Subject identification

Subject	20606 - Analysis of Economic Data
Credits	1.8 attended (45 hours) 4.2 non-attended (105 hours) 6 total (150 hours).
Group	Group 59, 2S, Ibiza, GADE(Campus Extens)
Període d'impartició	2nd semester
Teaching language	Catalan

Lecturers

Lecturers	Office hours for students					
	Start time	End time	Day	Start date	End date	Location
María Teresa Marí Vich	17:00h	18:00h	Monday	13/02/2012	29/06/2012	N.4 Extensió Eivissa 3r Pis

Degrees where the subject is taught

Degree	Character	Course	Studies
Degree in Business Administration	Foundation courses	First course	Degreee
Degree in Economics	Foundation courses	First course	Degreee

Contextualisation

The subject "Analysis of economic data" is a subject of first cycle, of basic formation and that is distributed during the second fourth month period. The subject that counts on a total of nine subjects is divided in three parts. First, an introduction of two subjects, will locate the student and it will give basic knowledge to be able to confront the rest of the subject. The second part of five subjects is focused on learning the statistical instruments that will allow to make a description of the economic data and to obtain the first conclusions. In the third part that is developed throughout two subjects, all the techniques of statistical inference will be learned to be able to carry out tests of the hypotheses raised during the second part of the subject and to make estimations of population parameters from the data of a sample.

Analysis of economic data is a course of basic character in a block of quantitative economic methods in the degree of Economy and the degree of Administration and Direction of Companies. In both degrees this block gives an ample knowledge on empirical analysis. The student not only learns like reading, understanding and to interpret empirical studies, but also to make empirical studies of suitable form.

Requirements

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The subject has a introductory character and is of basic formation and, therefore, it does not have essential nor recommendable requirements.

Skills

The main target of this subject is the knowledge, by part of the student, of the basic techniques of Statistical Analysis of Data (Statistical Descriptive and Statistical Inference). A basic formation and instruments of analyses of the socioeconomic reality that will be very useful to approach with success other subjects is provided during the course. The student will know and learn to use basic theoretical concepts of Statistics, in order that they can be used for the solution of real problems that the student can find in the professional future. In particular, the student will acquire knowledge on different methods and statistical techniques, and will know to determine and to analyze the obtained results of the application of such methods.

Specific

1. To be able to use suitable statistical tools for a rational analysis. (GADE: CE2.1.7 From economic and business data being able to apply suitable statistical and econometrical tools for the analysis of the company and its environment. GECO: CE3 To contribute with rationality to the analysis and the description of any aspect of the economic reality.).
2. GADE: CE2.3.7 To be aware of relevant economical statistical data sources and as well as be able to use suitable analytical tools to prepare the decision making in companies and organizations, especially on the operational and tactical levels..

General

1. GECO: CG3 To apply to the analysis of the problems professional criteria based on the handling of technical instruments..
2. To be able to analyze problems with reflection and critical reasoning. (GADE: CG5 To have the skills to collect and interpret relevant data and to make a judgement that includes a reflection on social, scientific or ethical topics. GECO: CG5. Analyzing problems with critical reasoning, without prejudices, with accuracy and rigor.).
3. GECO: CG7 Capacity of synthesis..

Content

Part 1: Introduction to the analysis of data (2 subjects)

With this subject, it is tried to locate the student and to become familiar with the subject and with the concepts that will be used throughout the course. The term of statistic will be defined, the different parts that it has, its more frequent use and the purpose of its application to the economy.

Part 2: Descriptive statistic (5 subjects)

Along these five subjects that include the second part of the course, different applicable measures for a complete descriptive analysis for a determined variable and some of the most important statistical methods are explained that allow identifying the association between quantitative as well as qualitative variables. It is introduced to the student the simple linear regression. In order to analyze the evolution of the dependent variables in the previous models a subject will be developed to explain index numbers, where it is explained

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the most important matter and its properties. It is important that the student knows to interpret the results derived from all the explained statistical measures in the subject.

