Syllabus

2021 - 2022

Centro Universitario
EDEM
Adscrito a VNIVERSITAT DG VALÈNCIA

BASIC STATISTICS

COURSE DETAILS

Code	36259
Degree	Degree in Business Management
Mention	Business creation and management
Character	Basic Training
Year	1st
ECTS	6

PROFESSORS

Name	Department	Tutorials
Ballester Granell, Miguel Ángel	Applied economy	Thursday from 15:00 to 17:00 (By appointment)

SUMMARY

Basic Statistics is a basic course scheduled during the second semester of year 1 with a total workload of 6 ECTS or credits. This introductory course is needed to provide the students with the understanding of the descriptive statistics and the fundaments of probability theory needed for making descriptive reports on the economic environment, for market analysis, for decision taking and for subsequent courses (Inference and Econometrics).

In a degree aimed to academically train future entrepreneurs, administrators, and directors of companies, able with their management to contribute to economic and social development, Basic Statistics is an essential matter for the analysis of numerical data coming from measurements, observation or the design and development of new business initiatives that lead these efforts.

This course will introduce the basic concepts of descriptive statistics and probability theory which will form the basis for the study of inference the next course. The subject is also useful for other subjects such as the analysis of financial statements, market research fundamentals, econometrics, quality and environment management, methods for the analysis of business information, prospective, decision making, financing, survey methodology and others.

The course is divided into two basic parts: probability and descriptive statistics.

The first part includes the issues related to the theory of probability aimed to provide instruments that make it possible to work under uncertainty conditions. Probability theory and models, both single-dimensional and multidimensional are taught.

The second part is devoted to descriptive analysis of variables and statistical data, both single-dimensional and multidimensional. Regression techniques are explained, and they are also developed themes of special interest in the field of the economy, as it is the case of measures of inequality, economic indicators and time series.

The objective of this course is to provide students with an understanding of:

- The origin and usefulness of Statistics
- The concept of variable and different types of variables
- The information contained in single-dimensional and multidimensional distributions
- The measures of position, dispersion and shape or profile
- The relationship among variables
- The fundaments of the Theory of Probability
- The main distributions and models of probability

PRIOR KNOWLEDGE

Restriction of registration

Restrictions of registration with other subjects of the curriculum have not been specified.

Other requirements

Previous requisites have not been specified, although it is recommended to have approved the subject of mathematics.

COMPETENCES

GENERAL COMPETENCES:

- GP.1 - Ability to work in teams.
- GP.3 - Critical and self-critical ability.
- GP.5 - Managing time effectively.
- GI.1 - Capacity for analysis and synthesis.
- GI.2 - Capacity of organization and planning.
- GI.3 - Oral and written communication in the native language.
- GI.4 - Ability to use English in the professional field.
- GI.5 - Ability to use ICT in the field of study.
- GI.6 - Ability to analyse and seek information from different sources.
- GI.7 - Ability to solve problems.

- GI.8 - Ability to make decisions.
- GI.9 - Ability to negotiate and reconcile interests effectively.
- GI.10 - Ability to transmit and communicate complex ideas and approaches to both a specialist and non-specialist audiences.

SPECIFIC COMPETENCES:

- EA.5 - Ability to make decisions in an environment of certainty and uncertainty.
- EA.6 - Ability to apply analytical and mathematical methods for analysis of economic and business problems.
- EA.8 - Ability to define, solve and explain complex problems systemically.
- EA.10 - Ability to communicate in formal, graphical and symbolic languages.
- EA.73 - Develop critical capacity on the Spanish and international economic news.
- EA.74 - Ability to analyse the economic situation and understand its implications.
- EA.30 - Ability to plan, organize, monitor, and evaluate the implementation of corporate strategies.

LEARNING OUTCOMES

Upon completion of this course, students will be able to:

- Ability to recognize an economic problem from the observation of the economic reality.
- Use of basic quantitative tools and their application to the economic environment.
- Ability to choose a theoretical framework to analyse reality.
- Knowledge of the basic quantitative tools for the economic analysis, diagnosis and forecast, such as mathematics, statistics, and econometrics.
- Identify, classify, argue and interpret the relations between economic variables.
- Ability to identify problems raised econometric model and apply theoretical knowledge for proper treatment.
- Search, choose and assess adequate information for the analysis of economic and business environments.
- Application of different analytical tools under uncertainty

COURSE CONTENTS

Unit 1. Introduction. General Concepts

    1.1.   Presentation of the course and its objectives.
    1.2.   Evaluation and grading scheme. Exams and Continuous evaluation. Group research projects.
    1.3.   Introduction to general concepts in statistics and nomenclature.

Unit 2. Probability

    2.1. Probability and its postulates
    2.2. Probability rules
    2.3. Bayes' theorem

Unit 3. Discrete probability distributions

    3.1. Random variables
    3.2. Discrete random variables: probability distributions and its properties
    3.3. Discrete probability models
    3.4. Jointly distributed discrete random variables

Unit 4. Continuous probability models

    4.1. Continuous random variables: probability distributions and properties
    4.2. The Normal distribution
    4.3. Other important continuous probability models
    4.4. Jointly distributed continuous random variables

Unit 5. Univariate data analysis

    5.1. Introduction
    5.2. Graphical description of univariate data
    5.3. Numerical description of univariate data: central tendency, variability and shape

Unit 6. Bivariate data analysis

    6.1. Introduction
    6.2. Graphical description of bivariate data
    6.3. Measures of relationships between variables

Unit 7. Regression

    7.1. The linear regression model
    7.2. Least square coefficient estimators
    7.3. Explanatory power of a linear regression equation

Unit 8. Time series models

    8.1. Index numbers
    8.2. Time series

WORKLOAD

PRESENTIAL ACTIVITIES	HOURS
Lectures	28.0
Complementary activities	2.0
Practical sessions	28.0
Exams	2.0
Total Presential Activities	**60**
NON-PRESENTIAL ACTIVITIES	
Individual tasks and works	10,0
Self-study	20,0
Preparation of evaluation activities	20,0
Preparation of lectures	15,0
Preparation of practical classes, problems, and group work	20,0
Resolution of practical classes	5,0
Total Non-Presential Activities	**90**
TOTAL	**150**

TEACHING METHODOLOGY

Basics Statistics is taught in English. The subject is primarily structured around theoretical sessions, practical sessions, and the realization of a group work.

