1. OVERVIEW

Subject Area	The Cardiovascular System
Degree	MEDICINE
School/Faculty	BIOMEDICAL AND HEALTH SCIENCES
Ac. Year	THREE
ECTS	8 ECTS
Type	COMPULSORY
Language(s)	SPANISH
Delivery Mode	ON CAMPUS
Semester	Six-monthly

2. INTRODUCTION

This is a compulsory subject belonging to the Human Clinical Training module III and is taught during the semester. This module consists of 174 ECTS in clinical training and 72 ECTS in clinical placements. Human Clinical Training brings together all the knowledge, skills and attitudes students acquire throughout the degree programme. The Cardiovascular System subject consists of 4 ECTS and 4 ECTS in clinical placements. To take this course, students must have passed at least 150 ECTS in the first three years.

The overall objectives of the subject area are:

- Provide knowledge of aetiology, symptomatology, diagnostics, prognosis and prevention of diseases of the cardiovascular system.
- Provide guidance on how to collect relevant patient information in order to draw up a clinical history (anamnesis and physical examination).
- Understand how the main complementary tests are used.
- Learn the steps involved in making a diagnosis, prognosis and treatment plan for the main pathologies of the cardiovascular system.
- Consider and propose appropriate preventive measures for different clinical situations.

3. SKILLS AND LEARNING OUTCOMES

Basic Skills (CB, as per the Spanish acronym):

- CB2: Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- CB3: Students will develop an ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- CB4: Students can communicate information, ideas, problems and solutions to both specialist

and non-specialist audiences.

- CB5: Students will develop the learning capacity required to undertake subsequent study with a high degree of autonomy.

General skills (CG, by the acronym in Spanish):

- CG1. Recognise the essential parts of being a medical professional, including ethical principles and legal responsibilities, together with how to provide a patient-centred service.
- CG2. Understand the importance of such principles to benefit patients, society and the profession, with particular attention paid to professional secrecy, confidentiality and intimacy.
- CG3. Know how to apply the principle of social justice to professional practice.
- CG4. Develop professional practice taking into account patient autonomy, beliefs and culture.
- CG5. Be aware of the need to maintain and update professional skills, paying special attention to continuous self-learning of emerging knowledge and to discover new products and techniques with the aim of improving quality.
- CG6. Carry out professional activity with regard to other health professionals.
- CG9. Understand and recognise the effects, mechanisms and manifestations of a disease on the structure and functioning of the human body.
- CG10. Understand and recognise the causal agents and risk factors which determine health conditions and the development of a disease.
- CG12. Understand the principles of action, indications and effectiveness of therapeutic interventions, based on the available scientific evidence.
- CG13. Obtain and elaborate a clinical history report with all relevant information.
- CG14. Perform a physical examination and mental health assessment.
- CG15. Have the ability to carry out an initial diagnosis and establish a well-founded approach to making a diagnosis.
- CG17. Establish the diagnosis, prognosis and treatment, applying the principles based on the most reliable information possible.
- CG18. Indicate the most suitable therapy for the most common acute and chronic processes, including patients in the terminal phase.
- CG19. Raise and propose the suitable preventative measures required for each clinical situation.
- CG20. Acquire sufficient clinical experience under supervision in hospital institutions, health centres or other healthcare institutions.
- CG21. Listen attentively, obtain and synthesise information regarding the problems troubling the patient and understand this information.
- CG22. Write clinical histories and other medical records in a way so they can be understood by other people.
- CG23. Communicate effectively and clearly, both orally and in writing, with patients, family members, media and other professionals.
- CG24. Establish good interpersonal communication which allows you to efficiently and empathetically connect with patients, family members, media and other professionals.
- CG26. Assume a role in the prevention and protection against diseases, injuries or accidents, together with the maintenance and promotion of health, both on an individual and community level.
- CG32. Know how to use information and communication technology in clinical, therapeutic,

preventative and research activity.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT1. Communication: ability to engage in active listening, ask questions and respond in a clear and concise way, as well as to effectively express ideas and concepts. This includes concise and clear written communication.
- CT2. Leadership: ability to offer ideas, approaches and interpretations through strategies which offer solutions to real-life problems.
- CT3. Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals, evaluate and integrate contributions from the rest of the group members and create a good working environment.
- CT4. Adaptability: ability to detect, interpret and respond to a changing environment. Ability to equip themselves and work effectively in different situations and/or with different groups or individuals. This means adapting to change depending on circumstances or needs. It involves the confidence to take on crucial challenges on a personal or group level, maintaining a good physical and mental health to allow work to be carried out effectively.
- CT5. Initiative: ability to undertake difficult or risky actions with resolve.
- CT6. Problem solving: ability to solve an unclear or complex issue or situation which has no established solution and requires skill to reach a conclusion.
- CT7. Decision making: ability to choose between different options or methods to effectively solve different problems or situations.
- CT8. Planning and organization: ability to set objectives and choose the right means to fulfil them through the efficient use of time and resources.
- CT9. Ability to put knowledge into practice, using the skills acquired in the classroom to mock situations based on real life experiences that occur in the relevant profession.
- CT10. Independent learning: the ability to govern your own development by choosing the most effective lines of action, strategies, tools and opportunities to independently learn and apply knowledge to practice.

