

Teaching Guide of the subject

Year 2026 – 2027

## **THERAPEUTIC AND TECHNOLOGICAL ADVANCES IN CARDIOLOGY**

Code: 106160

ECTS credits: 3

| <i>Titulation</i>      | <i>Type</i> | <i>Course</i> | <i>Semester</i> |
|------------------------|-------------|---------------|-----------------|
| <b>2500891 Nursing</b> | <b>OT</b>   | <b>4</b>      | <b>Annual</b>   |

| <i>Contact</i>                                                                                                              | <i>Use of languages</i>                                                   |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b><u>Responsible:</u></b><br><br>Romero Pastor, Mònica<br><a href="mailto:mromeropa@santpau.cat">mromeropa@santpau.cat</a> | <ul style="list-style-type: none"> <li>Group 1: <b>Catalan</b></li> </ul> |

### **Prerequisites**

There are no official prerequisites, but it is advisable to have assumed the knowledge of the subjects: Practicums I, II, III, IV and V, Function of the Human Body I, II, Nursing Care for Adults and Nursing Care in Complex Situations.

### **Contextualization and objectives**

This subject is optional, belongs to the itinerary "Specific nursing care in the field of cardiology" and is planned in the seventh semester of the Bachelor's Degree in Nursing.

The main purpose of this subject is to train students in the acquisition of skills related to the knowledge and use of all therapeutic and technological advances in nursing care in cardiology. The application of clinical practice guidelines and nursing care quality indicators for each of the specific procedures allows the acquisition of these competencies.

### **Learning objectives of the subject**

1. Identify therapeutic, pharmacological and technological advances in heart disease.
2. Describe the nursing care process aimed at patients with heart problems and technological or pharmacological dependence.
3. Apply, based on scientific evidence, specific nursing care in all therapeutic or pharmacological procedures to guarantee the safety of cardiological patients subjected to high technology.

## Competencies and learning outcomes

| Competence                                                                                                                                                                                                                                                                                                             | Learning Outcomes                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SPECIFIC</b>                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |
| <b>E02.</b> Plan and provide nursing care aimed at individuals, families or groups, focused on health outcomes, evaluating its impact through clinical practice and care guidelines, which describe the processes by which a health problem is diagnosed, treated or cared for.                                        | <b>E02.01.</b> To identify clinical practice and care guidelines related to attention to people's health demands throughout the life cycle and in the alterations that may occur. |
| <b>E06.</b> Base nursing interventions on scientific evidence and available means.                                                                                                                                                                                                                                     | <b>E06.06.</b> Analyze nursing interventions, justifying them with scientific evidence or contributions from experts to support them.                                             |
| <b>E07.</b> Demonstrate that they understand people without prejudice, considering their physical, psychological and social aspects, as autonomous and independent individuals, ensuring respect for opinions, beliefs and values, guaranteeing the right to privacy through confidentiality and professional secrecy. | <b>E07.13.</b> Respect the principles of the right to privacy, confidentiality and professional secrecy in all care carried out.                                                  |
| <b>E08.</b> Promote and respect the right to participation, information, autonomy and informed consent in the decision-making of the people served, according to the way they live their health-disease process.                                                                                                       | <b>E08.07.</b> Respect the right of people to participate in the decision-making set in their own care, according to the way in which they live their health process.             |
| <b>E12.</b> Demonstrate knowledge of the ethical and deontological code of Spanish nursing, and understand the ethical implications of health in a changing global context.                                                                                                                                            | <b>E12.05.</b> Apply the ethical and deontological code of nursing in all areas of nursing activity.                                                                              |
| <b>GENERAL / BASIC</b>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                   |
| <b>G01.</b> To introduce changes in the methods and processes of the field of knowledge in order to provide innovative responses to the needs and demands of society.                                                                                                                                                  | <b>G01.03.</b> Acquire and use the necessary tools to develop a critical and reflective attitude.                                                                                 |
| <b>G03.</b> Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.                                                                                                                                                                                            | <b>G03.03.</b> Analyse difficulties, prejudices and discrimination, in the short or long term, in relation to certain people or groups.                                           |

**G04.** Act within the field of self-knowledge by assessing inequalities based on sex/gender.

**G04.07.** Communicate with a non-sexist and non-discriminatory use of language.

**B05.** Students must have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

## **Content**

### **MODULE 1. Introduction to therapeutic and technological advances applied to patients with cardiac pathology.**

Topic 1. Technological advances in the anatomical and physiological exploration of the heart.

