSTEM

1.-The contents, objectives and competencies of the Cardiorespiratory System subject will be evaluated through 3 tests corresponding to each of its sections.

2.-In the first call (November and February) the 3 tests of the subject can be passed separately with a minimum grade of 5.

3.-To pass the subject in the second call (June) it will be necessary to have passed each of the 3 sections of the subject with a minimum grade of 5. Otherwise, the matter will be considered suspended.

4.-Tests 2 and 3 will include 0.5 points in their score corresponding to attendance at non-lecture activities.

5.-Those who in the 2nd call wish to take the tests to improve the final grade of the subject, will have to have all the sections passed in the 1st call, take the 3 tests and renounce the grade previously obtained which, in case If presented, it will be replaced by the one obtained in this second call, being subject to all the previous conditions.

Evaluation tests

Weight in the final grade %

1: Theoretical aspects Respiratory Anatomy, Circulatory Anatomy, Practical aspects and seminars 35%

2: Theoretical and practical aspects Haemostasis, Respiratory system 30%

3:Theoretical and practical aspects:Cardiology, Vascular system and microcirculation 35%

Bibliography

RECOMMENDED TEXTS

DRAKE, R.L., VOGL, W., MITCHELL, A.W.M. (2015)
Gray - Anatomy for students.
3rd edition. Ed. ELSEVIER.

DRAKE, R.L., VOGL, W., MITCHELL, A.W.M. (2018)
Gray - Basic Anatomy
. 2nd edition. Ed. ELSEVIER.

GILROY, A.M. (2015)
Prometheus. Anatomy. Student handbook.
1st edition. Ed. PAN AMERICAN MEDICINE.

LATARJET, RUIZ-LIARD (2004).
Human Anatomy.
4th edition. Ed. PAN AMERICAN MEDICINE.

MOORE, K.L., DALLEY, A.F., AGUR, A.M.R. (2018)
Anatomy with clinical orientation.
8th edition. Ed. WOLTERS-CLUB.

MOORE, K.L., AGUR, A.M.R., DALLEY, A.F. (2019)
Fundamentals of Anatomy with clinical orientation.
6th edition. Ed. WOLTERS-CLUB.

PRO, E.A. (2014)
Clinical Anatomy.
2nd edition. Ed. PAN AMERICAN MEDICINE.

SCHUNKE, M., SCHULTE, E., SCHUMAKER, U. (2014)
Prometheus. Text and atlas of Anatomy.
3rd edition. Ed. PAN AMERICAN MEDICINE

STANDRING, S. (2015)
Gray's Anatomy: the Anatomical Basis of Clinical Practice.
41th edition. Ed. ELSEVIER.

GUYTON AND HALL
Treatise on Medical Physiology + Online Access
April / 2016, 13^a Edition. Español ELSEVIER ISBN-13: 9788491130246

GERARD J. TORTORA, BRYAN DERRICKSON
Principles of Anatomy and Physiology
2019, 8^a PAN AMERICAN MEDICAL EDITORIAL EDITION, ISBN 9786078546220

F. CABRERA BUENO, J.J. GOMEZ DOBLAS
ELECTROCARDIOGRAPHY. Practical Interpretation of the ECG
2015, 1st Edition PAN AMERICAN MEDICAL EDITORIAL, ISBN9788498358889

ATLAS OF ANATOMY

Agur, M.R., Dalley, F. (2007)
Grant's - Atlas of anatomy.
14th edition. Ed. Wolters Kluwer.

Fleckenstein, P., Trantum-Jensen, J. (2016)
Anatomical basis of imaging diagnosis.
3rd edition. Ed. Elsevier.

Gilroy, A.M., MacPherson, B.R., Ross, L.M. (2013)
Prometheus. Atlas of Anatomy.
2nd edition. Ed. Pan American Medical.

Hansen, J.T. (2017)
Netter. Anatomy flashcards.
4th edition. Ed. Elsevier.

Loukas, M., Benninger, B., Shane Tubbs, R. (2019)
Photographic guide for dissection of the human body.
2nd edition. Ed. Elsevier.

Netter, F.H. (2019)
Atlas of Human Anatomy.
7^a edition. Ed. Elsevier.

Paulsen, F. Waschke J. (2018)
Sobotta. Atlas of Human Anatomy.
24^a edition. Ed. Elsevier.

Rohen, J.W., Yokochi, C., Lütjen-Drecoll, E. (2015)
Atlas of Human Anatomy.
8th edition. Ed. Elsevier.

Weber, E.D. ; Vilensky, J. ; Carmichael, S.W., Lee, K.S. (2015)
Netter. Essential Radiological Anatomy.
2nd edition. Ed. Elsevier.

ATLAS OF RADIOLOGY, CT, RM

1.- FLECKENSTEIN; TRANUM-JESSEN

Anatomical Bases of Imaging Diagnosis. 2ª Editing.

Harcourt-Elsevier Editions.

2.- JAMIE WEIR;

Atlas of Radiological Anatomy.

Ed. Doyma.

3.- HAN, KIM

Anatomical Cuts Correlated with CT and MRI. 3ª Editing.

Marbán.

4.- MÖLLER, REIF

Radiological Anatomy. 2ª Editing.

Marbán.

5.- MÖLLER, REIF

Pocket Atlas of Anatomical Cuts: CT and MRI. Volumes 1 and 2. 2ª Editing. Editorial Médica Panamericana.

6.- ELLIS, LOGAN, DIXON

Anatomical cuts

Marbán

LINKS OF INTEREST IN ANATOMY

<http://www.medicalstudent.com>

<http://anatomy.uams.edu/anatomyhtml/gross.html>

<http://www.anatomyatlases.org>

<http://www.bartleby.com/107/> (Gray's Anatomy)

http://www.lumen.luc.edu/lumen/meded/grossanatomy/x_sec/mainx_sec.html

<http://classes.kumc.edu/som/radanatomy/>