COURSE DATA

Data Subject

Code	35819
Name	Introduction to statistical inference
Cycle	Grade
ECTS Credits	6.0
Academic year	2020 - 2021

Study (s)

Degree	Center	Acad. year	Period
1313 - Degree in Business Management and Administration	Faculty of Economics	2	First term
1330 - Degree in Business Management and Administration (Ontinyent)	Faculty of Economics	2	First term
1921 - D.D. in Business Management Administration-Law	Doubles Studies Faculty of Law - Faculty of Economics	2	First term
1926 - D.D. in Tourism-Business Management Administration	Faculty of Economics	2	First term

Subject-matter

Degree	Subject-matter	Character
1313 - Degree in Business Management and Administration	17 - Expansion of statistics	Obligatory
1330 - Degree in Business Management and Administration (Ontinyent)	17 - Ampliación de Estadística	Obligatory
1921 - D.D. in Business Management Administration-Law	3 - Year 2 compulsory subjects	Obligatory
1926 - D.D. in Tourism-Business Management Administration	3 - Asignaturas de segundo curso	Obligatory

Coordination

Name	Department
BLASCO BLASCO, OLGA	110 - Applied Economics

SUMMARY

Introduction to Statistical Inference is compulsory subject ascribed to the area of Quantitative Methods for Business and Economics. It is taught in the first term of the second year of the degree in Business Administration and Management (ADE) with a total study load of 6 ECTS.

It is a necessary subject for analysis and decision making in a degree that aims at academically training future business managers and entrepreneurs who will contribute to the economic and social development.

The subject is markedly instrumental. Contents are basic for other subjects such as Econometrics and support other courses such as Analysis of Financial Statements, Foundations f Market Research, Quality and Environmental Management, Methods for the Analysis of Business Information and Decision Making, Prospective Techniques, Survey Methodology or Quantitative Techniques in Finance.

The subject starts with a short review of probability models in business and economics. Next the key concepts for Inferential Statistics are introduced, followed by basic notions of sampling. Then estimation of population parameters and hypothesis tests, both parametric and non-parametric, are introduced.

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 recommended to have completed and passed the following first year couses: Mathematics and Basic Statistics.

OUTCOMES

1313 - Degree in Business Management and Administration

- Demonstrate capacity for analysis and synthesis.
- Have organisation and planning skills.
- Demonstrate oral and written communication skills in the native language.
- Be able to use English in a professional environment.
- Be able to use ICTs in the field of study.
- Be able to analyse and search for information from different sources.
- Be able to solve problems.
- Be able to make decisions.

- Be able to negotiate and reconcile interests effectively.
- Be able to transmit and communicate complex ideas and approaches to both specialised and lay audiences.
- Be able to work in a team.
- Have critical and self-critical capacity.
- Manage time effectively.
- Be able to understand and use the different quantitative and qualitative methods to reason analytically, evaluate results and predict economic and financial parameters.
- Be able to carry out strategic diagnoses in complex and uncertain environments using the appropriate methodologies to resolve them.
- Be able to make decisions under certainty and uncertainty environments.
- Be able to apply analytical and mathematical methods for the analysis of economic and business problems.
- Be able to express oneself in formal, graphic and symbolic languages.
- Be able to plan, organise, control and evaluate the implementation of business strategies.
- Develop critical capacity on Spanish and international economic current affairs.
- Be able to analyse the economic situation and understand its implications.

LEARNING OUTCOMES

The student os expected to get the following learning outcomes:

- Ability to recognize an economic problem from the observation of the economic reality.
- Increasing ability to use logical/strategical reasoning to address real economic and business problems.
- 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.
- Ability to identify econometric problems in the model and to apply theoretical knowledge to address them.
- Search, choose and assess adequate information for the analysis of economic and business environments.

- Application of different analytical tools under uncertainty.

DESCRIPTION OF CONTENTS

1. PROBABILITY MODELS AND STOCHASTIC CONVERGENCE

1. Random variables and probability models
2. Stochastic convergence
3. Central Limit Theorem.
4. Distributions associated with normally distributed samples

2. INTRODUCTION TO STATISTICAL INFERENCE

1. Introduction: universe, population and sample. Objectives of inferential statistics
2. Sampling methods. Simple random sampling
3. Sampling distributions

3. ESTIMATION

1. Point estimation. Properties of estimators.
2. Methods for obtaining estimators.
3. Interval estimation.
4. Sample size determinatios.

4. PARAMETRIC HYPOTHESIS TESTS

1. Introduction.
2. Two tails hypothesis tests.
3. One tail hypothesis tests.

5. NONPARAMETRIC HYPOTHESIS TESTS

1. Tests of goodness of fit.
2. Tets of independence.
3. Other nonparametric tests.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	30,00	100
Development of individual work	10,00	0
Study and independent work	20,00	0
Preparation of evaluation activities	20,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	15,00	0
Resolution of case studies	4,00	0
TOTAL	**144,00**	

TEACHING METHODOLOGY

Course time is split equally between lectures and computer lab work. Lectures cover the fundamentals of inferential statistics and all the related theory with special emphasis in developing the link to socio-economic and business applications. While the teaching method of lectures is “chalk and talk”, students’ participation and in-class discussion is encouraged.

Computer labs focus on presenting the students with practical examples and finding solutions to problems based on the application of (previously introduced) theoretical concepts. These sessions are based on two main teaching methods:

- *Statistics-lab learning and problem solving*. Students will be conducting some inferential statistical procedures involving calculations, graph/table drawing, and writing short answers to problems or case studies in order to apply theoretical concepts to data using MS-Excel. In most cases students will have to turn in a report of the output and write brief interpretations of it..
- Quizzes and review questions: to check your understanding of assignments and lectures, I will give quizzes and review questions in some classes.

