

Teaching Guide of the subject

Year 2026 - 2027

SCIENTIFIC METHODOLOGY AND BIOSTATISTICS

Code: 106104

ECTS credits: 6

Qualification	Types	Course	Semester
2500891 Nursing	FB	1	2

Contact	Use of languages
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Prerequisites

There are no official prerequisites.

Contextualisation and objectives

This subject is part of the Basic Sciences, Statistics subject and is planned in the second semester of the Bachelor's Degree in Nursing.

Research in health sciences involves the research, review and updating of new knowledge to ensure adequate and quality care. To generate valid knowledge for each discipline, it is essential to follow a systematic methodology such as scientific methodology and become aware of one's own disciplinary knowledge.

The purpose of this subject is for the student to understand the importance of research in nursing and acquire the most important concepts in methodology and statistics, highlighting the applicability and transversal nature of the contents of the subject.

Learning objectives of the subject

- 1.- To know the main aspects of scientific methodology.
- 2.- Interpret qualitative studies
- 3.- Interpret quantitative studies
- 4.- Identify and acquire skills in the management and analysis of sources of scientific evidence.
- 5.- To acquire skills for decision-making based on scientific evidence.

Learning outcomes

Learning Outcomes of the DEGREE (RAT)	LEARNING OUTCOMES OF THE SUBJECT (RAM)
ST04. Formulate clinical judgments based on clinical and care practice guidelines, applying diagnostic and therapeutic reasoning in care delivery.	SM01. Use scientific evidence in professional practice (ST04).
ST09. Use technologies and information systems available in the health and social care system to obtain relevant data and information for implementing high-quality nursing care.	SM10. Use information and communication systems to support diagnosis and deliver high-quality, evidence-based care (ST09).

Contents

MODULE I. SCIENTIFIC METHODOLOGY

Paradigms and types of research

- Concept of scientific research and scientific method.
- Paradigms in Health Sciences.
- Introduction to qualitative and quantitative methodology.
- Evidence-based nursing.
- Ethical aspects of research.

Qualitative methodology

- Characteristics of the qualitative methodology.
- Formulation of the study question, objectives and hypothesis.
- Bibliographic search.
- Design of studies.
- Population and sample.
- Data collection and data analysis techniques.
- Interpretation of the results of scientific studies.
- Critical reading.
- Scientific dissemination.

Quantitative methodology

- Characteristics of the quantitative methodology.
- Formulation of the study question, objectives and hypothesis.
- Design of the studies.
- Population and sample.
- Variables
- Data collection and data analysis techniques.
- Scientific dissemination.

MODULE II. BIOSTATISTICS

- Main concepts of statistics.
- Descriptive statistics.
- Statistical inference.
- Estimate by interval.
- Contrast of hypothesis.
- Presentation of the results.
- Interpretation of the results of scientific studies.

Methodology

The methodological approach of the subject is based on considering that each student is the protagonist in the teaching and learning process. Students must be active and autonomous throughout the process and teachers must support them, providing the necessary information and resources for learning to take place.

Directed activity:

The subject is face-to-face with recommended attendance. Expository, participatory and group methodology is used, developing active listening and exposition.

Supervised activity:

Different articles and documents are worked on. Tutorials can be face-to-face or electronically. Tutored group work is carried out in small groups of 5-7 students.

Training activities¹

Activity	Hours	ECTS	Learning Outcomes
Type: Directed			
. Theory (TE) . Classroom Practices (PAUL)	45	1,8	SM01 SM10
Type: Supervised			
. Tutorials	1	0,04	SM01 SM10
Type: Self-employed:			
. Bibliographic queries and documents. . Reading articles / reports of interest.	90	3,60	SM01 SM10

¹ The teaching staff will allocate approximately 15 minutes once the subject is finished to allow that their students can answer the assessment surveys on teaching and subject.

Evaluation

Continuous assessment

The final grade of the subject is obtained from the arithmetic average of the grades obtained in the sum of the following sections:

1. **Group written work (30%).**
2. **Oral defense of group work (10%).**
3. **Written test of Module I (30%).**
4. **Written test of Module II (30%).**

To be able to do average, a grade equal to or greater than 4 out of 10 must be obtained in each of the tests (tests, work and defense).

In the multiple-choice written test (multiple-choice questions), incorrect answers are penalized according to the following formula:

$x = \text{hits} - (\text{errors} / (k - 1))$, where **k** is the number of answer options. Thus, in an exam with **4 possible options** (A, B, C or D), each incorrect answer subtracts **0.33 points (1/3)** from a correct answer. Therefore, **3 incorrect answers are equivalent to the loss of 1 correct answer**. Unanswered questions do not score or penalize.

Feedback on the results of the evaluation tests will be made through the classroom and tutorials if necessary.

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

Qualification

- 0 to 4.9: Suspense
- 5.0 to 6.9: Passed
- 7,0 a 8,9: Notable
- 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, at the discretion of the teacher, for an honors degree).

Single assessment

1. In this subject there is no task programmed to be done in a group.
2. The date of the single test will coincide with the date of the last continuous assessment test that appears in the daily programme and in the calendar of training and assessment activities
3. The single assessment will consist of:
 1. Test 1 which will consist of an **individual written assignment** and weights 30 %.
 2. Test 2 which will consist of the **oral defense of the individual work** and weights a 10 %.
 3. Test 3 which will consist of a **written test Module I** and weights 30 %.

4. Test 4 which will consist of a **written test Module II** and weights 30%.

To be able to do average, a grade equal to or greater than 5 out of 10 must be obtained in each of the tests (tests, work and defense).

