Teaching Guide					
Identifying Data					2015/16
Subject (*)	Metodoloxía da Investigación			Code	651516001
Study programme	Mestrado Universitario en Discapacidade e Dependencia (plan 2015)				
Descriptors					
Cycle	Period	Year		Type	Credits
Official Master's Degree	Yearly	First		Obligatoria	9
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department	Socioloxía e Ciencia Política da Administración				
Coordinador	Cotillo Pereira, Alberto		E-mail	a.cotillo@udc.es	
Lecturers	Cotillo Pereira, Alberto		E-mail	a.cotillo@udc.es	
Web					
General description	The course on "Research Methods" has a transversal orientation. Therefore, it must provide students the knowledge and skills that help them to understand and develop research, both in relation to the work of the final project of the master and, if appropriate, for the development of their doctoral dissertations. Therefore, the knowledge acquired constitute support for the realization of the final work of the project with adequate scientific methodology, making it the translation of empirical knowledge and skills acquired. While the final project of the master enterely designs and executes a research project, in this course we will only conduct the methodological design of the research project.				

Study programme competences / results	
Code	Study programme competences / results
A2	CE2. Ser capaz de deseñar proxectos de investigación no ámbito da discapacidade e dependencia
A5	CE5. Ser capaz de utilizar eficientemente os recursos tecnolóxicos na comprensión e investigación da discapacidade e a dependencia?
B1	CB6. Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación
B2	CB7. Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en ámbitos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo
B4	CB9. Que os estudantes saiban comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a públicos especializados e non especializados dun modo claro e sen ambigüidades
B5	CB10. Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en boa medida autodirixido ou autónomo.
B6	CG1 Ser capaz de seleccionar e desenvolver as estratexias investigadoras para estudar a problemática relacionada coa discapacidade e a dependencia
B10	CG5 Capacidade para integrar coñecementos científicos de carácter avanzado ligados ao ámbito da discapacidade e a dependencia
B11	CG6 Ser capaz de acceder á información relacionada coa discapacidade e a dependencia
C3	CT3. Utilizar as ferramentas tecnolóxicas básicas necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida
C6	CT6. Valorar críticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas aos que deben enfrontarse
C7	CT7. Ser capaz de 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		
Upon successful completion of the course, students will be able to recognize the structure of different research projects.	AR2	BR11	
Upon successful completion of the course, students will be able to identify the different phases and tasks that are required in research activity.	AR2		

Upon successful completion of the course, students will be able to program different methodological designs.	AR2	BR1 BR2 BR5 BR6	
Upon successful completion of the course, students will be able to identify the advantages and disadvantages of different methodological designs.		BR6	CR7
Upon successful completion of the course, students will be able to calculate the more usual epidemiological indicators, the sample size and the main descriptive statistics.	AR5		CR3
Upon successful completion of the course, students will be able to choose the more appropriate statistical tests in each case.		BR6	CR3
Upon successful completion of the course, students will be able to interpret the most usual epidemiological indicators, the descriptive statistics and the outcomes of the main statistical tests.	AR5	BR4 BR10	CR3 CR6

Contents	
Topic	**Sub-topic**
LESSON 1. RESEARCH PLAN	Structure of a research. Activities in a research: measurement, comparison and interpretation.
LESSON 2. TIPES OF EPIDEMIOLOGICAL STUDIES.	Descriptive studies vs. analytical studies. Cross-sectional studies vs. longitudinal studies. Experimental studies vs. observational studies. Prospective studies vs. retrospective studies. Questions of validity, accuracy and reliability in epidemiological studies.
LESSON 3. FUNDAMENTALS ON CLINICAL EPIDEMIOLOGY.	The clinical decision. Statistical significance vs. clinical relevance. Causal inference.
LESSON 4. MEASURES OF DISEASE FREQUENCY.	Incidence. Prevalence. Adjusting rates. Effect measures. Risk. Risk measurement. Early detection of diseases.
LESSON 5. FUNDAMENTALS ON STATISTICS.	The concept of Statistics. Variables. Tabulation and graphical representation of variables.
LESSON 6. DESCRIPTIVE STATISTICS.	Descriptive statistical analysis. Measures of central tendency. Measures of dispersion. Measures of frequency distribution. The normal curve. Features and applications of the normal curve. Calculation of probabilities.
LESSON 7. SAMPLING.	The concept of sampling. Applications. Sampling types. Calculation of the sample size and sampling errors.
LESSON 8. INFERENCIAL STATISTICS.	Introduction to inferential statistics. Parameter estimation and hypothesis testing. Mean difference. Difference in proportions. Confidence intervals.
LESSON 9. BASIC OPERATIONS IN SPSS.	SPSS windows. Creating variables in SPSS. Previous operations on the data. Variable transformation.
LESSON 10. BIVARIATE ANALYSIS.	Analysis of variance. Analysis of contingency tables. Correlation analysis. SPSS applications.
LESSON 11. ANALYSIS OF SURVIVAL AND MATCHING.	Analysis of survival. ROC curves. Study of the agreement. SPSS applications. Presentation and interpretation of results.
LESSON 12. EXPLORATORY DATA ANALYSIS.	Graphic / exploratory analysis of the variables. SPSS applications.
LESSON 13. MULTIPLE REGRESSION ANALYSIS.	Concept of multiple regression analysis. Objectives of multiple regression. Design research in multiple regression analysis. Assumptions in the multiple regression analysis. Estimation and assessment of the regression model. Interpretation of the theoretical value of the regression. Validation of results. Examples of application of multiple regression analysis in SPSS.

