UNIVERSITÀ DEGLI STUDI DI PALERMO

DIPARTIMENTO	Scienze Psicologiche, Pedagogiche, dell'Esercizio Fisico e della Formazione
ANNO ACCADEMICO OFFERTA	2018/2019
ANNO ACCADEMICO EROGAZIONE	2018/2019
CORSO DILAUREA MAGISTRALE	PSICOLOGIA SOCIALE, DEL LAVORO E DELLE ORGANIZZAZIONI
INSEGNAMENTO	DATA ANALYSIS LABORATORY
TIPO DI ATTIVITA'	C
AMBITO	20969-Attività formative affini o integrative
CODICE INSEGNAMENTO	17940
SETTORI SCIENTIFICO-DISCIPLINARI	SECS-S/05
DOCENTE RESPONSABILE	FERRANTE MAURO Professore Associato Univ. di PALERMO
ALTRI DOCENTI	
CFU	6
NUMERO DI ORE RISERVATE ALLO STUDIO PERSONALE	110
NUMERO DI ORE RISERVATE ALLA DIDATTICA ASSISTITA	40
PROPEDEUTICITA'	
MUTUAZIONI	
ANNO DI CORSO	1
PERIODO DELLE LEZIONI	2° semestre
MODALITA' DI FREQUENZA	Facoltativa
TIPO DI VALUTAZIONE	Voto in trentesimi
ORARIO DI RICEVIMENTO DEGLI STUDENTI	**FERRANTE MAURO** Mercoledì 10:00 12:00 Stanza del docente: edificio 15, sesto piano, stanza 608, oppure su Piattaforma Microsoft Teams. E' preferibile che gli studenti interessati contattino il docente tramite mail qualche giorno prima per essere aggiunti al team del ricevimento.

DOCENTE: Prof. MAURO FERRANTE

PREREQUISITI	Students are expected to have knowledge on basic statistical concepts, acquired during the three-year degree.
RISULTATI DI APPRENDIMENTO ATTESI	Knowledge and understanding We expect that students will strengthen their ability in understanding and they will be able to write critically elaborate texts which will include the use of statistical techniques for analyzing mass behaviours and attitudes. Such techniques are in fact largely used in evaluation processes within communities and all other contexts where psychologists work. Applying knowledge and understanding Psychologists are expected to critically use statistics within their work environment. We refer, for example, to the observation of the behaviour of individuals and groups within families and institutions; to the prevention of hardships and to the facilitation of wellness at work and in society, and to the evaluation of related policies; to the personnel selection, training and evaluation for both public and private organizations. Making judgements The course is designed for the achievement of this ability. All the phases of the research path are analyzed, so that students can acquire the expertise necessary to critically select, among many data analysis tools, the more suitable to the nature of the investigated phenomena. Communication skills At the end of the course, students are expected to be able to interpret and communicate the results of their work, both as research results and in any other format. In order to do that, students have to reinforce the elements of their statistical language, and to acquire the capabilities required to produce scientific and professional reports. Learning skills Critical thinking and the selection of the most suitable research designs (among many possible options) represent the most relevant purposes of this course. People able to do this, can also develop the ability to learn by themselves in further steps of their academic and professional career.
VALUTAZIONE DELL'APPRENDIMENTO	Open book PC session. Assessment Methods: Excellent - 30/30 cum laude - Excellent knowledge of course topics and of statistical language, the student is able in applying the acquired knowledge for solving the proposed problems. Very good - 26/29 - Good Knowledge of course topics, Very good knowledge of statistical languatge; the Student can apply the acquired knowledge for solving the proposed problems. Good - 24/25 - Basic knowledge of course topics, Dicreet knowledge of statistical language, with a certain capability in the application of acquired knowledge for solving the proposed problems. Acceptable - 21/23 - Minimum knowledge of main course topics. Acceptable knowledge of statistical language. Minimum capability in the application of acquired knowledge for solving the proposed problems. Sufficient - 18/20 - Minimum knowledge of main course topics. Acceptable knowledge of statistical language. Low or no capability in the application of acquired knowledge for solving the proposed problems. Inadequate - Student doesn't have the minimum knowledge of the main contents of the course topics.
OBIETTIVI FORMATIVI	This course offers students the chance to think about some fundamental issues related to the research methodology and to data analysis, with a particular focus on direct applications. The main purpose of the course consists of orientating students to the critical use of statistical analysis tools for producing research reports. Case-studies, obtained from the psychological field, will be used in order to explain the close connection among the researcher’s questions, the choice of one among many research designs and statistical tools. Applications will be encouraged through the RStudio and R softwares.
ORGANIZZAZIONE DELLA DIDATTICA	The course will be held in English through lectures and practical lessons.
TESTI CONSIGLIATI	Review of Statistics (concepts and methods). All academic books on descriptive and inferential statistics used by students during their BA degree courses fit the requirements of this course; some additional papers and/or online resources will be suggested by the teacher to interested students.

	Navarro, D. (2015) Learning Statistics with R: A tutorial for psychology students and other beginners (ver. 0.5). A free copy of the book can be downloaded at the following link: https://health.adelaide.edu.au/psychology/ccs/docs/lsr/lsr-0.5.pdf Materials distributed to students during lessons.

PROGRAMMA

ORE	Lezioni
2	Review of descriptive statistics: univariate analysis
2	The analysis of the relationship between variables. Causation and covariation.
3	Review of inferential statistics: estimating parameters, testing hypotheses
2	Introduction to R and R studio

ORE	Esercitazioni
2	Self-evaluation test

ORE	Laboratori
4	Importing dataset, inputting data; Basic R functions
7	Univariate descriptive statistics: mean, median, quantiles, mode; standard deviation, variance, coefficient of variation, Gini's heterogeneity index. From data matrices to frequency distributions: cumulative and noncumulative frequency distributions (discrete values and classes, counts, relative frequencies, percentages). Graphs: bar plot, pie chart, histogram, vertical lines plot, stair step plot, ogive. The shape of a distribution: rightskewed, left-skewed, bell-shaped; boxplot.
7	Univariate descriptive statistics: mean, median, quantiles, mode; standard deviation, variance, coefficient of variation, Gini's heterogeneity index. From data matrices to frequency distributions: cumulative and noncumulative frequency distributions (discrete values and classes, counts, relative frequencies, percentages). Graphs: bar plot, pie chart, histogram, vertical lines plot, stair step plot, ogive. The shape of a distribution: rightskewed, left-skewed, bell-shaped; boxplot.
8	Bivariate descriptive statistics, the linear regression model. Crosstabulations: counts, row, column and total percentages. Distributions for qualitative and discrete or continuous quantitative variables. Stacked bar plot, scatter diagram. Chi-square, Cramer's V, Spearman's rho, covariance, linear correlation. The regression line: slope and intercept. The coefficient of determination.
10	Probability and statistical inference. Theoretical continuous distributions: Normal distribution, Student's t distribution, Chi-square distribution, FisherSnedecor's distribution. Probabilities, densities, percentiles. Sampling distributions: expected value (EV), standard error. Point estimates, confidence intervals: for the population mean, the population proportion, the population variance. Hypotheses testing: about a population mean, about a population proportion (large samples), about two population means (matched-pairs data, independent samples, equal or unequal population variances), about two population proportions (matched-pairs data, independent samples), about more than two population proportions. The Chi-square test for independence. Testing for other statistical relations: Spearman's rho, Pearson's linear correlation index, and regression slope. Non-parametric tests: Kolmogorov-Smirnov, Mann-Whitney, Wilcoxon. Interpreting the software output.