Teaching Guide					
Identifying Data					2019/20
Subject (*)	Research in Health Sciences II			Code	653862236
Study programme	Mestrado Universitario en Asistencia e Investigación Sanitaria (plan 2012)				
Descriptors					
Cycle	Period	Year		Type	Credits
Official Master's Degree	2nd four-month period	First		Obligatory	6
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department	Ciencias da SaúdeMatemáticas				
Coordinador	Jacome Pumar, Maria Amalia		E-mail	maria.amalia.jacome@udc.es	
Lecturers	Jacome Pumar, Maria Amalia Lopez de Ullibarri Galparsoro, Ignacio Sobrido Prieto, María		E-mail	maria.amalia.jacome@udc.es ignacio.lopezdeullibarri@udc.es maria.sobrido@udc.es	
Web	www.mastermais.udc.es/?page_id=197#Materia02				
General description					

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.
A5	Adquirir o coñecemento da realidade investigadora nun ámbito concreto das ciencias da saúde.
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.
B7	Capacidade de establecer unha relación de empatía cos suxeitos implicados no desenvolvemento da actividade investigadora.
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.
C4	Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
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

Data analysis: Introduction to the advanced statistical tools required for multivariate analysis and modelling of relationships among variables.	AR1 AR2 AR4	BC1 BC4	CC3 CC6 CC7 CC8
Evidence-based clinical practice	AR1 AR3 AR4	BC1 BC3 BC4 BC5 BC6 BC7	CC1 CC2 CC3 CC7
To know the basic principles of meta-analysis.	AR4 AR5	BC2 BC4 BC5	CC1 CC4 CC5 CC6

Contents	
Topic	**Sub-topic**
1. Association between two categorical variables	Basic concepts. Chi-squared and McNemar tests.
2. Simple linear regression	Simple linear correlation Fitting a simple linear regression Measures of goodness of fit Model diagnostics
3. Multiple linear regression	Variables selection Interaction Multicollinearity Comparison of models
4. Analysis of covariance	Introduction Fit of regression lines with different slopes Fit of regression lines with equal slopes
5. Logistic regression	Introduction Examples Goodness of fit Model selection
6. Survival analysis	Introduction to censored data Survival function: Kaplan-Meier estimator Comparison of survival functions: log-rank test
7.1. Evidence Based Practice	Introduction. Research implications. Evidence levels
7.2. Reviews	Narrative Reviews Systematic Reviews
7.3. Systematic reviews: Guidelines for its preparation	Introduction Methodology Results Discussion and conclussions Other elementes

8. Meta-analysis	Overview. Effect size. Statistical models. Quantification of heterogeneity. Publication bias. Meta-regression.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Document analysis	A4 A5 B4 B5 C3 C6	20	50	70
Introductory activities	B6 B7 C3	12	30	42
Seminar	A1	4	12	16
Collaborative learning	B6 B7 C4 C5 C7 C8	4	12	16
Supervised projects	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 C1 C2 C6	2	4	6
Personalized attention		0	0	0
(*)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	Learning through online material: recorded keynote speeches, videos, presentations and complementary pdf files.
Introductory activities	Online monitoring and personalized attention tools: forums and debates.
Seminar	Face to face seminars where students will be able to solve questions and problems.
Collaborative learning	Continuous evaluation through some of the following tools: exams, exercises, involvement with the virtual classroom, etc.
Supervised projects	Final academic work where students must demonstrate their theoretical and methodological knowledge of the contents. Works will be requested in virtual format and computer support.