LESSON 14. LOGISTIC REGRESSION ANALYSIS.	Concept of logistic regression analysis. Binomial and multinomial logistic regression. Objectives of the logistic regression. Design research in logistic regression analysis. Assumptions in the logistic regression analysis. Estimation and evaluation of the logistic regression model. Interpretation of the theoretical value of the regression. Validation of results. Application examples in binomial and multinomial logistic regression analysis in SPSS.
LESSON 15. MULTIVARIANTE ANALYSIS OF VARIANCE.	Concept of multivariate analysis of variance (MANOVA). MANOVA applications. MANOVA objectives. Research design by MANOVA. Basic assumptions of MANOVA. MANOVA model estimation and assessment of global adjustment. Interpretation of the results of MANOVA. Validation of results. Examples of application of MANOVA in SPSS.

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
ICT practicals	A5 B2 B4 B10 C3	45	0	45
Research (Research project)	A2 B1 B2 B5 B6 B10 B11 C7	15	60	75
Supervised projects	A2 A5 B2 B4 B6 B10 B11 C3	9	21	30
Objective test	A5 B4 B10 B11	5	0	5
Workbook	B1 B5 B10 B11 C6 C7	0	40	40
Guest lecture / keynote speech	B5 B6 B10 B11 C6 C7	25	0	25
Personalized attention		5	0	5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
ICT practicals	Throughout the course, students should develop tutored classroom practices, many of which involve the use of ICT, in particular the handling of SPSS.
Research (Research project)	In the second half of the course, drafts of the students projects must be exposed in the classroom to be discussed with the teacher and their classmates.
Supervised projects	In the first half of the course, students will develop a research project in all its phases and which takes as its subject's own final project.
Objective test	Throughout the first part of the course, students will perform in class several different kinds of objective tests to demonstrate mastery of required readings for the course.
Workbook	For the development of each of the sessions of the first part of the course, students must perform basic readings of the subject that the teacher will indicate at any time.
Guest lecture / keynote speech	Students, with the help of the teacher, will expose in the classroom the content of the basic readings that the teacher will indicate at any time.

Personalized attention	
Methodologies	Description
ICT practicals Research (Research project) Supervised projects	For the development of practices, students will have the personal attention of the teacher in the classroom. In addition, students must attend at least two tutorials throughout the development of their supervised project.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
ICT practicals	A5 B2 B4 B10 C3	They will consist of solving problems, developing specific stages of research or managing databases from real research examples.	30
Supervised projects	A2 A5 B2 B4 B6 B10 B11 C3	It will consist in developing a research project at all its stages and taking as its subject their final project.	20
Objective test	A5 B4 B10 B11	It will consist of performing various kind of objective tests of various kinds to demonstrate mastery of required readings of the course.	20
Workbook	B1 B5 B10 B11 C6 C7	It will consist in exposing in the classroom the basic readings of the course.	30

Assessment comments
At the beginning of the course students must choose one of two ways: either continuous assessment or assessment by examination on the official date. Those opting for the latter route will only have to present a theoretical and practical examination on the official date. Students who choose the path of continuous evaluation may not be presented for consideration by the official date in June. It is understood that chose not continuous assessment those students who did not communicate to the teacher by e-mail their choice by continuous assessment before October 15, 2016. The evaluation of the efforts of students who have opted for continuous assessment will be based on a system of points that have to be accumulated throughout the course. The maximum number of points that students can get will be 100 on continuous assessment and 80 in non-continuous assessment. Their final score will depend directly on the number of points they accumulate. In some classes the teacher will pass a signature sheet to monitor student attendance. Students in the continuous evaluation, will approve the subject if they meet each and every one of the following three conditions: (1) to attend at least 75% of classes in which attendance was monitored; (2) to accumulate 50 or more points and (3) to obtain in each of the tests, at least a third of the points in game (10 on the ICT practicals and workbook, and 7 in the supervised project and the objective tests). Students in non-continuous evaluation must obtain at least 50 points to pass, since the theoretical part will involve a maximum 50 points and the practical part will involve a maximum of 30 points. The latter will also be applied to all the students in the official opportunity of July. The teacher reserves the right to make changes along the course, provided they are not in contradiction with any of the information contained herein.

Sources of information	
Basic	- Hulley, S.B., Cummings, S.R.,Browner, W.S., Grady, D.G. & (2014). Diseño de investigaciones clínicas. Buenos Aires: Wolters Kluwer Health - Ruiz Morales, A. & Morillo Zárate, L.E. (2004). Epidemiología clínica. Investigación clínica aplicada. Bogota: Editorial Médica Panamericana - Irala-Eatévez, J. de, Martínez-González, M.A. & Seguí-Gómez, M. (2004). Epidemiología aplicada. Barcelona: Ariel - Cubo Delgado, S., Martín Marín, B. & Ramos Sánchez, J.L. (Coords.) (2011). Métodos de investigación y análisis de datos en ciencias sociales y de la salud. Madrid: Ediciones Pirámide - Hair, J.F., Anderson, R.E., Tathan, R.L. & Black, W.C. (1995). Análisis multivariante. Madrid: Prentice-Hall - Rothman, K.J. (1987). Epidemiología moderna. Madrid: Ediciones Díaz de Santos - Norell, S. (1994). Diseño de estudios epidemiológicos. Madrid: Siglo XXI - Moreno Altamirano, L., Cano Valle, F. & García Romero, H. (1994). Epidemiología clínica. México: Interamericana-McGraw-Hill - Sentís, J., Pardell, H., Cobo, E. & Canela, J. (2001). Bioestadística. Barcelona: Masson - León, O.G. & Montero, I. (2000). Métodos de investigación en Psicología y Educación. Madrid: McGraw-Hill - Pardo Merino, A. & Ruiz Díaz, M.A. (2002). SPSS 11. Guía para el análisis de datos. Madrid: McGraw-Hill

Complementary	

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.