

## GRADO EN GEOLOGÍA

### DATOS DE LA ASIGNATURA

ASIGNATURA	STATISTICS AND DATA ANALYSIS	SUBJECT	STATISTICS AND DATA ANALYSIS
CÓDIGO	757609107		
MÓDULO	MATERIAS INSTRUMENTALES	MATERIA	ESTADÍSTICA
CURSO	1º	CUATRIMESTRE	2º
DEPARTAMENTO	ECONOMÍA	ÁREA DE CONOCIMIENTO	ESTADÍSTICA E INVESTIGACIÓN OPERATIVA
CARÁCTER	BÁSICA	CAMPUS VIRTUAL	MOODLE

### DISTRIBUCIÓN DE CRÉDITOS

	TOTAL	TEÓRICOS GRUPO GRANDE	TEÓRICOS GRUPO REDUCIDO	PRÁCTICAS DE INFORMÁTICA	PRÁCTICAS DE LABORATORIO	PRÁCTICAS DE CAMPO
ECTS	6	4	0	2	0	0

### DATOS DEL PROFESORADO

#### COORDINADOR

NOMBRE	ISABEL SERRANO CZAIA		
DEPARTAMENTO	ECONOMÍA		
ÁREA DE CONOCIMIENTO	ESTADÍSTICA E INVESTIGACIÓN OPERATIVA		
UBICACIÓN	FAC. CC. EXP. (DESP. 4.3.3) / FAC. CC. TRAB. (DESP. 3.18)		
CORREO ELECTRÓNICO	iserrano@uhu.es	TELÉFONO	959219680
URL WEB		CAMPUS VIRTUAL	MOODLE

### DESCRIPCIÓN GENERAL DE LA ASIGNATURA

#### DESCRIPCIÓN GENERAL

The subject "Statistics and Data Analysis" starts from basic statistical knowledge to advanced statistical techniques that facilitate the design and analysis of experiments. It aims at applying interesting models in Environmental Sciences and Geology. This subject is developed by combining theoretical and practical classes in the classroom, with classes of application of statistical techniques that are studied on real data in the computer classroom. In addition to the theoretical classes, the teacher proposes and guides students through activities that help them to reinforce and assimilate the contents, both in problem solving in class and in the management of statistical tools in the computer classroom.

Office hours: Available in the virtual classroom of the subject <https://moodle.uhu.es/>

#### ABSTRACT

The subject "Statistics and Data Analysis" starts from basic statistical knowledge to advanced statistical techniques that facilitate the design and analysis of experiments. It aims at applying interesting models in Environmental Sciences

and Geology.

## OBJETIVOS: RESULTADOS DEL APRENDIZAJE

The objective of this subject is to develop in the students the ability to apply techniques of statistical research in the field of Environmental Sciences and Geology.

## REPERCUSIÓN EN EL PERFIL PROFESIONAL

This subject is offered to Spanish and Erasmus students at UHU. The learning outcomes of this subject is that students have the ability to apply techniques of statistical research in the field of Environmental Sciences and Geology.

## COMPETENCIAS

### COMPETENCIAS BÁSICAS

### COMPETENCIAS GENERALES

### COMPETENCIAS TRANSVERSALES

### COMPETENCIAS ESPECÍFICAS

## TEMARIO Y DESCRIPCIÓN DE LOS CONTENIDOS

### TEORÍA

#### **Module 1: Descriptive Statistics of Datasets**

Describing data by tables and graphs. Measures of Location (Central and Relative Position of Data), Dispersion and Shape. Box-Plot diagram.

#### **Module 2: Introduction to Probability, Random Variables and Their Distribution**

Introduction to Probability, Univariate Random Variables (Discrete and Continuous) and Distribution Functions. Some Special Univariate Discrete and Continuous Distributions. The Central Limit Theorem and approximation between distributions. Sampling distributions of sample means.

#### **Module 3: Estimation and Inferential Statistics**

Point estimation. Confidence interval. Introduction to parametric Hypothesis testing. Relation between Confidence interval and Hypothesis testing.