Specific skills (CE, by the acronym in Spanish):

- CE 3.1.7 Recognise, diagnose and direct treatment of the main cardiocirculatory pathologies.
- CE 3.2.1 Know how to do a full anamnesis focussed on the patient and with a view to diverse pathologies, interpreting its meaning.
- CE 3.2.2 Know how to perform a physical examination of the systems and apparatus, as well as a psychopathological assessment, being able to interpret the results.
- CE 5.1.1 Complete a student work placement, involving independent clinical rotation and a final skills assessment in health centres, hospitals and other care facilities, which allows students to incorporate professional values, healthcare communication skills, clinical reasoning, clinical management and critical judgement. This also requires students to familiarise themselves with the most common health problems in Medicine, Surgery, Obstetrics and Gynaecology, Paediatrics, Psychiatry and other clinical areas.

Learning outcomes (RA, by the acronym in Spanish):

- Recognise the most common cardiovascular pathologies: cardiac arrhythmias, chest pain, acute coronary syndrome, heart failure, syncope, shock, valvular heart disease, ischaemic syndromes and venous malformations, arterial hypertension, oedematous syndrome, pericardial disease and other significant cardiovascular pathologies.

- Diagnose the most common cardiovascular pathologies: clinical history based on cardiovascular pathology, cardiovascular physical examination (heart auscultation, measuring of pulse and blood pressure, assessment of oedema, etc.), indication and interpretation of the main complementary diagnostic tests (ECG, stress tests, laboratory tests, imaging, anatomical pathology, etc.).
- Direct the medico-surgical treatment of the most common cardiovascular diseases.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CB 5, CG1, CG 2, CG3, CG4, CG5, CG6, CG9, CG 10, CG20, CG21, CG22, CG23, CG24, CG26, CG32, CT9, CT10, CE 5.1.1	Recognise the most common cardiovascular pathologies: cardiac arrhythmias, chest pain, acute coronary syndrome, heart failure, syncope, shock, valvular heart disease, ischaemic syndromes and venous malformations, arterial hypertension, oedematous syndrome, pericardial disease and other significant cardiovascular pathologies.
CB3, CB 5, CG1, CG 2, CG3, CG4, CG5, CG6, CG 13, CG14, CG15, CG 17, CG20, CG21, CG22, CG23, CG24, CG26, CG32, CT1, CT3, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE3.2.1, CE 3.2.2, CE 5.1.1	Diagnose the most common cardiovascular pathologies: clinical history based on cardiovascular pathology, cardiovascular physical examination (heart auscultation, measuring of pulse and blood pressure, assessment of oedema, etc.), indication and interpretation of the main complementary diagnostic tests (ECG, stress tests, laboratory tests, imaging, anatomical pathology, etc.).
CB4, CB 5, CG1, CG 2, CG3, CG4, CG5, CG6, CG 12, CG 18, CG19, CG20, CG21, CG22, CG23, CG24, CG26, CG32, CT2, CT4, CT5, CT6, CT7, CT8, CT9, CT10, CE3.2.1, CE 3.2.2, CE 3.1.7, CE 5.1.1	Direct the medico-surgical treatment of the most common cardiovascular diseases.

4. CONTENTS

Topic	CARDIOLOGY AND HEART SURGERY
CARDIOLOGY AND HEART SURGERY	
Topic 1.	Cardiovascular risk. Primary and secondary prevention. Arteriosclerosis.
Topic 2.	Essential high blood pressure.
Topic 3.	Heart failure.
Topic 4.	Treatment of heart failure.