Part 3: Statistical inference (2 subjects).

These two last subjects try to introduce the student to the part of the statistics that, from a sample allows obtaining population estimations, as much precise as by interval, to test hypotheses and to generalize the results of a sample to a population. It is, of course, important not forgetting the concepts uncertainty, error and reliability.

Thematic content

Part 1. Introduction to the analysis of data (2 topics)

Chapter 1. Economic variable and statistical analysis

1.1. Types of economic variables.
1.1.1. Qualitative and quantitative variable.
1.1.2. Macroeconomic and microeconomic variables.
1.2. Data of cross-section, time series and panel data.
1.3. Random components of the economic variables. The no experimental character of the economic data.
1.4. Population and sample. Main methods of sampling in the economic statistics.
1.5. Stages of the analysis of economic data.
1.6. Obtaining of the data.
1.7. Descriptive analysis of the data

Chapter 2. The statistical information for the economic analysis. Organization and sources.

2.1. Statistical organs of the European Union, General Administration and CCAA.
2.2. Official statistical production: Statistics of the sectors productive, demographic, social and environmental; financial statistics and of the public administrations.
2.3. Resources for economists in the network

Specific objectives:

· To know the definition Statistic like discipline that provides instruments to analyze numerical display to include/understand the reality and to make decisions.
· To differentiate the variables and to classify them based on its scale of measurement and properties.
· To understand the difference between population clearly and shows. To indicate the main advantages and disadvantages to study a population from a sample.
· To differentiate the descriptive statistic and the inferential statistic.
· To know the stages of the process of statistical analysis and the importance of each one of them.
· To know the main sources of information and official statistical organisms

Part 2. Descriptive statistic (5 topics)

Chapter 3. Unidimensional analysis of economic variables

3.1. Frequency distributions. Graphs.
3.2. Measures of position.
3.3. Measures of dispersion.
3.4. Measures of asymmetry. Box-plot.
3.5. Measures of inequality. The Lorenz curve and the Gini index.

Practice and/or activities:

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· To learn how to use Excel and the descriptive statistical tools to be able to analyze a database and to obtain results that synthesize the information.

Specific objectives:

· To know the methods of collection of information and relevant aspects at the time to analyze them.
· To construct tables of frequency distributions and to process all the data that is come off these.
· To select the more suitable graphical representation considering the accuracy of the graphs for the type of variable and the limitations that thus some of them offer, and understanding the information provided.
· To know some of the measures of syntheses which describe the general aspects of the distribution and summarize diverse aspects of it, like central position, dispersion and shape. To know how to interpret its results and of selecting most suitable according to the characteristics of the variables to study, and the goal pursued.
· To define each one of the measures of syntheses learned in class, its properties, their advantages and limitations.
· In general, to develop the capacity to choose graphical and numerical methods to explore, to organize, to summarize and to describe the data, considering the type of variable and the form of the distribution.

Chapter 4. Bivariant analysis of quantitative economic variables.
4.1 Linear association between two variables.
4.2 The covariance. Properties of the covariance.
4.3 Coefficient of linear correlation. Properties of the correlation coefficient.

Chapter 5. Bivariant analysis of qualitative economic variables.
5.1 Table of contingency. Joint distribution. Marginal distribution. Conditional distribution.
5.2 Chi-square and C of contingency.

Specific objectives:

· To understand the importance of the study of the relation between variables and of the concept of statistical independence.
· To construct tables of bidimensional frequency distributions and to calculate joint, marginal, conditional frequencies and to interpret its meaning.
· To represent the relation between variables graphically and to analyze its meaning, with a scatter diagram.
· To calculate the statistical ones which they summarize the relation between variables, to interpret its values and of knowing its properties, advantages and limitations

Chapter 6. Simple Linear Regression.
6.1 The economic model and the random component.
6.2 Estimation of the parameters of the regression: Ordinary least square.
6.3 Interpretation of the estimations
6.4 Measures of goodness of fit.
6.5 Prediction

Practice and/or activities:

· It will be studied to use all the tools that allow the analysis of two variables and the possible relation between these. In addition it will be introduced to the estimation of a model of simple linear regression, obtaining of the parameters, interpreting its meaning, validation of the formulated model and predictions.