## PRÁCTICAS DE INFORMÁTICA

#### **Module 4: Computer Sessions (Excel + Rcmdr)**

Application of Module 1 contents using real data. Parametric and non-parametric univariate and bivariate Hypothesis testing. Regression analysis. Relationships Between Two Categorical Variables. Introduction to Multivariate Analysis.

There will be ten computer sessions (2h each) covering different aspects of the subject. Computer hangout for each computer session will be at students' disposal in Moodle.

## METODOLOGÍA DOCENTE



Universidad  
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Curso 2020/2021



Grupo grande	<ul style="list-style-type: none"> <li>• Presentación de la asignatura y generalidades de los bloques temáticos.</li> <li>• Clases presenciales relativas a los contenidos teóricos y prácticos (problemas) de la asignatura, utilizando recursos didácticos tales como transparencias, presentaciones informatizadas y vídeos.</li> <li>• Aprendizaje autónomo.</li> <li>• Atención personalizada a los estudiantes.</li> </ul>
Prácticas de informática	<ul style="list-style-type: none"> <li>• Utilización del aula de informática para reforzar los conocimientos teóricos y prácticos adquiridos previamente.</li> <li>• Aprendizaje autónomo.</li> <li>• Aprendizaje cooperativo.</li> <li>• Atención personalizada a los estudiantes.</li> </ul>

## CRONOGRAMA ORIENTATIVO I

SEMANAS (S):	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
GRUPO GRANDE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GRUPO REDUCIDO															
PRÁCTICAS DE LABORATORIO															
PRÁCTICAS DE INFORMÁTICA			X	X	X	X	X	X	X	X	X	X	X		
PRÁCTICAS DE CAMPO															

## EVALUACIÓN DE LA ASIGNATURA

### PRIMERA EVALUACIÓN ORDINARIA (FEBRERO/JUNIO)

#### EVALUACIÓN CONTINUA

1. Activities in the classroom and online questionnaires. They have a weight of 10% on the overall rating. A minimal note is not required.
2. Evaluation of the computer practices (weight of 30% on the final rating): there are two activities (one with Excel (15% on the final rating) and the second with R-Rcmdr (15% on the final rating)) applying the techniques studied on a set of real data. These activities are graded on a scale from 0 to 10 points. The practical part can be overcome provided that the qualification obtained in each one of the activities is equal to or greater than 5 points.
3. Once completed the contents of block 1 (Descriptive Statistics), there will be a voluntary test of exercises corresponding to this module. The mark for overcoming it is 5 points. This partial test result is not saved to Ordinary call II. It suppose the 50% of the theory (30% of the final rating).
4. The contents of the blocks 2 and 3 will be evaluated in the final exam (second 50% of the theory block - 30% of the final rating). Students are required to obtain a minimum score of 5/10 in the exam to pass to pass this part.

#### EVALUACIÓN FINAL

1. Evaluation of the theoretical content-exercises part (60% of the final rating). The exam will contain three or four exercises. Students are required to obtain a minimum score of 5/10 in the exam to pass this part.
2. After completing the exam, students must solve a questionnaire about the contents of the theory-exercises block with a maximum closed resolution time (10% of the final grade). Students are required to obtain a minimum score of 5/10 to pass this part.
3. Students must perform an activity in the computer room with Excel and R-Rcmdr, applying the statistical techniques studied, on the same date as the final exam of the subject. The practical part can be overcome provided that the qualification obtained is, at least, 5 points. (30% of the final rating).

### ¿Contempla una evaluación parcial?

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Once completed the contents of block 1 (Descriptive Statistics), there will be a voluntary test of exercises corresponding to this module. The mark for overcoming it is 5 points. This partial test result is saved to June but it is not saved to September. It suppose a 30% of the final rating (50% of the theory block).

The contents of the blocks 2 and 3 will be evaluated in the final exam (second 50% of the theory block - 30% of the final rating). Students are required to obtain a minimum score of 5/10 in the exam to pass to pass this part.