Topic 2. Advanced electrocardiography. Interpretation of cardiac arrhythmias.

### **MODULE 2. Technological and pharmacological advances in the different cardiac pathologies. Part I.**

Topic 3. Nursing care for patients subjected to technological and pharmacological advances in the Cardiac vascularization.

Topic 4. Nursing care for patients subjected to technological and pharmacological advances in the Heart failure.

Topic 5. Nursing care in patients subjected to technological and pharmacological advances in arrhythmias Heart.

### **MODULE 3. Technological and pharmacological advances in the different cardiac pathologies. Part II.**

Topic 6. Nursing care for patients subjected to technological and pharmacological advances in the valvular diseases.

Topic 7. Nursing care for patients subjected to technological and pharmacological advances in emergencies Cardiac.

## **Methodology**

The methodological approach of the subject is based on considering that the protagonist in the teaching-learning process is the students, being active in all the phases that make up the subject.

### ***Directed activities:***

The subject has a single theory group. In order to encourage active participation, students are provided with articles and working documents so that they can study prior to classes. The theoretical development of the subject is combined with classroom activities, of a more practical nature, in order to consolidate the theoretical contents and achieve the competences of the subject.

### ***Supervised activities:***

Students carry out activities related to the syllabus, based on the analysis of scientific evidence and the resolution of cases, in small groups. For the development of the activities, an orientation script is proposed and tutored monitoring is carried out.

The presentation of the activities must follow the EUI's regulations for the presentation of works. They will be delivered in electronic format through the virtual classroom, and students will make an oral presentation.

The following table shows the planning of the directed, supervised and autonomous activities:

### **Training activities<sup>1</sup>**

| Activity                                                                                                                                                              | Hours | ECTS | Learning Outcomes                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------------------------------------------------------------------------------------------|
| <b>Types: Directed</b><br>. Theory (TE):                                                                                                                              | 23    | 0,90 | <i>E02.01, E06.06, E07.13, E08.07,<br/>E12.05, B05<br/>G01.03, G03.03, G04.07</i>         |
| <b>Types: Supervised</b><br>. Tutorials:                                                                                                                              | 1     | 0,04 | <i>G01.03, G02.01, G03.02, G04.03</i>                                                     |
| <b>Type: Self-employed</b><br>. Reading articles/reports of interest.<br>. Personal study.<br>. Bibliographic consultations and documents.<br>. Preparation of works. | 45    | 1,80 | <i>E02.01, E06.06, E07.13, E08.07,<br/>E12.05, B05<br/>G01.03, G02.01, G03.02, G04.03</i> |

### **Evaluation**

The evaluation must make it possible to verify the level of learning achieved, considering the objectives and competencies of the program.

Students have one call per academic year, to pass the subject.

Academic progression and completion of the subject is assessed by:

<sup>1</sup> The teaching staff will allocate approximately 15 minutes once the subject is finished to allow them to students can answer the assessment surveys on the teaching performance and the subject.

### **Continuous evaluation**

The objective of continuous assessment is for the student to be able to know their academic progress throughout their training process in order to allow them to improve it, as well as to verify their evolution and learning progress.

A continuous and formative evaluation is established through evaluation activities distributed throughout the course, whose weight and instruments are described below:

- **Test-type synthesis test** performed at the end of modules I, II and III **(50%)**.
- **Report / written work** (group activity) that is carried out during module II and must be presented on the date indicated in the virtual classroom **(20%)**. Not recoverable.
- **Report / Subsystem of scientific evidence in care**. Group activity. The dossier is presented at the end of modules I, II and III on the date indicated in the virtual classroom **(30%)**. Not recoverable.

In multiple-choice tests, the negative answers are according to the following formula:

$x = \text{correct answers} - (\text{errors} / n - 1)$ , where  $n$  is the number of answer options.

The indications of group work are established by the teaching staff at the beginning of the course and the presentation of the same must follow the regulations of the EUI to be accepted.

Delay in delivery, maximum 24 hours, will be penalized by subtracting one point from the grade of the work.

Subsequent deliveries will not be accepted.

The grade of the subject is given by the weighted sum of the marks obtained in these tests, from a minimum grade of 5 in each of them.