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Specific objectives:

· To use the method of ordinary least square to obtain the best straight line that explains the linear relation of two variables.
· To interpret the values of the coefficients and of determining the accuracy of the model.
· To know the limitations of the simple linear adjustment and possible solutions.
· To make predictions for the dependent variable on the basis of the obtained results of the regression and to determine when these results are trustworthy.

Chapter 7. Index numbers

7.1 Types of indices.
7.2 Main economic indices.
7.3 Index of prices of consumption and other indices of conjuncture (IPC, IPSEBENE, IPCA, IPRI...)
7.4 Change of base.
7.5 Chained indices.
7.6 Deflating of series.

Practice and/or activities:

· To learn to use the resources and the information provided by the INE to obtain the IPC.

Specific objectives:

· To know the definition of simple, complex indices, weighed, thus like the advantages and disadvantages of each one of them.
· To calculate indices of prices, amounts and value.
· To know some the main indices which are used in the Spanish economy and to interpret its values and some of its uses.
· To connect indices which have changed their base.
· To quantify the inflation and to deflate economic magnitudes.
· To know the IPC and the Deflator of the GDP, as well as its advantages and disadvantages in the indexing of goods.

Part 3. Statistical inference (2 topics).

Chapter 8. Basic concepts of probability

8.1 Discreet and continuous variables. Probability distributions of a variable. Expected values. Properties of the expectation operator.
8.2 More important probability distributions: Discreet variables: Bernoulli, Binomial. Continuous variables: Normal, t of Student.
8.3 Distributions samples. Distribution of the sample mean. Central Limit Theorem.

Chapter 9. Estimation and tests.

9.1 Point-wise estimation. Properties of the estimators.
9.2 Methods to find estimators: Least Square.
9.3 Estimation by intervals. Intervals of confidence for the average, difference of averages, proportion.
9.4 Test of hypothesis of the population average.
9.4.1 Null and alternative hypothesis.
9.4.2 Critical region.
9.4.3 Errors type I and type II.
9.4.4 Rules of statistical decision for the average in the population. Alternative of two tails or a tail. P-values.

Practice and/or activities:

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· With the aid of some statistical tools estimation by intervals will be carried out as well as the tests of some hypothesis on some population characteristics.

Specific objectives:

· To understand what is a random phenomenon and to learn to appreciate the uncertainty in the economic decisions.
· To understand the utility of the concept of stochastic to transform the results of a random phenomenon into numbers that facilitates the handling and the analysis of the uncertainty.
· To understand the utility of the statistical inference in the problem of decision, to understand that although the risk is inevitable in these decisions, it is possible to try to diminish its effect if the study is done on suitable data and processed in a correct way, but above all in the interpretation of the results.
· To interpret the results of an estimation. To choose the best estimation analyzing the properties that verify.
· To be able to raise a hypothesis correctly. To know and to use the different types from tests, levels of significance and power of the test. To use the test of hypothesis in great and small tests.

Teaching methodology

The course consists of both theoretical and practical classes. The assessment of each student's performance is made during the course to allow an important feedback during the learning process.

