Teaching Guide				
Identifying Data				2018/19
Subject (*)	Clinical Research I		Code	653862232
Study programme	Mestrado Universitario en Asistencia e Investigación Sanitaria (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatory	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Ciencias da SaúdeMatemáticas			
Coordinador	Estevez Perez, Maria Graciela	E-mail	graciela.estevez.perez@udc.es	
Lecturers	Estevez Perez, Maria Graciela Pértega Díaz, Sonia	E-mail	graciela.estevez.perez@udc.es s.pertega@udc.es	
Web	http://www.imedir.udc.es/mais/			
General description	This subject is divided into two blocks and completes the basic training in Probability and Inference introduced by the subject "Applied Statistic to Health Sciences." The first block is dedicated to two or more sample Inference from both a parametric and non-parametric point of view. In the other hand, the second block introduces the student to sample size justification methods and diagnostic test studies.			

Study programme competences	
Code	Study programme competences
A1	Capacidade para elixir e aplicar as metodoloxías de investigación mais adecuadas á investigación proposta.
A2	Capacidade para o deseño experimental e o completo desenvolvemento de proxectos de investigación no ámbito sanitario, desde a formulación da hipótese de investigación ata a comunicación dos resultados.
A3	Adquirir un sentido ético da investigación sanitaria.
A4	Obter un substrato teórico suficiente para comprender o entorno clínico de aplicación das técnicas de investigación.
B1	Capacidade para aplicar o método científico na planificación e o desenvolvemento da investigación sanitaria.
B2	Fluidez e propiedade na comunicación científica oral e escrita.
B3	Compromiso pola calidade do desenvolvemento da actividade investigadora.
B4	Capacidade de análise e de síntese.
B5	Habilidade para manexar distintas fontes de información.
B6	Capacidade para traballar de forma colaborativa en equipos multi e interdisciplinar.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C2	Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C5	Entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes	
Learning outcomes	Study programme competences

To analyze data using descriptive techniques and to make inferences about populations from partial information obtained by random sampling	AR1 AR2 AR3 AR4	BC1 BC2 BC3 BC4 BC5 BC6	CC1 CC2 CC3 CC5 CC6 CC7 CC8
To use the auxiliary tools and interpret the obtained results	AR1 AR2 AR3 AR4	BC1 BC2 BC3 BC4 BC5 BC6	CC1 CC2 CC3 CC5 CC6 CC7 CC8

Contents	
Topic	**Sub-topic**
Normality test	1. Graphic methods 2. Analytical methods
Two-Sample Inference	1. Two-Sample Inference for related variables. 2. Two-Sample Inference for independent variables
Introduction to the Analysis of Variance	1. ANOVA models 2. Nonparametric alternatives to ANOVA
Sample size determination	1. Determination of sample size for estimating parameters. 2. Determination of sample size for testing hypotheses. 3. Sample size calculations for case-control studies. 4. Sample size calculations in studies monitoring. 5. Determination of sample size for estimating correlation coefficient.
Validation of diagnostic test	1. Validity and reliability of diagnostic tests: sensitivity, specificity, predictive values, likelihood ratios 2. The clinical application of Bayes' theorem 3. Receiver-operating characteristics (ROC) curves and área under the curve

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Document analysis	A1 A2 A3 A4 B1 B4 B5 C2 C5 C6 C7 C8	20	50	70
Online forum	A1 A2 A4 B1 B6 C1 C3 C6	12	30	42
Seminar	A1 A2 A3 A4 B1 B2 B3 C1 C5 C6 C7 C8	4	10	14
Case study	A1 A2 B1 B2 B4 B5 B6 C1 C3 C6	4	12	16
Supervised projects	A1 A2 A3 A4 B1 B2 B3 B4 B5 B6 C1 C3 C6 C8	2	4	6
Personalized attention		2	0	2
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**
Document analysis	Supervised study using material multimedia (recorded classes, videos, slides, pdf documents)
Online forum	Online tools for monitoring and tutoring (forums, discussions)
Seminar	Seminars (work in group method to exchange information, make documents and discuss theories)
Case study	Continuous evaluation (written tests, problems to correct, participation in virtual class)
Supervised projects	Final evaluation (final work that reflects the control of the subject and/or final exam)