A mix of a collaborative environment and individual work will be used in the computer lab.

EVALUATION

Grades are a weighted average of the results from a final exam and all computer lab assignments

1. The weight of the final exam is 70% of the course grade. It will include practical problems to assess students’ proficiency in the application of the core tools and concepts of the subject.
2. The remainder 30% of the final grade is the assessment of in-class projects, problems and quizzes.
3. By its very nature, ongoing evaluation activities, **these can not be retaken.**

IMPORTANT:

No student will get a positive assessment of the course (5 points or more) without passing the final exam. Students who fail the final exam will get a maximum final grade of 4.5 points.

A student might opt out of in-class assignments assessment. In this case his/her final grade will be totally based on the final exam, with a maximum value of 7 points out of 10.

REFERENCES

Basic

- CEACES, Proyecto (Contenedor Hipermedia de Estadística Aplicada a las Ciencias Económicas y Sociales). Universitat de València. ON LINE: http://www.uv.es/ceaces
- ESCUDER, R. y MURGUI, J.S. (2011). Estadística Aplicada. Economía y Ciencias Sociales. Tirant lo Blanch. Valencia, (2ª edición).
- ESTEBAN, J. y otros (2018). Inferencia Estadística. 2ª Edición revisada. Garceta, Madrid.
- MURGUI, J.S. y otros (2002). Ejercicios de Estadística. Economía y Ciencias Sociales. Valencia: Tirant lo Blanch.
- > Paul Newbold, William L. Carlson, Betty Thorne: Statistics for business and economics, Pearson Education 2010.
- Beamonte, E. (2012). Apuntes de Introducción a la Inferencia Estadística. Grado en Administración y Dirección de Empresas. Reproexpres S.L., Valencia.

Additional

- ANDERSON, D.R.; SWEENEY, D.J. y WILLIAMS, T.A. (2001). Estadística para Administración y Economía. International Thomson Editores, México.
- BERENSON, M.L.; LEVINE, D.M y KREHBIEL, T.C. (2001) Estadística para Administración. Pearson-Prentice Hall, México.
- CANAVOS, G.C. (1984). Probabilidad y Estadística: aplicaciones y métodos. McGraw-Hill, México.
- DeGROOT, M.H. (1988). Probabilidad y Estadística. Wilmington: Addison-Wesley Iberoamericana Wilmington.
- ESTEBAN, J. y otros (2008). Curso Básico de Inferencia Estadística. Reproexpres Ediciones, Valencia.
- HILDEBRAND, D.K. y OTT, R.L. (1997). Estadística aplicada a la Administración y a la Economía. Addison-Wesley Iberoamericana, Wilmington.

- LIND, D.A. y otros (2008). Estadística Aplicada a los Negocios y la Economía. McGraw Hill, México, (13ª Edición).
- NEWBOLD, P. y otros (2008). Estadística para Administración y Economía. Pearson-Prentice Hall, Madrid (6ª Edición).
- RUÍZ-MAYA, L. y MARTÍN-PLIEGO, F.J. (2004). Fundamentos de Inferencia Estadística. Ed. Thomson, Madrid, (3ª 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

1. Contenidos

Se mantienen todos los contenidos de la guía docente. En el tema 1, apartado 1, Variables aleatorias y Modelos de Probabilidad, se incorporan los aspectos más importantes de los Modelos de probabilidad multivariantes que se suprimieron excepcionalmente en la materia de Estadística Básica en el curso académico 2019-2020, tanto en su aspecto teórico como práctico.

2. Volumen de trabajo y planificación temporal de la docencia

La guía docente preveía 30 horas de clases de teoría y 30 de prácticas. Debido a las circunstancias excepcionales, se prevé que la presencialidad pueda reducirse hasta el 50%. En este escenario, en las sesiones presenciales se hará hincapié en los conceptos más importantes de la asignatura y se complementará con clases asíncronas y/o materiales en el Aula Virtual para que el estudiante potencie el trabajo autónomo.

3. Metodología docente

En las clases presenciales se seguirá la metodología docente indicada anteriormente en esta guía. En el caso de las clases no presenciales, se utilizarán diferentes metodologías docentes que ayuden al aprendizaje autónomo del estudiante, a través de:

-Materiales teóricos y prácticos subidos al Aula Virtual, con ejemplos y ejercicios resueltos y propuestos a entregar mediante la opción de “Tarea” del Aula Virtual.

- Videoconferencias por Blackboard Collaborate, Teams, Skype o la herramienta que el profesor considere adecuada, PowerPoints con audio, y la utilización del correo electrónico.

4. Evaluación

La superación de la materia dependerá de la calificación obtenida en la prueba de síntesis final y de toda aquella información que el profesor recabe sobre el trabajo de los estudiantes a lo largo del semestre.

Salvo que la situación sanitaria obligue a cambiar el escenario de presencialidad, la nota final se determinará como se indica a continuación.

La prueba de síntesis, que será presencial, tendrá un peso del 70% sobre la nota final.

La evaluación continua constará de todas aquellas pruebas y tareas que cada profesor realice, tanto en las clases presenciales como online, y supondrá el 30% de la nota final.

5. Bibliografía

La bibliografía actual de la guía se complementa con el material depositado en el Aula Virtual.