UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2015/16
Subject (*)	Estatística		Code	730G05012
Study programme	Grao en Enxeñaría Naval e Oceánica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Second	Obligatoria	6
Language				
Teaching method	Face-to-face			
Prerequisites				
Department	MatemáticasMétodos Matemáticos e de Representación			
Coordinador	Tarrio Saavedra, Javier	E-mail	javier.tarrio@udc.es	
Lecturers	Naya Fernandez, Salvador Tarrio Saavedra, Javier	E-mail	salvador.naya@udc.es javier.tarrio@udc.es	
Web				
General description				

Study programme competences / results	
Code	Study programme competences / results
A1	Skill for the resolution of the mathematical problems that can be formulated in the engineering. Aptitude for applying the knowledge on: linear algebra; geometry; differential geometry; differential and integral calculation; differential equations and in partial derivatives; numerical methods; algorithmic numerical; statistics and optimization
B1	That the students proved to have and to understand knowledge in an area of study what part of the base of the secondary education, and itself tends to find to a level that, although it leans in advanced text books, it includes also some aspects that knowledge implicates proceeding from the vanguard of its field of study
B2	That the students know how to apply its knowledge to its work or vocation in a professional way and possess the competences that tend to prove itself by the elaboration and defense of arguments and the resolution of problems in its area of study
B3	That the students have the ability to bring together and to interpret relevant data (normally in its area of study) to emit judgments that include a reflection on relevant subjects of social, scientific or ethical kind
B6	Be able to carrying out a critical analysis, evaluation and synthesis of new and complex ideas.
C1	Using the basic tools of the technologies of the information and the communications (TIC) necessary for the exercise of its profession and for the learning throughout its life.
C2	Coming across for the exercise of a, cultivated open citizenship, awkward, democratic and supportive criticism, capable of analyzing the reality, diagnosing problems, formulating and implanting solutions based on the knowledge and orientated to the common good.
C5	Assuming the importance of the learning as professional and as citizen throughout the life.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Participación en proxectos multidisciplinares de enxeñaría naval e oceánica.	A1	B1 B2 B3	
Modelar estatiscamente sistemas e procesos complexos de todos os ámbitos da Enxeñaría Naval e Oceánica.	A1	B6	C1
Resolver problemas con datos aplicando diversas técnicas estatísticas de forma efectiva para a enxeñería naval.		B1 B2	C1 C2 C5

Contents	
Topic	Sub-topic

Description of a statistical variable.	General Concepts. Frequency distributions. Graphical representations. Typical measures.
Description of several statistical variables.	Statistical vector. Linear regression. correlation.
Probability.	General Concepts. Axiomatic definition of Kolmogorov. Assigning probabilities: Laplace rule.
Conditional probability.	Definition of conditional probability. Independence of events. Theorems product, the total probability and Bayes.
One-dimensional random variables.	Concept of one-dimensional random variable. Discrete random variables and continuous. Transformation of random variables. Typical measures of a random variable. Inequality of Tchebychev.
Significant distributions Discreet.	Notable discrete random variables: discrete uniform distribution. Distribution Bernoulli. Binomial distribution. Geometric Distribution. Negative binomial distribution. Poisson distribution. hypergeometric distribution
Significant distributions continuous.	Continuous random variable notable: normal. The central limit theorem. Approach Distributions. Chi-square distribution of Pearson. Student's t-distribution. Distribution F Fisher-Snedecor.
Introduction to Statistical Inference.	General Concepts. Sampling. Generation of random variables. Concept of precise estimator. The sampling distribution of a statistic in precise.
Point estimation.	Properties of estimates. Methods of obtaining estimates. Precise estimate of the average. Precise estimator of the variance. Precise estimate of proportion.
Estimation of confidence intervals.	Concept of confidence interval. Confidence intervals for the mean. Confidence interval for the variance. Confidence interval for a proportion. Confidence intervals for the difference in averages. Confidence interval for the ratio of variances. Confidence interval for the difference in proportions.
Hypothesis tests	General Concepts. The critical significance level and a contrast. Power of a contrast. General procedure of hypothesis testing. Resistances for the medium. Contrast to the variance. Contrast to a ratio. Contrasts for the difference in averages. Contrast to the ratio of variances. Contrast to the difference in proportions. Contrasts position. Goodness-of-fit. Test of independence. Homogeneity tests.

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A1 B2 B3 C1	21	36.75	57.75
Problem solving	B1 B6 C1 C2	21	36.75	57.75
ICT practicals	C1	9	13.5	22.5
Multiple-choice questions	A1 B1 B2 C5	1.25	2.5	3.75
Objective test	A1 B1	2.5	5	7.5
Personalized attention		0.75	0	0.75
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description

Guest lecture / keynote speech	Part of the practical classes will be held in a computer lab, where with the help of statistical package (free software R) will be carried out with different practices simulated or actual data that have been previously provided to students.
Problem solving	If you compose a presentation of the subject, where in addition to describing the main data Mismo, establishing a discussion of solving problems.
ICT practicals	Be conducted lectures where the teacher will explain, with the help of appropriate audiovisual media (laptop and video projector), oos main contents of the course.
Multiple-choice questions	Multiple-choice test questions 10-20 of the program.
Objective test	There will be a test at the end of the course which consist in a series of practical exercises and reolución a test / exam multiple choice.

Personalized attention	
Methodologies	**Description**
Guest lecture / keynote speech	There will be lectures where the teacher will explain, with the help of appropriate audiovisual media (laptop and video projector), the main contents of the course. Encouraged at all times the debate among students and between students and teacher.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
ICT practicals	C1	Presentation of the works suggested by teachers with free statistical software R.	30
Objective test	A1 B1	Written exam of 20 multiple choice questions of the course and the resolution of one or two problems. Be weighed with the note of the work (maximum 1.5 points) and the attendance (1 point), being necessary to get by at least a 3.5 this review (on one note 10) to make this compensation.	50
Multiple-choice questions	A1 B1 B2 C5	Continuous assessment of of the program with questions and exercises.	20
Others			

Assessment comments

Sources of information	
Basic	- Cao R., Franciso M, Naya S., Presedo M., Vázquez M., Vilar J.A. y Vilar J.M. (2001). Introducción a la Estadística y sus aplicaciones. Editorial Pirámide - Montgomery, D. C. & Runger, G. C. (2004). Probabilidad y Estadística aplicadas a la Ingeniería.. Editorial Limusa-Wiley - http://www.r-project.org/ (). .
Complementary	

Recommendations
Subjects that it is recommended to have taken before
CALCULUS/730G01101 LINEAR ALGEBRA/730G01106
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus

Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.