Personalized attention	
Methodologies	**Description**
Online forum Seminar Case study Supervised projects	The employed methodologies include personalized attention

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Case study	A1 A2 B1 B2 B4 B5 B6 C1 C3 C6	Written tests, problems to correct, participation in virtual class	50
Supervised projects	A1 A2 A3 A4 B1 B2 B3 B4 B5 B6 C1 C3 C6 C8	Final work that reflects the control of the subject and/or final exam	50

Assessment comments
The assessment criterion of Block I (three first subjects) will be in the following way: 50% of the qualification will be obtained of questionnaires and/or problems to correct and the 50% remaining of a work consistent in the resolution of a practical case. This work can be carried out in an individual way or in groups of two or three members. The maximum total score of this block will be 5 points. Evaluation of Block II (last two subjects) will be made by resolution of a test consisting of 5 case studies related to each of the two themes of this block: sample size justification and diagnostic tests studies. Each of estes cases will be evaluated with 1 point, where the proposal for a correct answer, the argument of the resolution of each case and the use of the web resources provided will be taken into account. The maximum total score of this block will therefore be 5 points. To obtain a NR (No Grade Reported), the student must not participate in any learning activities To help achieve a sustainable immediate environment and meet the objective 9 of "I Plan de Sostenibilidad Medio-Ambiental Green Campus FCS", the documentary works will be requested in virtual format and computer support. If some of them were carried out on paper: a.- Don't use plastic. b.- The impressions will be made double face. c.- Recycled paper will be used. d.- Printing drafts should be avoided, especially in color.

Sources of information

Basic	Referencias básicas:Material elaborado polo profesorado do máster e posto a disposición de todo o alumnado a través da plataforma virtualReferencias complementarias:Plataforma de Innovación Sanitaria da Consellería de Sanidade e o SERGAS. Bioestadística. ANOVA: Análise da Varianza (Rosa M. Crujeiras Casais. Departamento de Estatística e Investigación Operativa da Universidade de Santiago de Compostela). Dispoñible en: http://fegasmultimedia.sergas.es/default.aspx?action=play&conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4Bioestadística: métodos y aplicaciones. Francisca Ríus Díaz, Francisco Javier Barón Lopez, Elisa Sánchez Font y Luis Parras Guijosa. Universidad de Málaga. http://www.bioestadistica.uma.es/libro/ Aula Virtual de Bioestadística. Dpto. de Matemática Aplicada (Biomatemática). Facultad de Biología. UCM. http://e-stadistica.bio.ucm.es/Elementos de Bioestadística. Agustín García Nogales. Universidad de Extremadura. 2011. http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdfAtención Primaria en la Red. Metodología de la Investigación. http://www.fisterra.com/formacion/metodologia-investigacion/
Complementary	Referencias complementarias:Plataforma de Innovación Sanitaria da Consellería de Sanidade e o SERGAS. Bioestadística. ANOVA: Análise da Varianza (Rosa M. Crujeiras Casais. Departamento de Estatística e Investigación Operativa da Universidade de Santiago de Compostela). Dispoñible en: http://fegasmultimedia.sergas.es/default.aspx?action=play&conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4Bioestadística: métodos y aplicaciones. Francisca Ríus Díaz, Francisco Javier Barón Lopez, Elisa Sánchez Font y Luis Parras Guijosa. Universidad de Málaga. http://www.bioestadistica.uma.es/libro/ Aula Virtual de Bioestadística. Dpto. de Matemática Aplicada (Biomatemática). Facultad de Biología. UCM. http://e-stadistica.bio.ucm.es/Elementos de Bioestadística. Agustín García Nogales. Universidad de Extremadura. 2011. http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdfAtención Primaria en la Red. Metodología de la Investigación. http://www.fisterra.com/formacion/metodologia-investigacion/

Recommendations
Subjects that it is recommended to have taken before
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.