## SEGUNDA EVALUACIÓN ORDINARIA

In the ordinary call II there will be two evaluation systems:

- Students who have followed the continuous assessment process:

1. The grade obtained in the activities in the classroom and online questionnaires (10% of the overall grade) is maintained.
2. Evaluation of the theoretical content-exercises. If it is passed in June, the grade is maintained and there is no need to repeat the exam. For those who do not pass it in June, they must complete the final exam of the total theoretical content of the subject, solving practical questions and exercises on the application of the statistical methods studied. It will be 60% of the qualification of the subject. To pass the exam it is mandatory that the grade is equal to or greater than 5 points.
3. Evaluation of the computer practices (30% weight on the final grade): A test will be held in the computer room, solving exercises only from the part that has not been overcome in June (Excel, Rcmdr or both). The practical part can be considered overcome as long as the qualification obtained in the exam is equal to or greater than 5 points.

- Students who use the final single evaluation system:

1. Evaluation of the theoretical content-exercises part (60% of the final rating). The exam will contain three or four exercises. Students are required to obtain a minimum score of 5/10 in the exam to pass this part. If it is passed in June, the grade is maintained and there is no need to repeat the exam.
2. After completing the exam, students must solve a questionnaire about the contents of the theory-exercises block with a maximum closed resolution time (10% of the final grade). Students are required to obtain a minimum score of 5/10 to pass this part. If it is passed in June, the grade is maintained and there is no need to repeat it
3. Students must perform an activity in the computer room with Excel and R-Rcmdr, applying the statistical techniques studied, on the same date as the final exam of the subject. The practical part can be overcome provided that the qualification obtained is, at least, 5 points. (30% of the final rating). If it is passed in June, the grade is maintained and there is no need to repeat the exam.

## TERCERA EVALUACIÓN ORDINARIA Y OTRAS EVALUACIONES



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1. Evaluation of the theoretical content-exercises part (60% of the final rating). The exam will contain three or four exercises. Students are required to obtain a minimum score of 5/10 in the exam to pass this part.
2. After completing the exam, students must solve a questionnaire about the contents of the theory-exercises block with a maximum closed resolution time (10% of the final grade). Students are required to obtain a minimum score of 5/10 to pass this part.
3. Students must perform an activity in the computer room with Excel and R-Rcmdr, applying the statistical techniques studied, on the same date as the final exam of the subject. The practical part can be overcome provided that the qualification obtained is, at least, 5 points. (30% of the final rating).

## OTROS CRITERIOS DE EVALUACIÓN

¿Contempla la posibilidad de subir nota una vez realizadas las pruebas?

NO

Requisitos para la concesión de matrícula de honor

"Normativa de Evaluación de Grados y Másteres de la Universidad de Huelva"

## REFERENCIAS

### BÁSICAS

- Basic Statistics : Understanding Conventional Methods and Modern Insights, by Wilcox, Rand R.. Oxford University Press USA - OSO, 2009. (ProQuest Ebook Central, <http://0-ebookcentral.proquest.com.columbus.uhu.es/lib/bibuhuelib-ebooks/detail.action?docID=453655>).

- The Art of Data Analysis : How to Answer Almost Any Question Using Basic Statistics. Jarman, by Kristin H., John Wiley & Sons, Incorporated, 2013. (ProQuest Ebook Central, <http://0-ebookcentral.proquest.com.columbus.uhu.es/lib/bibuhuelib-ebooks/detail.action?docID=1175199>).

- Statistics : the art and science of learning from data, by Alan Agresti, Christine A. Franklin, 2nd ed. Pearson Prentice Hall, 2007

Upper Saddle River, NJ :

### ESPECÍFICAS

Gardener, M. (2012). BEGINNING R [RECURSO ELECTRÓNICO]: THE STATISTICAL PROGRAMMING LANGUAGE. Indianapolis: John Wiley & Sons.