



Teaching Guide

Identifying Data					2019/20
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 Saúde Matemáticas				
Coordinador	Estevez Perez, María Graciela	E-mail	graciela.estevez.perez@udc.es		
Lecturers	Estevez Perez, María Graciela Pértega Díaz, Sonia	E-mail	graciela.estevez.perez@udc.es s.pertega@udc.es		
Web	http://www.imedir.udc.es/mais/				
General description	<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 / results

Code	Study programme competences / results
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 / results



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 / Results	Teaching hours (in-person & virtual)	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	10	24	34
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
Objective test	A1 A2 B1 B2 B4 C1 C2 C3 C6 C7	2	6	8
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)
Objective test	Avaliación final (exame escrito e presencial)
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 Objective test	The employed methodologies include personalized attention

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Case study	A1 A2 B1 B2 B4 B5 B6 C1 C3 C6	Written tests, problems to correct, participation in virtual class	30
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	30
Objective test	A1 A2 B1 B2 B4 C1 C2 C3 C6 C7	Exame escrito e presencial	40

Assessment comments



The assessment criterion of Block I (three first subjects), in both opportunities (January and July), will consist of two parts:

A part of continuous evaluation, with a weight of 60%, which will be distributed as follows: 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. An objective test, carried out in person on the date that officially establishes the coordination of the master's degree, which will consist in answering a list of short and conceptual questions (or multiple choice questions) about application and interpretation of the studied statistical methods. The maximum total score of this block will be 5 points.

Evaluation of Block II (last two subjects) in both opportunities (January and July), will consist of two parts:

A part of continuous evaluation, with a weight of 60%, which will be obtained of a work consistent in the resolution of practical cases related to theoretic content. This work should be carried out in an individual way through the Moodle platform. An objective test, with a weight of 40%, carried out in person on the date that officially

establishes the coordination of the master's degree, which will consist

in answering a list of short and conceptual questions (or multiple choice questions) about application and interpretation of the studied theoretic methods. The maximum total score of this block will be 5 points.

Passing the subject will require to approve, independently, each of the Blocks.

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 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

<p>Basic</p>	<p>Referencias básicas: Material elaborado polo profesorado do máster e posto a disposición de todo o alumnado a través da plataforma virtual. 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-a671-87de878d7bc4 Bioestadística: métodos y aplicaciones. Francisca Rius 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.pdf Atención Primaria en la Red. Metodología de la Investigación. http://www.fisterra.com/formacion/metodologia-investigacion/</p>
<p>Complementary</p>	<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: http://fegasmultimedia.sergas.es/default.aspx?action=play&conferenceGUID=f57877d8-5dde-4313-a671-87de878d7bc4 Bioestadística: métodos y aplicaciones. Francisca Rius 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.pdf Atención Primaria en la Red. Metodología de la Investigación. http://www.fisterra.com/formacion/metodologia-investigacion/</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

Programa

Green Campus FCS Para axudar a conseguir un entorno inmediato sustentable e cumprir cos obxectivos estratéxicos 1 e 2 do "III Plan de Acción do Programa Green Campus FCS (2018-2020)", os traballos documentais que se realicen nesta materia:

a. Solicitaranse maioritariamente en formato virtual e soporte informático. b. De realizarse en papel: - Non se empregarán plásticos. - Realizaranse impresións a dobre cara. - Empregarase papel reciclado. - Evitarase a realización de borradores.

PLAxioA

detección de fraude, copia ou plaxio na redacción do traballo da materia implicará un suspenso na oportunidade de avaliación afectada (0,0) e a remisión directa á oportunidade seguinte. Dita circunstancia comunicárase á Comisión Académica e ao resto de profesores do título. En caso de que se reitere a irregularidade nunha 2ª avaliación, a Comisión poderá solicitar ao Reitor a expulsión temporal ou definitiva do/a estudante do título cursado.

(*)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.