



## Teaching Guide

Identifying Data				2017/18
<b>Subject (*)</b>	Clinical Research I	<b>Code</b>	653862232	
<b>Study programme</b>	Mestrado Universitario en Asistencia e Investigación Sanitaria (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatoria	6
<b>Language</b>	Spanish			
<b>Teaching method</b>	Face-to-face			
<b>Prerequisites</b>				
<b>Department</b>	Ciencias da Saúde Matemáticas			
<b>Coordinador</b>	Estevez Perez, María Graciela	<b>E-mail</b>	graciela.estevez.perez@udc.es	
<b>Lecturers</b>	Estevez Perez, María Graciela Pértega Díaz, Sonia	<b>E-mail</b>	graciela.estevez.perez@udc.es s.pertega@udc.es	
<b>Web</b>	<a href="http://www.imedir.udc.es/mais/">http://www.imedir.udc.es/mais/</a>			
<b>General description</b>	<p>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.</p> <p>In the other hand, the second block introduces the student to sample size justification methods and diagnostic test studies.</p>			

## 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	BC1	CC1
	AR2	BC2	CC2
	AR3	BC3	CC3
	AR4	BC4	CC5
		BC5	CC6
		BC6	CC7
		CC8	
	To use the auxiliary tools and interpret the obtained results	AR1	BC1
AR2		BC2	CC2
AR3		BC3	CC3
AR4		BC4	CC5
		BC5	CC6
		BC6	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 these 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 help achieve a sustainable immediate environment and meet the objective 9 of "I Plan de Sostenibilidade 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



<b>Basic</b>	<p>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: <a href="http://fegasmultimedia.sergas.es/default.aspx?action=play&amp;conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4">http://fegasmultimedia.sergas.es/default.aspx?action=play&amp;conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4</a>Bioestadística: métodos y aplicaciones. Francisca Ríus Díaz, Francisco Javier Barón Lopez, Elisa Sánchez Font y Luis Parras Guijosa. Universidad de Málaga. <a href="http://www.bioestadistica.uma.es/libro/">http://www.bioestadistica.uma.es/libro/</a> Aula Virtual de Bioestadística. Dpto. de Matemática Aplicada (Biomatemática). Facultad de Biología. UCM. <a href="http://e-stadistica.bio.ucm.es/Elementos">http://e-stadistica.bio.ucm.es/Elementos</a> de Bioestadística. Agustín García Nogales. Universidad de Extremadura. 2011. <a href="http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdf">http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdf</a>Atención Primaria en la Red. Metodología de la Investigación. <a href="http://www.fisterra.com/formacion/metodologia-investigacion/">http://www.fisterra.com/formacion/metodologia-investigacion/</a></p>
<b>Complementary</b>	<p>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: <a href="http://fegasmultimedia.sergas.es/default.aspx?action=play&amp;conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4">http://fegasmultimedia.sergas.es/default.aspx?action=play&amp;conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4</a>Bioestadística: métodos y aplicaciones. Francisca Ríus Díaz, Francisco Javier Barón Lopez, Elisa Sánchez Font y Luis Parras Guijosa. Universidad de Málaga. <a href="http://www.bioestadistica.uma.es/libro/">http://www.bioestadistica.uma.es/libro/</a> Aula Virtual de Bioestadística. Dpto. de Matemática Aplicada (Biomatemática). Facultad de Biología. UCM. <a href="http://e-stadistica.bio.ucm.es/Elementos">http://e-stadistica.bio.ucm.es/Elementos</a> de Bioestadística. Agustín García Nogales. Universidad de Extremadura. 2011. <a href="http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdf">http://campusvirtual.unex.es/ebooks/files/file/Bioesta.pdf</a>Atención Primaria en la Red. Metodología de la Investigación. <a href="http://www.fisterra.com/formacion/metodologia-investigacion/">http://www.fisterra.com/formacion/metodologia-investigacion/</a></p>

## 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.