

CIENCIAS AMBIENTALES Y GEOLOGÍA

DATOS DE LA ASIGNATURA

ASIGNATURA	STATISTICS AND DATA ANALYSIS	SUBJECT	757609107
CÓDIGO	757914109		
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)		
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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 foreign 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

Las competencias básicas, generales, transversales y específicas se encuentran detalladas en las guías docentes de estas asignaturas en el Grado en Geología y/o Ciencias Ambientales.

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

Grupo grande	<ul style="list-style-type: none"> • Método expositivo (lección magistral). • Exposiciones audiovisuales. • Resolución de ejercicios y problemas. • Ejercicios de autoevaluación, resolución de dudas. • Ejercitar, ensayar y poner en práctica conocimientos previos y aplicar métodos propios de la disciplina. • Aprendizaje autónomo. • Atención personalizada a los estudiantes. • Presentación de la asignatura y generalidades de los bloques temáticos. • Clases presenciales relativas a los contenidos teóricos y prácticos (problemas) de la asignatura, utilizando recursos didácticos tales como transparencias, presentaciones informatizadas y vídeos.
Prácticas de informática	<ul style="list-style-type: none"> • Exposiciones audiovisuales. • Resolución de ejercicios y problemas. • Ejercicios de autoevaluación, resolución de dudas. • Ejercitar, ensayar y poner en práctica conocimientos previos y aplicar métodos propios de la disciplina. • Aprendizaje autónomo. • Atención personalizada a los estudiantes. • Utilización del aula de informática para reforzar los conocimientos teóricos y prácticos adquiridos previamente.

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 September. It suppose the 40% of the theory (24% of the final rating).
4. The contents of the blocks 2 and 3 will be evaluated in the final exam (60% of the theory block - 36% 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 24% of the final rating (40% of the theory block).

The contents of the blocks 2 and 3 will be evaluated in the final exam (60% of the theory block - 36% of the final rating). Students are required to obtain a minimum score of 5/10 in the exam to pass to pass this part.

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

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. Upper Saddle River, NJ : Pearson



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GUÍA DOCENTE

Curso 2021/2022



Prentice Hall, 2007

ESPECÍFICAS

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