**The results of the evaluation tests will be retroacted through the classroom and tutorials where appropriate.**

**The work evaluation rubric is available in the virtual classroom.**

### **Qualification**

- 0 to 4.9: Fail
- 5.0 to 6.9: Pass
- 7.0 to 8.9: Remarkable
- 9.0 to 10: Excellent (in the event that the student has obtained a grade equal to or higher than 9, he/she may opt for, criterion of the professor, to an honors).

### **Unique assessment**

1. In this subject, you must attend the classroom on the day/days that are scheduled for group work.

2. The date of the unique test will coincide with the date of the last continuous assessment test that appears in the daily schedule and in the calendar of training and evaluation activities.
3. The unique assessment will consist of:
  - Test 1 which will consist of **an objective multiple-choice test** and weights **50%**.
  - Test 2 which will consist **of a case resolution test / open answer** and weights **30 %**.
  - Test 3, which will consist **of a work report on scientific evidence** and weights **20%**.

### **Recovery activity**

1. A unique date is set for the remedial activity for all students, whether or not they are eligible for a unique assessment.
2. A remedial activity is proposed to students who have been previously evaluated for a set of activities whose minimum weight is equivalent to 2/3 of the total grade of the subject and who have obtained a final grade of less than 5 and higher than 3.5.
3. This test will consist of an evaluation activity of the retrievable test(s) not passed.
4. The remedial tests will be determined by the teaching staff.
5. Teachers can exclude from the recovery process those activities that, by their nature, they consider not to be recoverable.
6. In the event that the student passes the retake test corresponding to the failed part, the maximum grade of the same will be a 5.
7. The retake grade will replace the grade originally obtained and the final weighted grade will be recalculated.
8. Once the subject has been passed, it may not be subject to a new evaluation.

### **Not assessable**

It is considered that the subject will not be assessable at the time that one of these circumstances is met:

1. Not having submitted any continuous assessment activity provided for in the teaching guide.
2. Not have attended any of the practical or compulsory sessions, when these are necessary to assess specific competences and this is indicated in the teaching guide.
3. Not having taken the final test (exam, written or oral test, job defence, etc.), if this represents an essential percentage of the qualification.
4. Not having completed the minimum required participation in training activities (e.g. seminars, presentations, forums, etc.), when these are part of the assessment.
5. Not having submitted the final work or compulsory project, if this constitutes central evidence of the learning of the subject.

### **Revision of the final grade**

Once the final grade has been published, the student can request the review of the final test within the established period. Requests for revision are not accepted on dates outside this period.

### **Procedure in case of copying/plagiarism**

1. Copying **or plagiarism** in any type of assessment activity is a crime, and will be penalised with a 0 as the grade of the subject, losing the possibility of recovering it, whether it is an individual or group work (in this case, all members of the group will have a 0).
2. If during the completion of an individual project in class, the teacher considers that a student is trying to copy or is discovered some type of document or device not authorised by the teaching staff, it will be graded with a 0, with no retake option, and therefore, the subject will be suspended.
3. A work, activity or exam is considered to be "copied" when it reproduces all or a significant part of the work of oneself or another classmate.
4. A work or activity will be considered "plagiarized" when a part of a text by an author is presented as one's own without citing the sources, regardless of whether the original sources are on paper or in digital format.

### **The use of Artificial Intelligence (AI) technologies**

The use of Artificial Intelligence (AI) technologies is regulated according to the type of work to be performed:

1. In the event that the work aims at personal reflection and meaningful learning by the student, **the use of AI technologies is prohibited** in any of its phases of realization. Any work that includes AI-generated fragments (e.g., summaries, translations, text writing or image creation) is considered academic dishonesty and may lead to a partial or total penalty in the grade of the activity, as well as greater sanctions in cases of severity.
2. In other jobs, **the restricted use of AI technologies is allowed** only in those support tasks, such as bibliographic or information search, text correction, translations and other specific situations that are indicated. In these cases, the student will have to clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of the activity. The non-transparency of the use of AI in this assessable activity will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the activity, as well as greater sanctions in cases of severity.

In any case, in the description of each work, the teacher in charge will clearly indicate **whether the prohibited or restricted use of AI applies**.

### **Aspects of assessment related to values and attitudes**

1. The teacher may lower the grade of the subject between 1 and 2 points out of 10 for any student who repeatedly does not respect the indications on the rules of behaviour in class.
2. "No disrespect for colleagues or teachers will be tolerated. Homophobic, sexist or racist attitudes will not be tolerated either. Any student in whom any of the attitudes described above are detected will be classified as failing the subject."

