UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: STATISTICAL INFERENCE
Type: CORE COURSE
Degree: 316 - UNDERGRADUATE DEGREE IN ECONOMICS
Center: 5 - FACULTY OF ECONOMICS AND BUSINESS
Year: 2
Main language: Spanish
Use of additional languages:
Web site:

Code: 53315
ECTS credits: 6
Academic year: 2019-20
Group(s): 10 17
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: ESTEBAN ALFARO CORTES - Group(s): 10

Building/Office	Department	Phone number	Email	Office hours
Facultad de Ciencias Económicas y Empresariales. Despacho 3.14	ECONOMÍA APLICADA I	926053094	esteban.alfaro@uclm.es	Ver página Web de la Facultad y moodle de la asignatura/See Web site of the Faculty and Moodle for the subject

Lecturer: JOSE LUIS ALFARO NAVARRO - Group(s): 17

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Facultad de Ciencias Económicas y Empresariales. Despacho 3.14	ECONOMÍA APLICADA I	926053274	joseluis.alfaro@uclm.es	Ver página Web de la Facultad y campus virtual de la asignatura.

2. Pre-Requisites

It is recommended to have coursed the subject on Statistics for Economics

3. Justification in the curriculum, relation to other subjects and to the profession

In the economic field, a basic management of the fundamental techniques for the treatment of quantitative information is essential. This need is translated into a knowledge of the main sources of statistical information, the basic rules for its interpretation and Analysis, and a mastery of the most relevant analytical-quantitative instruments. Therefore, the curriculum, within module 4 "Methods Quantitative for the Economy" devotes a section to the matter of Statistics, structured in two subjects: Statistics for Economics and Statistical Inference. The fundamental mission of the subject Inference Statistics is to deduce properties (make inferences) from a population, from a small part of it (sample). The goodness of these deductions is measured in probabilistic terms, that is, all inference is accompanied by its probability of success. Inferential statistics include: sample theory, estimation of parameters, hypothesis testing, experimental design and Bayesian Inference.

4. Degree competences achieved in this course

Course competences

Code	Description
E03	Ability to find economic data and select relevant facts.
E06	Application of profesional criteria to the analysis of problems, based on the use of technical tools.
E16	Identify relevant sources of financial information and its content, as well as the ability to derive the important information from the data, otherwise completely unknown to non-professionals.
G01	Possession of the skills needed for continuous, self-led, independent learning, which will allow students to develop the learning abilities needed to undertake further study with a high degree of independence.
G03	Develop oral and written communication skills in order to prepare reports, research projects and business projects and defend them before any commission or group of professionals (specialised or non-specialised) in more than one language, by collecting relevant evidence and interpreting it appropriately so as to reach conclusions.
G04	Ability for the use and development of information and communication technology in the development of professional activity.
G05	Capacity for teamwork, to lead, direct, plan and supervise multidisciplinary and multicultural teams in both national and international environments.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Enable student for autonomous work and learning, as well as for personal initiative

Train the student to search for information in order to analyze it, interpret is meaning, synthesize it and communicate it to others.

Train the student to work out problems in creative and innovative ways.

Enable students to know the sources of official statistics and their treatment for the analysis of economic reality

To know the tools and methods for quantitative analysis of markets, sectors and companies, including models for decision-making and economic forecasting models.

Additional outcomes

6. Units / Contents

Unit 1: DISTRIBUTIONS DERIVED FROM THE NORMAL AND THE CENTRAL LIMIT THEOREM
    Unit 1.1 CONVERGENCE OF SUCCESSIONS OF RANDOM VARIABLES: THEORY OF THE CENTRAL LIMIT
    Unit 1.2 DISTRIBUTIONS FROM NORMAL

Unit 2: DISTRIBUTIONS IN SAMPLING
    Unit 2.1 SAMPLING: STATISTICS AND THEIR DISTRIBUTIONS
    Unit 2.2 SAMPLING IN NORMAL POPULATIONS

Unit 3: ESTIMATORS AND THEIR PROPERTIES
    Unit 3.1 POINT ESTIMATION: CONCEPT AND PROPERTIES OF ESTIMATORS
    Unit 3.2 METHODS OF POINT ESTIMATION
    Unit 3.3 CONFIDENCE INTERVALS ESTIMATION

Unit 4: HYPOTHESES TESTING
    Unit 4.1 INTRODUCTION TO HYPOTHESES TESTING
    Unit 4.2 PARAMETRIC HYPOTHESES TESTING
    Unit 4.3 NON-PARAMETRIC HYPOTHESES TESTING

Unit 5: ANALYSIS OF THE VARIANCE (ANOVA)
    Unit 5.1 INTRODUCTION TO ANOVA
    Unit 5.2 ANALYSIS OF THE ONE-WAY ANOVA
    Unit 5.3 ANALYSIS OF THE MULTI-FACTOR ANOVA