Personalized attention	
Methodologies	Description
Introductory activities Supervised projects Seminar	Personalized attention is inherent in the methodologies used'

Assessment			
Methodologies	Competencies	Description	Qualification
Supervised projects	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 C1 C2 C6	Final academic work where the students should show their theoretical and methodological knowledge of the contents.	50
Collaborative learning	B6 B7 C4 C5 C7 C8	Exams, delivered exercises, involvement with the virtual classroom.	50

Assessment comments

The subject is formed by 3 blocks: Block A, Data analysis (units 1-6), Block B, Systematic reviews (units 7.1-7.3), and Block C, Meta-analysis (unit 8).
The weight of each block in the final mark is: Block A,
50%; Block B, 25%; and Block C, 25%.
If the student has not been assessed in any of the three blocks, the final mark will be "ABSENT".
The student will not pass the subject if the mark of any of the blocks is lower than 3 (in a 0-10 scale). Otherwise, the final mark of the subject will be the sum of the weighted marks of the corresponding blocks.
The three blocks are independent, that is, the mark of one block is not affected by the mark/s of the other block/s.
The assessment of each block is based on the delivery of exercises and/or essays. The instructions regarding the delivery of exercises and/or essays will be published on moodle.udc.es before the beginning of each block. Regarding supervised projects, following the "Normativa académica de evaluaciones, de calificaciones y reclamaciones" Article 14, plagiarism and the use of non-original material, including that obtained online, without implicit indication of the source and, if it is the case, the author, will result in a failing grade (numerical score 0) in the corresponding block. All of this without prejudice of the disciplinary responsibilities derived from the corresponding procedure.
Concerning repeating students, the different marks of previous academic years will not be kept.
Early opportunity:
The criteria are those considered in the Article 19 of the "Normas de avaliación, revisión e reclamación das
cualificacións dos estudos de grao e mestrado universitario".
D) Qualification with honors:
The students with a final score greater than 9 might be granted with a qualification with honors. The teachers might consider aditional criteria in the scores, based on any of the methodologies included in the teaching guide.

Sources of information	
Basic	Temas 1-6Metodoloxía da investigación (FISTERRA) http://www.fisterra.com/formacion/metodologia-investigacion/Material docente da Unidade de Bioestatística Clínica do Hospital Universitario Ramón y Cajal. http://www.hrc.es/bioest/M_docente.htmlArtículos de Bioestatística da SEH-LELHA https://www.seh-lelha.org/bioestadistica/Gerard E. Dallal. The little handbook of statistical practice. http://www.jerrydallal.com/LHSP/LHSP.htm Temas 7.1-7.4CASPe Herramientas - Critical Appraisal Skills Programme Español Medidas de Asociación e Impacto. http://www.redcaspe.org/que-hacemos/herramientas/Sobrido Prieto M. La Biblioteca Cochrane plus: guía breve de uso. Santiago de Compostela: Bibliosaude; 2009 disponible en: http://www.sergas.es/Docs/Bibliosaude/GuiaBibliotecaCochranePlus.pdfCasal Acción B, Ríos Neira M, Sobrido Prieto M. Guía de uso de CRD Databases. Plan de Calidad el Sistema Nacional de Salud del Ministerio de Sanidad y Política Social. Axencia de Avaliación de Tecnoloxías Sanitarias deGalicia; 2012. Guías de Recursos deInformación: nº 1. Disponible en: http://www.sergas.es/docs/Avalia-t/guia-uso-CRD.pdfSobrido Prieto M. Guia de uso de la base de datos Trip. [internet] Santiago de Compostela: Bibliosaude; 2011. Disponible en: http://www.sergas.es/Docs/Bibliosaude/GUIA%20DE%20USO%20TRIPDATABASE.pdf Sitio Web de R: http//www.r-project.org/Sitio Web de Cochrane Collaboration: http://www.cochrane.org/Tema 8Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. (2009). Introduction to Meta-Analysis. Wiley.Pértega S, Pita S. (2005). Revisiones sistemáticas y Metanálisis (II). Cadernos de Atención Primaria 12(3): 166-17. Disponible no sitio web de Fisterra: http://www.fisterra.com/mbe/investiga/metaanalisis/rsymetaanalisis2.asp
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Preparing a Research Project II: Development/653862202 Statistics Applied to Health Sciences/653862206 Clinical Research I/653862232
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 comunicarase 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.