### **Formal aspects of written work**

In all activities (individual and group) linguistic correctness, writing and formal aspects of presentation will be considered.

### **Other considerations**

1. All the evaluation tests will be published in the daily program and in the calendar of the training and evaluation activities.
2. The date of the unique test will coincide with the date of the last continuous assessment test.
3. Students who repeat the subject may request at the beginning of the academic year to take only a final synthesis assessment (Article 117, page 46 of the Academic Regulations of the Universitat Autònoma de Barcelona (Approved by agreement of the Governing Council of 7 July 2022, and amended by agreement of the Governing Council of 1 February 2023)).

*Students in the second or higher enrolment who have taken all the assessment tests the previous year may choose to take assessment with a single synthesis assessment activity. This activity will consist of an exam at the end of the subject coinciding with the written exam of the subject. Students in the second or higher enrolment who wish to opt for the synthesis exam must notify the teaching staff responsible for the subject in writing two weeks before the published date.*

### **Evaluation activities**

| Activity                                                                                                                                                                  | Weight         | Hou<br>rs  | ECTS | Learning Outcomes                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|------|-----------------------------------------------------------------------------------|
| <b>Individual activity:</b><br><br>Synthesis test type test Module I, II and III                                                                                          | 50%            | 2          | 0,08 | <i>E02.01, E06.06, E07.13,<br/>E08.07, E12.05, B05<br/>G01.03, G03.03, G04.07</i> |
| <b>Group work:</b> <ul style="list-style-type: none"> <li>• Report/Written Work Module II</li> <li>• Report (dossier of evidence in care) Module I, II and III</li> </ul> | 20%<br><br>30% | 2<br><br>2 | 0,16 | <i>G01.03, G02.01, G03.02,<br/>G04.03</i>                                         |

### **Bibliography**

#### **Specific bibliography for each module in the virtual classroom of the subject**

**Books:****CARDIOVASCULAR CLINICAL PRACTICE GUIDELINE**

*Authors:* Ortega Vargas M<sup>a</sup>, Puntuner Bates M, Suárez Vázquez MG, Lejía Hernández C, Montesino Jiménez G,

Cruz Ayala G, Quintero Barrios M, González Flores N,

*Edition:* 2011 Panamericana S.A

*ISBN:* 978-607-7743-22-4

**ARRHYTHMIAS. PRINCIPLES, INTERPRETATION AND TREATMENT**

*Authors:* Huszar, R

*Edition:* 2005 Elsevier España, S.A

*ISBN:* 84-8174-628-2

**PHARMACOLOGY FOR NURSING**

*Authors:* Adams Michael, Holland Norman.

*Edition:* 2009 Pearson Educación S.A

*ISBN* 978-84-8322-523-3

**Other bibliographic references:**

1. Soar J, Berg K, Andersen L, Bottiger KB, Cacciola S, Callaway C, et al. Nolan. **Adult advanced life support 2020 International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations** Resuscitation 2020; (156): A 80.
2. Jerry P. Nolan. **Part 1. Executive Summary: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with treatment recommendations.** Resuscitation 2010; (27): 25-58.
3. Lapp A. **Assisted circulation with counter-pulse.** Rev Infirm. 2014 Oct; 204:53-4.
4. Assis RB, Azzolin K, Boaz M, Rabelo ER. **Complications of intra-aortic balloon in a cohort of hospitalized patients: implications for nursing care.** Rev Lat Am Enfermagem. 2009 Sep-Oct; 17(5):658-63.
5. Lupieri G, Creatti C, Palase A. **Cardio-thoracic surgical patients' experience on bedside nursing handovers: findings from a qualitative study.** Intensive Crit Care Nurs. 2016 Aug; 35:28-37.
6. Larimer K, Durmus J, Florez E. **Experiences of Young adults with pacemakers and/or implantable cardioverter defibrillators.** J Cardiovasc Nurs. 2015 Jul 1:56-61.
7. Barber J, Leslie G. **A simple education tool for ventricular assist device patients and their caregivers.** J Cardiovasc Nurs. 2015 May-Jun; 30 (3): E1-E10. doi: 10.1097/JCN.0000000000000122.

**Teaching platforms**

- Moodle