Topic 5.	Cardiogenic shock.
Topic 6.	Arrhythmias I. Bradycardia and heart blocks.
Topic 7.	Arrhythmias II. Atrial arrhythmias.
Topic 8.	Arrhythmias III. WPW syndrome and atrioventricular nodal re-entry tachycardia.
Topic 9.	Arrhythmias IV. Ventricular arrhythmias.
Topic 10.	Arrhythmias V. Syncope and sudden death. Pacemakers and defibrillators.
Topic 11.	Ischaemic heart disease I. Myocardial ischaemia. Introduction.
Topic 12.	Ischaemic heart disease II. Chronic heart disease. Stable angina.
Topic 13.	Acute Coronary Syndrome (ACS) without ST-segment elevation (NSTE ACS). Unstable angina.
Topic 14.	Acute coronary syndrome (ACS) with ST-segment elevation (STE ACS). I and II.
Topic 15.	Valvular heart disease I. Rheumatic fever. Mitral valve disease I: Mitral stenosis.
Topic 16.	Valvular heart disease II. Mitral valve disease II: Mitral insufficiency.
Topic 17.	Valvular heart disease III. Aortic valve disease I: Aortic stenosis.
Topic 18.	Valvular heart disease IV. Aortic valve disease II: Aortic insufficiency.
Topic 19.	Valvular heart disease V. Tricuspid and pulmonary valve disease. Multi-valvular disease. Artificial heart valves.
Topic 20.	Myocarditis and cardiomyopathy.
Topic 21.	Dilated, hypertrophic and restrictive cardiomyopathy.
Topic 22.	Congenital heart disease I. Left to right shunts.
Topic 23.	Congenital heart disease II. Right to left shunts. Obstructive heart defects.
Topic 24.	Pericardial disease: acute and chronic/constrictive pericarditis. Pericardial effusion/tamponade.
Topic 25.	Heart tumours and trauma.
VASCULAR SURGERY	
Topic 1.	Acute and chronic arterial ischaemia.
Topic 2.	Diabetic foot and amputations.
Topic 3.	Vascular trauma. Arteriovenous fistula.
Topic 4.	Acute aortic syndrome.
Topic 5.	Aortic aneurysm. Thoracic and abdominal aortic aneurysm. Peripheral and visceral artery aneurysms.
Topic 6.	Venous pathology: thromboembolic venous disease. Post-thrombotic syndrome. Chronic venous insufficiency. Varicose veins. Lymphoedema.
Topic 7.	Angiodysplasia. Vascular tumours.
Topic 8.	Thoracic outlet syndrome. Arterial pathology of the supra-aortic trunks and carotid arteries.
Topic 9.	Inflammatory and functional peripheral artery disease.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

1. Problem-based learning: presentation of problems, reorganising into small groups, literature analysis, analysis of scientific texts and documents, symposiums and presentations, directed debates, specialised individual and collective tutorials, and reaching a consensus.

2. Problem-based learning directed towards clinical reasoning: presentation of problems, reorganising into small groups, literature analysis, analysis of scientific texts and documents, symposiums and presentations, directed debates, specialised individual and collective tutorials, and reaching a consensus.
3. Case studies and problem solving: approach and solving cases and problems either as an individual or in small groups.
4. Specialised seminars: literature research and debate on scientific data in small groups.
5. Lectures: classroom presentations by the professor on basic theory, encouraging debate and student participation.
6. Case study method: presentation and discussion of clinical cases in small groups.
7. Learning in skills workshops and simulation scenarios: practical work with IT programs, anatomical models, human dissection and standardised patients.
8. Experiential learning in supervised clinical placements in the different hospital services: problem-solving in a practical context observing the tutor, being observed by the tutor, or with the tutor's supervision. Students will integrate themselves and participate in the activities performed in the healthcare units. The student activities will be programmed, tutor-assisted and assessed by the tutor.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On campus:

Learning activity	Number of hours	ATTENDANCE %
Theory/practical learning activities on-campus	42h	100
Directed learning activities	20h	20
Independent working	30h	0
Clinical placements	100h	100
Tutorials	6h	100
Knowledge tests	2h	100

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the subject area, are as follows:

On campus:

	Assessment system	Weighting
THEORY (50%)	Continuous assessment	10%
	Final assessment exam	40%
PRACTICAL PART (50%)	Attitude (rubric)	5%

	Clinical practice (rubric)	20%
	ECOE	25%

8. BIBLIOGRAPHY

The reference work for the follow-up of the subject is:

Cardiovascular System:

- Harrison's Principles of Internal Medicine. McGraw-Hill Interamericana. 20ª edición (2018). Acceso a este recurso digital (usuarios Universidad Europea de Madrid), https://accessmedicine-mhmedical-c1o-5m.ezproxy.universidadeuropea.es/book.aspx?bookid=2129
- Tratado de las Enfermedades Vasculares. Tomos I y II. Fundación de la Sociedad Española de Angiología y Cirugía Vascular. Viguera Ed. Barcelona. 2006.
- Manual de Patología Vascular. Gabriel España Caparros. ISBN 978-84-945406-

Recommended bibliography is indicated below:

- **PROMIR:**

- Castillo Orive M. Hernández Jiménez S, Monteagudo Ruiz JM, et al. PROMIR: Cardiología 2022-2023, 2ª ed. Madrid: Editorial Médica Panamericana; 2022.