COURSE DATA

DATA SUBJECT

Code: 33005
Name: Statistics
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1202 - Degree in Physiotherapy	Facultat de Fisioteràpia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1202 - Degree in Physiotherapy	Statistics	BASIC

COORDINATION

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SUMMARY

With the Statistics course the student will know the basic concepts of descriptive and inferential analysis, in order to perform the appropriate statistical tests, and answer the hypothesis.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is not necessary previous requirements.

COMPETENCES / LEARNING OUTCOMES

1202 - Degree in Physiotherapy

Acquire computer skills regarding the study field.

Acquire knowledge related to the information and communication technologies.

Analyse data by using the appropriate software.

Describe and synthetize properly the data observed in the experiment.

Have the ability to organise and plan work.

Interpret properly the results provided by the software.

Know and understand the sciences, models, techniques and instruments on which Physiotherapy is based, structured and developed

Plan easy and useful experiments to reach the study goals.

Prepare and present a study report.

Recognise diversity, multiculturality, democratic values and peace culture.

Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.

Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.

Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.

Work in teams.

Work on and systematically complete physiotherapy records

DESCRIPTION OF CONTENTS

1. Introduction

Lesson 1. Basic concepts of data analysis.

2. Descriptive statistics with a one or more variables

Lesson 2. Organization and representation of data: database management. Frequency distribution. Measures of position: quantils. Graphic representations.
Lesson 3. Measures of distribution shape: Normality, asymmetry and kurtosis. Extreme values. Standard scores.
Lesson 4. Measures of central tendency: Arithmetic mean, median and mode. Resistant and robust measures of central tendency.
Lesson 5. Measures of variability: Variance and standard deviation. Resistant and robust measures of variability.

3. Introduction to statistical inference and hypothesis contrasts

Lesson 6. Hypothesis contrast: Presentation of the hypothesis. The logic of contrast. Type of error. Level of significance and power.
Lesson 7. Statistical Inference: Main concepts. Sampling. Distribution of a statistical sample. Main sample distributions. Sample size.
Lesson 8. Estimated parameters: mean and intervals. Desirable characteristics of an estimator. Estimation of means and proportions. Calculating confidence intervals for the main parameters. Level of significance and power.

4. Mean Difference. Parametric analysis

Lesson 9. Parametric contrast of hypothesis I: contrast test for a group. Contrast tests for two groups independent or related.
Lesson 10. Parametric contrast of hypothesis II: Contrast tests for more than two independent groups: ANOVA.
Lesson 11. Parametric contrast of hypothesis III Contrast tests for two related groups: ANOVA.
Lesson 12. Parametric contrast of hypothesis III: Between-subjects fFactorial ANOVA.
Lesson 13. Parametric contrast of hypothesis III: Within-subjects factorial ANOVA.

5. Relationship between quantitative data

Lesson 14. Analysis of contingency tables: Chi-square test as an association and as a test of contrast. Coefficients derived from Chi-square. Interpretation and main features

6. Relationship between quantitative data

Lesson 15. Measures of relationship or association. Covariance and Pearson correlation coefficients. Measures of association for categorical data. Measures of association for ordinal variables.
Lesson 16. Linear regression. Model components. Implementation and evaluation model: coefficient of determination. Introduction to multiple regression.

7. Median Difference. Nonparametric analysis.

Lesson 17. Nonparametric contrast of hypothesis I: Basics. Verification of assumptions. Testing contrast to a group. Nonparametric contrast of hypothesis II: Test of contrast for two independent groups and related. Tests for more than two independent groups and related.

8. PRACTICAL PROGRAMME

Practice 1 and 2. Introduction to data analysis and management of the statistical program.
Practice 3. Descriptive and exploratory analysis.
Practice 4. Contrast hypothesis and introduction to the Student's t test.
Practice 5. Contrasts on one and two means.
Practice 6. Contrasts on one and two means.
Practice 7. One-way analysis of variance I.
Practice 8. One-way analysis of variance II.
Practice 9. Factorial Analysis variance I.
Practice 10. Factorial Analysis variance II.
Practice 11. Analysis of categorical variables.
Practice 12. Simple linear correlation.
Practice 13. Linear regression.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	20,00
Computer classroom practice	40,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	25,00
Independent study and work	25,00
Preparation of lessons	20,00
Preparation for assessment activities	20,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The contents of the theoretical program are developed by: lecture, case studies and problem-based learning.

Throughout the practical program, students learn by solving problems and exercises and case studies.

The teaching program may be modified during the development of the course if the teacher under teacher quality creteria and assimilation of knowledge by the student, its deems appropriate

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EVALUATION

THEORETICAL (1 hour):

Multiple choice test

- 30 questions

- 4 answers 1 correct

- [Correct–(Mistakes/No. answers–1)]*(highest score/no. questions)

40% of final mark

PRACTICAL (1 hour):

-1 Case or problem from which the student will answer the questions.
60% of final mark

In all the written tests will penalize bad use of language.

The final mark for the subject will be the pondered sum of the marks on the theoretical and practical blocks. Anyway must get at least 5 of 10 in both the theoretical and practical exams, to make the average.

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REFERENCES

BASIC

- Norman y Streiner. Bioestadística. Madrid: Harcourt; 2000.
- Ríos S. Iniciación a la estadística. Madrid: Paraninfo; 1992.
- Ferrán Aranaz M. SPSS para Windows: análisis estadístico. Madrid: McGrawHill; 2001.
- Sánchez Zuriaga D. Estadística aplicada a la fisioterapia, las ciencias del deporte y la biomecánica. Madrid: CEU Ediciones; 2010

ADDITIONAL

- Amón J. Estadística para psicólogos: estadística. Probabilidad. Estadística inferencial. Madrid: Pirámide; 2003.
- Fields A. Discovering Statistics using SPSS. London: SAGE Publications; 2006.
- GOMEZ RUBIO, V., & LÓPEZ CANO, E. (2017). Teoría y problemas resueltos de matemática aplicada y estadística para farmacia. Ediciones Paraninfo, SA.

Likewise, in each lesson, the books, scientific articles, and recommended readings of interest for the preparation of the addressed content will be specified.