Different teaching methods will be used depending on the type of session.

The teaching method in theoretical classes will be the participatory master class. Participation and active involvement will be encouraged.

At practical sessions, the teacher will propose students real and simulated situations to be solved by applying the concepts learned in class.

Practical sessions will be held with the support of specific data analysis software as Excel, SPSS, STATA, R or Python.

EVALUATION CRITERIA

Evaluation of students will take place through continuous evaluation and exams.

Ordinary evaluation (first call) consists of Continuous evaluation and Mid-term and Final exams structured as follows.

1. **Continuous evaluation** represents **40 percent** in the final grade and will consist in a group research work, quizzes, and class and group participation. Due to its nature, the **continuous evaluation is non-recoverable** and will be maintained in the 1st and the 2nd call.

In the final exams and the research papers written along the course, students should follow orthography and grammar standard for academic essays. Otherwise, theirs grades will be down weighted accordingly.

Class attendance is mandatory. Students failing to attend more than 15% of the sessions will lose their continuous evaluation. As a consequence, the final grade of students failing to attend more than 15% of the sessions will be equal to 60 percent of the grade obtained in the exams.

- **Class and group participation** (10 percent)

Attendance and participation are essential, and all students are expected to participate. Relevant discussions are expected from each student.

Individual and active contribution to group projects is also expected. Participation in group projects may also be assessed.

Cellular phones and tablets should be switched off and out of reach of the students. **Laptop computers should be switched off and folded** unless the professor indicates they can be switched on. **Students violating these rules will be invited to abandon the classroom** and their absences will be computed. Equally, students involved inside comments will be invited to abandon the class room.

- **Quizzes** (10 percent)

At the beginning of some sessions, students will receive a quiz on the topics seen in previous sessions. Quizzes may be handwritten or computer based.

- **Research work** (20 percent)

Research work is a central element in this course. It should be original and will be developed in groups composed by 5 or 6 participants. The group work will consist in the identification of a business-related problem. Students will formalize a research design that will be presented and discussed publicly. Once approved by the professor, research designs cannot be changed any more without specific authorization. **An approved research design is a prerequisite for presenting the final research report**.

Honesty Rules. Research reports will be scanned by the means of specific antiplagiarism software. The research work is a central element in this course; therefore, **the professor will apply strong enforcement of honesty rules**. Plagiarism is considered a serious misconduct (*falta grave*). Any violation of academic honesty rules will be reported to the Academic Discipline Committee. **Cheating students in Basic Statistics should be ready to face the most serious consequences** stablished by EDEM internal rules.

Due to its nature, the **continuous evaluation is non-recoverable** and will be maintained in the 1st and the 2nd call.

2. **Exams** represent **60 percent** of the final grade.

The evaluation based upon exams will consist in a Midterm exam (20 percent) and a Final exam (40 percent). The Final exam will cover all the topics studied in the course.

The course final grade will be a weighted average of the exams grade and continuous evaluation and must be greater than 5: (0,6* exams + 0,4*continuous evaluation).

The maximum grade is 10 points. Final grades will be a weighted average of all the components listed above. The minimum course final grade required to pass the subject is 5 points. However, **if the exams average grade is lower than 5 points, the final grade obtained will be limited to a maximum of 4.5**. Thus, if the exams grade is lower than 5 and after applying the weighting the final mark is greater than 4.5, it will remain at a maximum of 4.5. If, on the other hand, the final grade is less than 4.5, it will be maintained.

Extraordinary evaluation (retake or second call) applies to students that failed the course in the first call.

Continuous evaluation in the second call weights 40 percent of the final grade, **is non-recoverable** and will be the same as in the first call.

Second call exam will consist in a single comprehensive final exam **covering all the topics** in the course and will weight **60 percent** of the final grade.

As a consequence, First call Midterm or Final exam grades will not be maintained into the second call.

Students in second examination sessions: Students who do not pass the subject in first and second call and who do not repeat course will have to re-register again. These students will have right for third and fourth call on the subject. The evaluation will be as follows:

***Continuous assessment accounts for 20 percent** of the final qualification. To pass this part, they will prepare a research report. Students should contact the course professor in order to receive detailed instructions on the report.

***Synthesis tests accounts for 80 percent** of the final qualification (40 percent Mid-term exam and 40 percent Final exam).

REFERENCES

Main reference book

- Paul Newbold, William Carlson, Betty Thorne (2019) - Statistics for Business and Economics: Global Edition, 9e, Pearson Education, ISBN: 9781292315034.

- Haslwanter, Thomas (2016) -An Introduction to Statistics with Python, Springer. ISBN: 978-3-319-28315-9

Complementary references

- McClave, Benson & Sincich (2014) - Statistics for Business and Economics, 12/E, ISBN-10: 032182623X, Pearson Education.

- Berenson, Levine & Szabat (2015) - Basic Business Statistics, Student Value Edition, 13/E - ISBN-10: 0321946391 • ISBN-13: 9780321946393, Pearson Education.