Information about the subject

Degree: Bachelor of Science Degree in Nursing

Faculty: Faculty of Medicine and Health Sciences

Code: 1211103 **Name:** Biostatistics and Research Methodology

Credits: 6,00 **ECTS Year:** 1 **Semester:** 2

Module: CORE COURSES 64.5 ECTS)

Subject Matter: ESTADÍSTICA **Type:** Basic Formation

Field of knowledge: MATEMÁTICAS Y ESTADÍSTICA

Department: Biostatistics, Epidemiology, and Public Health

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

1211A	David Fernández García **(Responsible Lecturer)**	david.fernandez@ucv.es
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CAJE David Fernández García **(Responsible Lecturer)** david.fernandez@ucv.es

Module organization

CORE COURSES 64.5 ECTS)

Subject Matter	ECTS	Subject	ECTS	Year/semester
ANATOMÍA HUMANA	6,00	Human and Functional Anatomy	6,00	1/1
FISIOLOGÍA	12,00	Human Physiology	6,00	1/2
		Physiopathology	6,00	2/1
BIOQUÍMICA	6,00	Clinical Biochemistry	6,00	1/1
ESTADÍSTICA	6,00	Biostatistics and Research Methodology	6,00	1/2
PSICOLOGÍA	6,00	Psychology of Care	6,00	1/1
IDIOMA MODERNO	6,00	English	6,00	1/2
FARMACOLOGÍA	6,00	Pharmacology	6,00	2/1
NUTRICIÓN	6,00	Nutrition and Dietetics	6,00	2/1
SOPORTE VITAL	6,00	Emergency Care and Life Support	6,00	4/1

Recommended knowledge

In order to get the most out of this course, we recommend that students have the following knowledge prior to enrolling:
1. Working with equations with one and two unknowns
2. Working with fractions
3. Simple mathematical calculations
4. Using a scientific calculator

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1	R3. Tener la capacidad de recopilar e interpretar datos e informaciones sobre las que fundamentar sus conclusiones incluyendo, cuando sea preciso y pertinente, la reflexión sobre asuntos de índole social, científica o ética en el ámbito de su campo de estudio.
R2	R16. Aplicar las tecnologías y sistemas de información y comunicación de los cuidados de salud.
R3	R28. Analizar los datos estadísticos referidos a estudios poblacionales, identificando las posibles causas de problemas de salud. Educar, facilitar y apoyar la salud y el bienestar de los miembros de la comunidad, cuyas vidas están afectadas por problemas de salud, riesgo, sufrimiento, enfermedad, incapacidad o muerte.
R4	R55. Diferenciar la metodología de investigación cuantitativa y cualitativa, aplicándolas para la elaboración de proyectos de investigación.
R5	R56. Basar las intervenciones de la enfermería en la evidencia científica y en los medios disponibles. Demostrar destreza en el manejo de cálculos estadísticos e inferenciales. Interpretar los resultados de los análisis estadísticos para su aplicación práctica.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

	Weighting			
	1	2	3	4

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R3, R4, R5	60,00%	Written exams
R1, R2	35,00%	Practical tests and assignments
R1, R2, R3, R4, R5	5,00%	Attendance and participation

Observations

- Clarifications on Course Assessment

·The **theoretical written tests (60%)** consist of the final in-person exam and continuous assessment tasks completed throughout the course.

·The **practical tests and assignments (35%)** are based on the group research project.

·**Attendance and active participation (5%)** will also be assessed.

To **pass the course**, students must obtain at least **50% in the final exam**. The exam will consist of two sections:

·A part with **15 multiple-choice questions**, each with four possible answers and only one correct option. Wrong answers will be penalized according to the formula A - (E / (n - 1)), where A = number of correct answers, E = number of incorrect answers, and n = number of options.

·A second part with **3 problems to solve**. The final result and the reasoning process will both be evaluated.

If the student does not reach **50% in the final exam**, the published grade will be the **unweighted score** obtained in the final exam.

The **research project** will involve working on one of the proposed topics related to the field of nursing care, following the phases of the scientific method and the guidelines provided during the semester.

Spelling mistakes, grammatical inconsistencies, and the use of "text message language" in assignments, exams, or any other evaluation tools will result in a **10% deduction** of the grade assigned to the task.

- Use of Artificial Intelligence

*Students **may use AI** for:*

·Clarifying doubts regarding learning activities
·Assisted learning (alternative explanations or self-assessment exercises)
·Searching for additional resources and references for studying
·AI-generated activities proposed by the instructor

*The following uses of AI are **strictly prohibited**:*

·Recording or transcribing, partially or fully, any classroom activity to generate summaries or notes using AI
·Generating text for assignments related to the **"Research Project"**
·Presenting AI-generated work as one's own
·Feeding instructions, assignments, or tests into AI tools to receive automatic answers

Citation and Attribution Criteria

·If AI is used in any activity, students must indicate **where it was used**, **which AI tool was used**, and **for what purpose** (e.g., source consultation, style analysis, knowledge expansion, etc.)

On a Single Evaluation

In this course, it is possible to opt for a **single evaluation**, which is an exceptional and extraordinary mode of assessment. This option will be granted only when a student, due to a justified and properly accredited reason, cannot meet the minimum attendance requirement. This option must be requested from the professor in charge, who, in coordination with the corresponding Department's administration, will assess its validity and communicate the final decision in writing. The single evaluation is not a single exam, but rather a set of tasks and/or tests through which all established learning outcomes will be assessed, ensuring that the student has dedicated the corresponding ECTS to the course.