Recovery activity

1. A single date is set for the retake activity of the written tests for all students, whether or not they are subject to single assessment.
2. A recovery activity is proposed to students who have been previously evaluated by 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 greater than 3.5.
3. This test will consist of an evaluation activity of the test(s) not passed.
4. The recovery tests will be determined by the teaching staff.
5. The teacher may exclude from the recovery process those activities that, due to their nature, he/she considers that they are not recoverable.
6. In the event that the student passes the retake test corresponding to the failed part, the maximum grade of this 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 cannot be subject to a new evaluation.

No available

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

1. Not having delivered any of the continuous assessment activities provided for in the teaching guide.
2. Not having attended any of the practical or compulsory sessions, when these are necessary to assess learning outcomes and as indicated in the teaching guide.
3. Not having taken the final test (exam, written or oral test, work defense, etc.), if This represents an essential percentage of the grade.
4. Not having completed the minimum required participation in training activities (for example, seminars, presentations, forums, etc.), when these are part of the evaluation.
5. Not having submitted the final project or compulsory project, if this constitutes a central evidence of learning of the subject.

Exam Review

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

Procedure in case of copying / plagiarism

1. Copying **or plagiarism** in any type of evaluation activity constitutes a crime, and will be penalized with a 0 as a grade for 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 assignment in class, the teacher considers that a student is trying to copy or is discovered some type of document or device not authorized by the teacher, the same will be graded with a 0, without the option of recovery, and therefore, the subject will be suspended.
3. A work, activity or exam will be considered to be "copied" when it reproduces all or a significant part of the work of oneself, 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 in paper or 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 carried out:

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 completion.

Any work that includes AI-generated fragments (e.g. abstracts, translations, text writing or image creation) 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 penalties in cases of seriousness.

2. In other works, **the restricted use of AI technologies is allowed** exclusively in those support tasks, such as bibliographic or information searches, proofreading, 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 they 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 assignment, the teacher in charge will clearly indicate **whether the prohibited or restricted use of AI applies**.

Aspects of evaluation related to values and attitudes

1. The teacher may reduce the grade of the subject by between 1 and 2 points when the student repeatedly does not respect the indications of behavior in the classroom and/or disturbs the normal functioning of the same.

- "No lack of respect for classmates or teachers will be tolerated. Homophobic, sexist or racist attitudes will also not be tolerated. Any student in whom any of the attitudes described above are detected will be classified as having failed the subject."

Formal aspects of written work

In all activities (individual and group) linguistic correction, writing and formal presentation aspects will be taken into account.

Other considerations

- All the evaluation tests will be published in the daily program and in the calendar of training and evaluation activities.
- The date of the single test will coincide with the date of the last continuous assessment test.
- Students who repeat the subject may request at the beginning of the course to carry out only one 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 modified by agreement of the Governing Council of 1 February 2023)).

Students in second or more enrolment who have taken all the assessment tests in the previous year may opt to be assessed 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 second or more enrolment who wish to opt for the final exam must notify the teaching staff responsible for the subject in writing two weeks before the published date.

Evaluation activities

Activities	Weight	Hours	ECTS	Learning Outcomes
Written work:	40%	3,5	0,14	SM01 SM10
Written work	30%			
Oral defense	10%			
Written assessment MODULE I: objective test	30%	2	0,08	SM01 SM10
Written assessment MODULE II: objective test	30%	2	0,08	SM01 SM10

Bibliography

Books:

Nursing Research: Developing Evidence-Based Nursing Practice

Autors: Susan K. Grove, Jennifer R. Gray

Edition: Elsevier 2019 (7th)

ISBN: 9788491135111

Nursing Research

Authors: Burns N, Grove S.

Edition: Elsevier 2012 (5th)

ISBN: 8481745170

Clinical and epidemiological research methods

Authors: Argimon Pallás JM, Jiménez Villa J

Edition: Elsevier, 2013 (4th)

ISBN: 9788480869416

Essentials of Nursing Research : Appraising Evidence for Nursing Practice

Authors: Polit DF, Beck CT

Edition: Philadelphia, Pa. ; Lippincott Williams & Wilkins, 2014 (8a)

ISBN: 9781451176803

Scientific research in health sciences

Author: Polit D, Hungler B.

Edition: Madrid Interamericana Mc Graw-Hill, 2000 6th

ISBN: 9789701026908

Introduction to Biostatistics for Nursing and Other Health Professions

Authors: Albert Navarro, Sergio Salas.

Edition: Publications Service of the Universitat Autònoma de Barcelona, 2021

ISBN: 8449094259

Fundamentals of Statistics in Health Sciences

Autors: Miguel Martín, Olivia Horna, Fúlvio B. Nedel, Albert Navarro.

Publisher: Servei de publicacions Universitat Autònoma de Barcelona, 2010.

ISBN: 9788449026324

Biostatistics for non-statisticians: principles for interpreting a scientific study

Authors: Erik Cobo, Pilar Muñoz, José Antonio González.

Publisher: Elsevier Doyma S.L., 2007.

ISBN: 9788445817827

Listen, observe and understand. Recovering the narrative in the Health Sciences. Contributions of qualitative research.

Authors: Berenguera A, Fernández de Sanmamed MJ, Pons M, Pujol E, Rodríguez D, Saura S.

Edition: Jordi Gol University Institute for Research in Primary Care (IDIAP J. Gol), 2014 (1st)

Webgraphy:**Fisterra**

<https://www.fisterra.com/formacion/metodologia-investigacion/>

Carlos III Health Institute

<https://bnsc.isciii.es/recursos-informacion>

Andalusian School of Public Health:

<https://easp.es/exploraevidencia/>

To the program

- Moodle