COURSE DATA

DATA SUBJECT

Code: 34067
Name: Statistics
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1201 - Degree in Pharmacy	Facultat de Farmàcia i Ciències de l'alimentació	1	First quarter
1211 - Double Degree in Pharmacy and Human Nutrition and Dietetics	Facultat de Farmàcia i Ciències de l'alimentació	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1201 - Degree in Pharmacy	Statistics	BASIC
1211 - Double Degree in Pharmacy and Human Nutrition and Dietetics	Asignaturas obligatorias del PDG Farmacia-Nutrición Humana y Dietética	COMPULSORY

COORDINATION

PEIRO RAMADA JUAN JOSE

SUMMARY

This course aims to provide students with the tools and basic concepts of Statistics which are necessary to state statistical hypotheses, recognize simple probabilistic models, analyze data obtained by either direct observation of the environment or as a result of controlled experiments in laboratories and make decisions based on the conclusions drawn from this analysis. An additional purpose of this course is to motivate students in the study and application of Statistics, using the proper tools to solve real problems.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

There are no recommendations as it is an introductory course.

COMPETENCES / LEARNING OUTCOMES

1201 - Degree in Pharmacy

Act with autonomy in learning, making informed decisions in different contexts, issuing judgements based on experimentation and analysis, and transferring knowledge to new situations.

Analyse the observed data using a statistical package.

Calculate integrals with different methods of primitive calculation.

Collaborate effectively in work teams, assuming responsibilities and leadership roles and contributing to collective improvement and development.

Contribute to the design, development and implementation of solutions that respond to social demands, taking into account the Sustainable Development Goals as a reference.

Correctly interpret the results provided by statistical packages.

Demonstrate critical and self-critical thinking in the field of the degree programme, considering aspects such as professional ethics, moral values and the social implications of the different activities carried out.

Describe and adequately synthesise the set of data observed in the experiment.

Design simple experiments useful to achieve the objectives of the study.

Know and understand, within the field of the degree programme, gender inequalities in society; integrate different needs and preferences based on sex and gender into the design of solutions and problem solving.

Know how to communicate effectively, both orally and in writing, adapting to the characteristics of the situation and the audience.

Module: Physics and Mathematics. Design experiments based on statistical criteria.

Module: Physics and Mathematics. Evaluate scientific data related to medicines and health products.

Module: Physics and Mathematics. Use statistical analysis applied to pharmaceutical sciences.

Possess and understand knowledge in the different areas of study included in pharmacist training.

Prepare and present a report on the experimental study carried out.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge, to respond to diverse professional and social needs.

Solve simple ordinary differential equations.

DESCRIPTION OF CONTENTS

1. Exploratory data analysis

Samples and populations. Types of variables. Graphical and numerical description of samples and variables

2. Introduction to probability

Events and probability. Random variables. The binomial distribution. The Normal curves. Areas under a Normal curve.

3. Statistical analysis of a sample

Population parameters. Estimation of a population mean. Hypothesis testing for a population mean. Normality test. Non-parametric alternatives.

4. Statistical analysis of two samples

Comparison of two paired samples. Confidence interval and the paired-sample t test. Nonparametric alternatives.
Comparison of two independent samples. Confidence interval for the difference of two population means. Hypothesis testing: the test t. Nonparametric alternatives.

5. Statistical analysis of k independent samples

Statistical design of k independent samples. Analysis of Variance and post-hoc tests. Nonparametric alternatives

6. Analysis of categorical data

Analysis of a population proportion. The Chi-Square Goodness-of-fit test. Contingency tables. The Chi-Square test.

7. Linear regression models

Descriptive statistics of two numerical variables. Regression line. Statistical inference of the linear model. Confidence interval for the prediction. Other regression models

8. Elementary notions of Differential and Integral Calculus

Derivatives and integrals. Ordinary Differential Equations.

9. LABORATORY SESSIONS

Exploratory data analysis.
Statistical analysis of a sample.
Statistical analysis of independent samples.
Categorical data.
Linear regression models.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	48,00
Computer classroom practice	10,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	0,00
Independent study and work	45,00
Preparation of lessons	15,00
Preparation for assessment activities	30,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

Theory classes will be devoted to develop the agenda and raise problems whose solution requires the methodology corresponding to each subject. WE will introduce the appropriate statistical technique and apply it to solve proposed problems using statistical software. For the preparation of the course the student will have a collection of proposed problems, separated by subjects, which they will have to resolve on their own.

The practical sessions will be synchronized with the theory. They will allow the student to solve problems by applying several statistical procedures.

EVALUATION

The final grade for the course is calculated from the following three blocks:

- B1. Theoretical-practical exam, the resolution of which requires, among others, the interpretation of different outputs of the statistical software R used during the course: 60% of the final grade. The minimum grade required in this block to compensate with the other blocks is 5 out of 10.

- B2. Resolution of theoretical and practical questions and problems raised throughout the course related with the theory sessions: 20% of the final grade.

- B3: Resolution of the case studies raised in the computer sessions and whose resolution requires the use of the statistical software R and the interpretation of the results obtained: 20% of the final grade.

The continuous evaluation, corresponding to blocks B2 and B3, is not recoverable. In the second call of the subject, only the theoretical-practical exam (block B1) will be repeated and the grades obtained in blocks B2 and B3 will be kept.

Copying or plagiaring of any task that is part of the evaluation will mean the impossibility of passing the subject, subjecting themselves to the appropriate disciplinary procedures.

Keep in mind that, in accordance with article 13. d) of the University Student Statute (RD 1791/2010, of December 30), it is the duty of a student to refrain from the use or cooperation in fraudulent procedures in the evaluation tests, in the work carried out, or in official documents of the university.

REFERENCES

- Chase, W. & Brown, F. General Statistics. (2nd ed.) Wiley. (1992) - Norman, G.R. y Steiner, D.L. Bioestadística. Madrid: Mosby/Doyma Libros. (1996)

- Samuels, M.L., Witmer, J.A. y Schaffner, A. Fundamentos de Estadística para las Ciencias de la Vida (4a ed.) Pearson Educación S.A. (2012)

- - Cobo, E. Bioestadística para no estadísticos. Elsevier-Masson. (2007) - Milton, J.S. Estadística para Biología y Ciencias de la Salud. (3ª ed.) Madrid: McGraw-Hill Interamericana. (2001)

- Rueda, P. Curso básico de matemáticas para universitarios. Laboratori de Materials. Publicacions de la Universitat de València (2009).