Attended activities

Type	Name	G. type	Description
Theory classes	Lectures	Large group (G)	The lectures give a detailed exhibition of the most important in each subject, including new concepts and examples of calculations. The lectures have a function to teach the most relevant of each section, but also to allow a special approach in more complex topics, where the student in general needs more support in the learning process. Another important function of the lectures is to facilitate the students to see the context of each subject and be able to see relations between the different parts from the course. The theoretical classes consist of 25 hours.
Practical classes	Presencial practices	Medium group (M)	When finalizing a theoretical subject the student will make exercises and practices to assimilate and to apply the theory reviewed in class. The practical sessions also include introduction of the use of statistical computer science packages. The practical exercises consist of 12 hours.
Assessment	Final examination.	Large group (G)	It will be made a final examination in the official call and another final examination corresponding to the period of recovery. This evaluation allows valuing the knowledge and if the statistical techniques that comprise of the matter are applied correctly. Also it is important to value the interpretations and conclusions established based on the obtained results. The final examination lasts 3 hours.
Assessment	Individual solution of exercises	Medium group (M)	Throughout the semester three sessions are made in which each student, of individual form, solves exercises which are handed in at the end of each session. The sessions include different subjects from the course and the

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Type	Name	G. type	Description
			dates of the sessions are made specific at the beginning of the semester. The classes of individual solution of exercises consist of 3 hours.
Assessment	Presentations in group.	Large group (G)	Each group of students will receive a material of data with determined questions to solve. The work consists of analyzing the data, but also solving exercises. The practices with data require application of the statistical techniques in computer science programs. Each group is going to present/ display its work for the rest of the class. It is important to not only show the final result, but also to explain how the group has reached the result and the interpretation and conclusions that can be done. The presentations are made in a session of 2 hours.

Non-attended activities

Type	Name	Description
Individual self-study	Solution of practices	Each student will receive a material of data with determined questions to solve. The practices with data require application of the statistical techniques in computer science programs. The presentation of the practice consists of a written report.
Group self-study	Preparation of oral exhibitions.	Each group of students will receive a material of data with determined questions to solve. The work consists of analyzing the data, but also solving exercises. The practices with data require application of the statistical techniques in computer science programs. Each group is going to present its work for the rest of the class. It is important to not only show the final result, but also to explain how the group has reached the result and the interpretation and conclusions that can be obtained.
Group or individual self-study	Preparation of didactic units.	It is recommendable to read the corresponding material before attending the lectures to facilitate the learning of the content. Also it is important to review the topics after each class to make sure that all the doubts have been solved. To study the literature and the resources offered by the professors is important to deepen the learning and to see the context of each section of the course.
Group or individual self-study	Solution of exercises.	When finalizing a theoretical subject the student will make exercises and practices to assimilate and to apply the theory reviewed in class. A part of this work is done in classes, but it is important that each student also makes these studies outside class. It is advisable, but completely voluntary, to form groups to make the studies most efficient. When there are doubts, often, they are possible to be solved in the group. If this it is not the case, the position of tutoring hours is to disposition of the students.

Workload estimate

It is recommendable to read the corresponding material before attending the lectures to facilitate the learning of the content. Also it is important to review the topics after each class to make sure that all the doubts have been solved. When finalizing a theoretical subject the student will make exercises and practices to assimilate and to apply the theory reviewed in class. A part of this work is done in classes, but it is important that each student also makes these studies outside class.

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Type	Name	Hours	ECTS	%
Attended activities		**45**	**1.8**	**30**
Theory classes	Lectures	25	1	16.67
Practical classes	Presencial practices	12	0.48	8
Assessment	Final examination.	3	0.12	2
Assessment	Individual solution of exercises	3	0.12	2
Assessment	Presentations in group.	2	0.08	1.33
Non-attended activities		**105**	**4.2**	**70**
Individual self-study	Solution of practices	18	0.72	12
Group self-study	Preparation of oral exhibitions.	6	0.24	4
Group or individual self-study	Preparation of didactic units.	40	1.6	26.67
Group or individual self-study	Solution of exercises.	41	1.64	27.33
	Total	**150**	**6**	**100**

At the beginning of the semester the subject schedule will be available to students through the UIBdigital platform. This schedule will at least include the dates for the continuous assessment exams and assignment deadlines. Furthermore, the lecturer will inform students as to whether the subject syllabus will be carried out according to the schedule or otherwise, including Campus Extens.

