

**COURSE DATA****Data Subject**

Code	33860
Name	Introduction to the Statistical Analysis and Processing of Data
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1007 - Degree in Information and Documentation	Faculty of Geography and History	1	Second term

Subject-matter

Degree	Subject-matter	Character
1007 - Degree in Information and Documentation	13 - Statistics	Basic Training

Coordination

Name	Department
BELENGUER RIBERA, JOSE MANUEL	130 - Statistics and Operational Research

SUMMARY

Statistical data analysis is a basic tool for its practical application on different areas of education and research in Information and Documentation, such as the assessment and management of the resources, processes and services of information units; the development of studies on the community of users, with particular attention to gender studies; or the quantitative analysis of the scientific and documentary production in general. Moreover, statistics is a basic analytical tool for problem-solving and decision-making in any organisation or system. The aim is to provide the tools and basic concepts of statistics that are needed to formulate hypotheses, recognise simple probabilistic models, analyse data sets and make decisions based on statistical techniques.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

No hay

OUTCOMES

1007 - Degree in Information and Documentation

- Capacity to write analytical reports and summaries with regard to management and organisation of information.
- Demonstrate organisational and planning skills.
- Have computer skills related to the field of study.
- Have skills for information management.
- Have problem-solving skills.
- Have decision-making capacity.
- Be able to apply critical reasoning to the analysis and assessment of alternatives.
- Be able to undertake improvements and propose innovations.

LEARNING OUTCOMES

Be familiar with the variability that is intrinsic to the data obtained in any type of study and with the problems that this may cause for drawing conclusions from research.

Model simple random experiments by identifying the appropriate probability model.

Handle techniques related with statistical inference, such as estimation and testing of hypotheses, which will be used in the statistical analysis of experiments.

Analyse the applicability conditions and limitations of the most common statistical methods. Know how to use statistical software to work with databases. Interpret graphs and tables obtained with statistical software.

DESCRIPTION OF CONTENTS



1. Introduction to Statistics.

- 1.1.- Concept and classification of Statistics.
- 1.2.- Measurement Scales.
- 1.3.- Basic definitions.
- 1.4.- Sampling: representativeness of the sample.
- 1.5.- Data analysis, results of an experiment and conclusions.

2. Description of a sample.

- 2.1.- Data organization: frequency tables and graphs.
- 2.2.- Numerical description of a sample: measures of central tendency, position, dispersion and shape).

3. Relationship between two variables.

- 3.1.- Two-dimensional frequency distribution. Graphic representations.
- 3.2.- Marginal distributions. Covariance.
- 3.3.- Concept of correlation. Linear correlation coefficient.
- 3.4.- Linear regression: least squares regression lines.

4. Description of a population: Probability distributions.

- 4.1.- Probability concept. Properties.
- 4.2.- Discrete and continuous probability distributions.
- 4.3.- Normal distribution. Properties.
- 4.4.- Distribution of the sample mean. Central limit theorem.

5. Inferential analysis in a population.

- 5.1.- Point estimation.
- 5.2.- Interval estimation: Confidence interval for the mean.
- 5.3.- Introduction to the hypothesis contrast. Level of significance and p-value.
- 5.4.- Contrasts on a mean.

6. Inference with two populations.

- 6.1.- Introduction. Independent samples and paired samples.
- 6.2.- Confidence interval and hypothesis contrast for the difference of two means. Independent samples.
- 6.3.- Confidence interval and hypothesis contrast for paired samples.

**7. Analysis of categorical data.**

7.1.- Interval estimation: confidence interval for a proportion.

7.2.- Contrasts on a proportion and Goodness of fit.

7.3.- Contingency tables.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Computer classroom practice	30,00	100
Development of individual work	15,00	0
Study and independent work	27,00	0
Preparation of evaluation activities	3,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	30,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

All the documents that will be used, both in the theoretical and practical sessions, will be available in the Virtual Classroom environment.

PRESENIAL CLASSES:

In the theory classes real problems will arise whose resolution requires the methodology corresponding to each topic. Then the appropriate statistical technique will be introduced and applied to solving the problem.

The practical sessions, in the computer classroom and synchronized with the theory, will allow the student to apply these procedures to solve problems. Each student will have a dossier in which the content of each practice will be described, and will include the problems that will be solved in it.