- COURSE COMPLETION FOR STUDENTS ENROLLED FOR THE SECOND OR SUBSEQUENT TIME

The assessment criteria for students enrolled for the second or subsequent time will be based on a single **exam**, consisting of two parts:

·One with **objective multiple-choice questions** (15 questions)
·One with **4 problems**, of which **3 must be solved**

The first part will represent **30%** of the final grade, and the second part **70%**.
Multiple-choice questions will have 4 possible answers and only one correct option. Wrong answers will be penalized according to the formula A - (E / (n - 1)), where A = number of correct answers, E = number of incorrect answers, and n = number of options.
The instructor responsible for students in their second or subsequent enrollment will contact them through the **virtual campus**, where they will be informed of the **tutoring days and hours**.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1	Presentation, explanation, and demonstration of content by the lecturer, and active listening, elaboration, and formulation of questions that organise the information received
M3	Personalised attention and small-group work. Period of instruction and/or guidance provided by a tutor in order to review and discuss the materials and topics presented in classes, seminars, readings, assignments, etc
M4	Set of oral and/or written tests used in the initial, formative, or summative assessment of the student
M5	Student study: Individual preparation of reading materials, essays, problem-solving activities, seminars, assignments, reports, etc., to be presented or submitted in lectures, practical classes, and/or small-groups. Work carried out on the university platform (https://campusvirtual.ucv.es/)
M6	Group preparation of reading materials, essays, problem-solving activities, assignments, reports, etc., to be presented or submitted in lectures, practical classes, seminars, and/or small-groups. Work carried out on the university platform (https://campusvirtual.ucv.es/)

M7 Group work sessions supervised by the lecturer. Case studies, diagnostic analyses, problem-solving activites, fieldwork, computer lab activities, visits, data searches, online libraries, Internet, etc. Meaningful knowledge construction through student interaction and activity.

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Participatory lecture Presentation, explanation, and demonstration of content by the lecturer, along with active listening, and the development and formulation of questions that organise the information received. M1, M7	R3	32,00	1,28
Practical classes Group work sessions supervised by the lecturer. Case studies, diagnostic analyses, problem-solving activities, fieldwork, computer lab activities, visits, data searches, libraries, online resources, Internet, etc. Meaningful knowledge construction through student interaction and activity M3	R1, R2, R3	18,00	0,72
Support sessions Personalised and small-group mentoring. Period of instruction and/or guidance provided by a tutor with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, assignments, etc M3	R4	8,00	0,32
Assessment Set of oral and/or written tests used in the initial, formative, or summative evaluation of the student M1, M4	R3, R5	2,00	0,08
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Independent work Individual preparation of reading materials, essays, problem-solving activities, seminars, assignments, reports, etc., to be presented or submitted in lectures, practical classes, and/or small-group sessions. Work carried out on the university platform (www.plataforma.ucv.es). M5	R1	60,00	2,40
Group work Group preparation of reading materials, essays, problem-solving activities, assignments, reports, etc., to be presented or submitted in lectures, practical classes, seminars, and/or small-group tutorials. Work carried out on the university platform (www.plataforma.ucv.es) M6	R2, R5	30,00	1,20
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
RESEARCH METHODOLOGY	·**Chapter 1:** Introduction to the research. Planning and organization of a research process. Research work stages. ·**Chapter 2:** Bibliographic research and documentation. ·**Chapter 3:** Hypothesis. Variables. Instruments. Research designs. Population and sample. ·**Chapter 4:** Data collection. Data analysis. Preparation of data for statistical analysis. Interpretation of research data. Conclusions. ·**Chapter 5:** Diffusion of the research results.
DESCRIPTIVE STATISTICS	·**Chapter 6:** Statistics application in nursery. Statistics variable description. ·**Chapter 7:** Numerical description of a bidimensional statistics variable. Regression and correlation.
PROBABILITY CALCULATION	·**Chapter 8:** Probability introduction. Random variable. Characteristics. Probability distribution models.
INFERENTIAL STATISTICS	·**Chapter 9:** Simple random sampling. Estimation. ·**Chapter 10:** Hypothesis testing. Parametric tests. Chi-Square test.

Temporary organization of learning:

Block of content	Number of sessions	Hours
RESEARCH METHODOLOGY	14,00	28,00
DESCRIPTIVE STATISTICS	4,00	8,00
PROBABILITY CALCULATION	2,00	4,00
INFERENTIAL STATISTICS	10,00	20,00

References

Basic bibliography

1.Moncho J. *Estadística aplicada a las ciencias de la salud*. 2ª ed. Barcelona: Elsevier; 2021.
2.Argimón JM, Jiménez J. *Métodos de investigación clínica y epidemiológica*. 5ª ed. Barcelona: Elsevier España; 2019.
3.Martínez-González MA, Sánchez Villegas A. *Bioestadística amigable*. 4ª ed. Barcelona: Elsevier; 2020.
4.Salamanca AB. *El aeiou de la investigación en enfermería*. Madrid: Ediciones Fuden; 2013.

Recomended bibliography

1.Touron J. *Análisis de datos y medida en educación*. Logroño: UNIR Editorial; 2023.
2.Spiegelhalter D. *El arte de la estadística*. Madrid: Capitán Swing; 2023.
3.Nussbaumer C. *Storytelling con datos: visualización de datos para profesionales*. 4ª ed. Madrid: Wiley-Anaya; 2017.