Student learning assessment

The evaluation of the learning consists of a final examination and three different forms from continuous evaluation. The student will have a numerical qualification between 0 and 10 for each one of the activities. The global qualification is calculated considering different weights for the different forms of evaluation.

The final examination is a written examination that is carried out in June and with another call in the period of extraordinary evaluation. Throughout the semester three sessions are made when each student, in individual form, solves exercises with delivery at the end of each session. The sessions include different topics from the course and the dates of the sessions are made specific at the beginning of the semester. Another continuous evaluation is in form of practices that consist of studies of data. The practices are made with computer science programs that are introduced in a computer-lab. The last part of the continuous evaluation is a presentation in group. This is a work in group with an oral presentation.

Someone that not is able to approve the course in June has a period of recovery to recover the final exam. The grades are kept for the other parts of the continuous evaluation.

Final examination.

Type	Assessment
Technique	Extended-response, discursive examinations **(Recoverable)**
Description	It will be made a final examination in the official call and another final examination corresponding to the period of recovery. This evaluation allows valuing the knowledge and if the statistical techniques

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	that comprise of the matter are applied correctly. Also it is important to value the interpretations and conclusions established based on the obtained results. The final examination lasts 3 hours.
Assessment criteria	Appropriateness of the applied procedure to solve the obtained exercise and results. Appropriateness of the interpretations and conclusions made based on the obtained results.

Final mark percentage: 45% for pathway A

Individual solution of exercises

Type	Assessment
Technique	Objective tests **(Non-recoverable)**
Description	Throughout the semester three sessions are made in which each student, of individual form, solves exercises which are handed in at the end of each session. The sessions include different subjects from the course and the dates of the sessions are made specific at the beginning of the semester. The classes of individual solution of exercises consist of 3 hours.
Assessment criteria	Appropriateness of the applied procedure to solve the obtained exercise and results. Appropriateness of the interpretations and conclusions established based on the obtained results.

Final mark percentage: 25% for pathway A

Presentations in group.

Type	Assessment
Technique	Oral tests **(Non-recoverable)**
Description	Each group of students will receive a material of data with determined questions to solve. The work consists of analyzing the data, but also solving exercises. The practices with data require application of the statistical techniques in computer science programs. Each group is going to present/display its work for the rest of the class. It is important to not only show the final result, but also to explain how the group has reached the result and the interpretation and conclusions that can be done. The presentations are made in a session of 2 hours.
Assessment criteria	Appropriateness of the procedure used based on the nature and characteristics of the analyzed variables. Appropriateness of the interpretations and conclusions established based on the obtained results. Clarity of the exhibition for the understanding of the material. Logical structure of the presentation. Degree of work to prepare the material to make the presentation. Balance of participation of all the members of the group.

Final mark percentage: 15% for pathway A

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Solution of practices

Type	Individual self-study
Technique	Student internship dissertation **(Non-recoverable)**
Description	Each student will receive a material of data with determined questions to solve. The practices with data require application of the statistical techniques in computer science programs. The presentation of the practice consists of a written report.
Assessment criteria	Appropriateness of the procedure used based on the nature and characteristics of the analyzed variables. Appropriateness of the interpretations and conclusions established based on the obtained results. Clarity of the report for the understanding of the material.

Final mark percentage: 15% for pathway A

Resources, bibliography and additional documentation

Apart from the textbooks specified in the bibliography, the material that will be used throughout the course will be a dossier with transparencies that each professor has prepared for the exhibition of each subject. Also, on the Web of the course, it will be able to download additional material, where there will be published practices, complementary exercises, and some detailed explanation of some concrete subjects and also grades of the works by the students that are made throughout the course.

Basic bibliography

Additional bibliography

Other resources

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