PREPARATION OF THEORETICAL CLASSES:

For the preparation of the subject each student will have problems that can be solved on their own.

PREPARATION OF PRACTICAL WORK:

The student must attend each practical session having previously read this dossier and having reviewed the theoretical contents related to it



EVALUATION

Written tests:

Taking into account the fundamentally practical approach of the subject it is impossible to conceive, at the time of evaluation, a separation between theory and practice, so the evaluation will consist of a theoretical-practical examination whose resolution will require the interpretation of different results presented in the standard format of the statistical software used. It will be essential to obtain a grade on the exam equal to or greater than 5 out of 10 to average with the rest of the grades.

Individual and/or group work:

They will consist in the resolution, in group, of the problems proposed in some practical classes and/or the realization of some individual works analyzing, from a statistical point of view, some data set.

The composition of the final grade will be taken, in summary, to the following table:

- EXAMINATION: 50%
- INDIVIDUAL AND/OR GROUP WORK: 50%
- TOTAL: 100%

This evaluation is based on the premise that teaching at the Universitat de València is, by definition, a face-to-face teaching. In this sense, students should bear in mind that attendance, both theoretical and practical, is essential for proper monitoring of the contents of the subject. The student must also bear in mind the possibility of a part-time enrollment when it is not possible to attend all the subjects that make up a complete course (60 credits). However, the possibility will be established, in cases that are adequately justified and for those students who request it, the possibility of being evaluated without having to attend all or part of the classes. In these cases the student should proceed as follows:

- At the beginning of the course, the teacher/s responsible for the subject must be informed about the incident for which it is impossible for them to attend the class, which must be adequately justified in a documentary way.
- The responsible teacher, in view of this information will decide the possibility of evaluation without total or partial assistance to the classes of the subject.

Students who are in this situation must submit for evaluation all work required by the lecturer (not necessarily the same to those required for the course) and may also be called to defend them orally to the lecturer, and conduct a knowledge test. The weight of the final grade work will be 50% and the test the remaining 50% knowledge. Students who do not attend Theoretical activities and / or practices, and individual and collective practical work, will read a series of supplementary texts.

REFERENCES



Basic

- Egghe, L. y Rousseau, R. (1990). Introduction to Informetrics: quantitative methods in library, documentation and information science. Elsevier
- Glenberg, A. M. y Andrzejewski, M. E. (2008). Learning from data. An introduction to statistical reasoning. Lawrence Erlbaum Associates, 3ª Edición
- Marín, J. (2008). Estadística Aplicada a las Ciencias de la Documentación. Diego Marín Librero-Editor, 3ª Edición
- Peña, D. y Romo, J. (1997) Introducción a la Estadística para las Ciencias Sociales. McGraw-Hill.

Additional

- Milton, J. S. (2001). Estadística para Biología y Ciencias de la Salud. Madrid: Ed. Interamericana - McGraw-Hill. 3ª Edición
- Samuels, M.L., Witmer, J.A. y Schaffner (2012) Fundamentos de Estadística para las ciencias de la vida. Pearson Educación SA. 4ª Edición

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

ACADEMIC YEAR 2021-2022 (1st TERM)

Introduction to the Statistical Analysis and Processing of Data (33860)

SEMI-PRESENTIAL TEACHING

1. Contents

The contents initially included in the teaching guide are maintained.

2. Workload and time schedule

The activities and their hours of dedication in ECTS credits marked in the original Course Guide will be kept.

Theoretical classes will be developed online and practical classes will have a 100% attendance. Teaching planning will be specified at the beginning of the term.

If the sanitary situation changes and no access to the University facilities is possible, all teaching activities will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.



3. Teaching Methodology

Online theoretical classes through the Blackboard Collaborate or Teams platforms that can be complemented with different types of materials and activities in the Virtual classroom.

Tutorials will be done online (through the UV corporate mail) or face-to-face by prior appointment with the teacher.

If the sanitary situation changes and no access to the University facilities is possible, teaching and tutorials will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

4. Evaluation

The evaluation criteria established in the Course Guide are kept.

If the University facilities were closed on the dates set in the official calendar for the final exam, the face-to-face exam will be replaced by an online test.

5. Bibliographic references

The recommended bibliography in the Course Guide is kept. If the sanitary situation changes and the access to the recommended bibliography is not possible, it will be replaced by materials accessible online.