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	R	Description
Class Attendance (theory) [ON-SITE]	Lectures	E03 E06 E16 G01 G04	1.33	33.25	N	-	-	
Class Attendance (practical) [ON-SITE]	Combination of methods	E03 E06 E16 G01 G03 G04 G05	0.67	16.75	Y	N	N	
Study and Exam Preparation [OFF-SITE]	Self-study	E03 E06 E16 G01 G04	2.08	52	Y	N	N	
Writing of reports or projects [OFF-SITE]	Group Work	E03 E06 E16 G01 G03 G04 G05	0.72	18	Y	N	N	
Other off-site activity [OFF-SITE]	Self-study	E16 G01 G03 G04	0.8	20	Y	N	N	
Progress test [ON-SITE]	Assessment tests	E03 E06 E16 G01 G03 G04	0.04	1	Y	N	N	
Final test [ON-SITE]	Assessment tests	E03 E06 E16 G01 G03 G04	0.08	2	Y	Y	Y	
Other on-site activities [ON-SITE]	Combination of methods	E03 E06 E16 G04	0.28	7	N	-	-	
Total:			**6**	**150**				
Total credits of in-class work: 2.4						**Total class time hours: 60**		
Total credits of out of class work: 3.6						**Total hours of out of class work: 90**		

As: Assessable training activity
Com: Training activity of compulsory overcoming
R: Rescheduling training activity

8. Evaluation criteria and Grading System

Evaluation System	Grading System Face-to-Face	Self-Study Student	Description
Assessment of active participation	5.00%	0.00%	The active attitude of the student will be assessed in the classroom.
Fieldwork assessment	20.00%	0.00%	At the beginning of the course working groups will be created and they will develop a project along the course. These projects will be supervised by the teacher and may need to be exposed at the end.
Progress Tests	10.00%	0.00%	Written choice test with 10 questions. Each question has three alternative answers, one correct and two incorrect. Each correct answer adds 1 point and each failed subtract 0.5, questions left blank unscored.
Final test	65.00%	0.00%	Written test with some practical questions to be solved
Total:	**100.00%**	**0.00%**	

Evaluation criteria for the final exam:
In the Final Test, a minimum of four points must be obtained for the rest of the activities to be considered.

Specifications for the resit/retake exam:
You can only recover the qualifications of group work and problem solving (handing it over again according to teacher recommendations) and final test (exam). Qualifications of the other sections will be retained but without possibility of recovery.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3.25
Class Attendance (practical) [PRESENCIAL][Combination of methods]	1.75

	Hours
Progress test [PRESENCIAL][Assessment tests]	1
Final test [PRESENCIAL][Assessment tests]	2
Other on-site activities [PRESENCIAL][Combination of methods]	7

Unit 1 (de 5): DISTRIBUTIONS DERIVED FROM THE NORMAL AND THE CENTRAL LIMIT THEOREM

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Other off-site activity [AUTÓNOMA][Self-study]	3

Unit 2 (de 5): DISTRIBUTIONS IN SAMPLING

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Other off-site activity [AUTÓNOMA][Self-study]	3

Unit 3 (de 5): ESTIMATORS AND THEIR PROPERTIES

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Writing of reports or projects [AUTÓNOMA][Group Work]	2
Other off-site activity [AUTÓNOMA][Self-study]	6

Unit 4 (de 5): HYPOTHESES TESTING

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Writing of reports or projects [AUTÓNOMA][Group Work]	8
Other off-site activity [AUTÓNOMA][Self-study]	6

Unit 5 (de 5): ANALYSIS OF THE VARIANCE (ANOVA)

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Writing of reports or projects [AUTÓNOMA][Group Work]	8
Other off-site activity [AUTÓNOMA][Self-study]	2

Global activity

Activities	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	33.25
Class Attendance (practical) [PRESENCIAL][Combination of methods]	16.75
Study and Exam Preparation [AUTÓNOMA][Self-study]	52
Writing of reports or projects [AUTÓNOMA][Group Work]	18
Other off-site activity [AUTÓNOMA][Self-study]	20
Progress test [PRESENCIAL][Assessment tests]	1
Final test [PRESENCIAL][Assessment tests]	2
Other on-site activities [PRESENCIAL][Combination of methods]	7

Total horas: 150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Canavos, G.C. & Miller D.M.	Modern Business Statistics	Duxbury Resource Center		978-0534168360	1994	
Canavos, George C.	Probabilidad y estadística :aplicaciones y métodos	McGraw-Hill		84-481-0038-7	2003	
Casas Sánchez, José M.	Estadística. II, Inferencia estadística	Editorial Centro de Estudios Ramón Areces, S.A.		978-84-9961-024-5	2011	
Casas Sánchez, José M.	Inferencia estadística : (incluye ejercicios resueltos)	Centro de Estudios Ramón Areces		9788480042635	2009	
Hand,Diamond J.	Statistics: A very short introduction	Oxford U.P.		978-0199233564	2008	
Martín-Pliego López, Fco. Javier	Problemas de inferencia estadística	Thompson		84-9732-355-6	2005	
Pérez, R.	Análisis de datos económicos	Pirámide		84-368-0728-6(o.c.)	1997	
Rohatgi, Vijay K.	An introduction to probability theory and Mathematical Stati	John Wiley		0-471-73135-8	1976	
Rohatgi, Vijay K.	Statistical inference	Dover		0-486-42812-5 (pbk.)	2003	
Ruiz-Maya, Luis	Fundamentos de inferencia estadística	AC Thomson Paraninfo		84-9732-354-8	2004	
	All of Statistics: A concise course in					

Wasserman, Larry A.	Statistical Inference	Springer	978-0387402727	2004
Webster, Allen L.	Estadística aplicada a los negocios y la economia	McGraw-Hill	958-410-072-6	2000