



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	
ACADEMIC YEAR	
ANNO ACCADEMICO EROGAZIONE	
SUBJECT	
CODE	
SCIENTIFIC SECTOR(S)	
HEAD PROFESSOR(S)	AUGUGLIARO LUIGI Professore Ordinario Univ. di PALERMO ABBRUZZO ANTONINO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	
PROPAEDEUTICAL SUBJECTS	04897 - GENERAL MATHEMATICS
MUTUALIZATION	
YEAR	
TERM (SEMESTER)	
ATTENDANCE	
EVALUATION	
TEACHER OFFICE HOURS	ABBRUZZO ANTONINO Monday 15:00 17:00 DSEAS secondo piano stanza 222 AUGUGLIARO LUIGI Tuesday 10:00 12:00 Stanza n. 201 - secondo piano

PREREQUISITES	The complete understanding of the topics covered in the course requires knowledge of the properties of algebraic operations and certain topics in mathematical analysis, namely the concept of the derivative of a function of one/ two variables, the concept of the limit of a function, and the identification of the maximum/minimum points of a function of one variable.
LEARNING OUTCOMES	<p>The assessment of the candidate's preparation is obtained through a written exam and, if evaluated positively, an oral exam.</p> <p>The written exam, lasting two hours, consists of three exercises and an open-ended question. The exam is structured to allow for the comparability of the responses provided by the candidates. The exercises aim to verify the possession of the logic and statistical tools studied during the course; for this purpose, they are structured in a clear, unambiguously interpretable manner and require the application of the most appropriate statistical indices for univariate analysis, bivariate analysis, and probability calculation. The open-ended question is designed to verify the possession of the fundamental theoretical knowledge of the subject; it involves demonstrating a theoretical property of a statistical indicator chosen during the exam's design phase. The written exam is graded negatively if, from the correction of the paper, the knowledge of the main topics covered in the course is not evident. In such a case, the candidate will be declared failed.</p> <p>If the written exam is evaluated positively, the candidate must take an oral exam divided into two phases. In the first phase, the errors made in the written exam will be discussed, while in the second phase, the candidate must answer a minimum of two or three questions on all parts of the syllabus. The final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative skills, and the ability to make independent judgments on concrete cases. The threshold for passing will be reached when the student shows knowledge and understanding of the topics at least in general terms and has minimal application skills in solving concrete cases; the student must also possess expository and argumentative skills that allow the transmission of their knowledge to the examiner. Below this threshold, the exam will be insufficient. The more the candidate, with their argumentative and expository skills, interacts with the examiner, and the more their knowledge and application skills go into detail about the subject under review, the more positive the evaluation will be.</p> <p>The final grade is given out of thirty and is obtained as the sum of the written exam evaluation (up to 25/30) and the oral exam evaluation (up to 5/30).</p>
ASSESSMENT METHODS	<p>The assessment of the candidate's preparation is obtained through a written exam and, if evaluated positively, an oral exam.</p> <p>The written exam, lasting two hours, consists of three exercises and an open-ended question. The exam is structured to allow for comparability of the responses provided by the candidates. The exercises aim to verify the possession of the logic and statistical tools studied during the course; for this purpose, they are structured in a clear, unambiguously interpretable manner and require the application of the most appropriate statistical indices for univariate, bivariate analysis and probability calculation. The open-ended question is designed to verify the possession of the fundamental theoretical knowledge of the subject; it involves demonstrating a theoretical property of a statistical indicator chosen during the exam's design phase. The written exam is graded negatively if, from the correction of the paper, the knowledge of the main topics covered in the course is not evident. In such a case, the candidate will be declared failed.</p> <p>If the written exam is evaluated positively, the candidate must take an oral exam divided into two phases. In the first phase, the errors made in the written exam will be discussed, while in the second phase, the candidate must answer a minimum of two or three questions on all parts of the syllabus. The final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative skills, and the ability to make independent judgments on concrete cases. The threshold for passing will be reached when the student shows knowledge and understanding of the topics at least in general terms and has minimal application skills in solving concrete cases; the student must also possess expository and argumentative skills that allow the transmission of their knowledge to the examiner. Below this threshold, the exam will be insufficient. The more the candidate, with their argumentative and expository skills, interacts with the examiner, and the more their knowledge and application skills go into detail about the subject under review, the more positive the evaluation will be.</p> <p>The final grade is given out of thirty and is obtained as the sum of the written</p>

	exam evaluation (up to 25/30) and the oral exam evaluation (up to 5/30).
EDUCATIONAL OBJECTIVES	The primary objective of the course is to introduce the basic concepts of Statistics, viewed generally as a fundamental discipline in the process of acquiring scientific knowledge and, specifically, economic knowledge. In this field, a solid quantitative foundation is essential for conducting appropriate economic analyses. The course will particularly focus on methods from Descriptive Statistics, providing practical and theoretical tools related to the measurement, collection, and treatment of data pertinent to economic analysis.
TEACHING METHODS	Lezioni frontali ed esercitazioni in aula.
SUGGESTED BIBLIOGRAPHY	Appunti forniti dal docente. S. Borra e A. di Ciaccio (2014) Statistica: metodologie per le scienze economiche e sociali. McGraw-Hill Education (Italy). R. A. Irizarry (2019) Introduction to Data Science: Data Analysis and Prediction Algorithms with R. Chapman & Hall/CRC Data Science.

SYLLABUS

Hrs	Frontal teaching
12	Introduction to Statistics, statistical characters, graphical and tabular representations, and index numbers.
4	Introduction to the statistical programming language R
12	Analysis of the distribution of a character: and averages and indices of variability.
10	Comparison between empirical and theoretical distributions.
10	Statistical dependence and interdependence.
Hrs	Practice
4	Statistical characters, graphical and tabular representations.
4	Introduction to the statistical programming language R
5	Averages and indices of variability
5	Comparison between empirical and theoretical distributions.
6	Statistical dependence and interdependence.

PREREQUISITES	The full understanding of the arguments of the discipline requires the knowledge about the properties of algebraic operations and some notions of mathematical analysis, i.e. the derivative of a function, the limit of a function and the problem of determining the minimum of a function. It is also required: literacy competence, digital competence, personal, social and learning to learn competence.
LEARNING OUTCOMES	<p>Knowledge and ability to understand At the end of the course, the student will acquire the terminology of the discipline in order to use it in the analysis of an economic data-set; the student will acquire the fundamental tools own of the Descriptive Statistics, it will be able to choose and apply the adequate statistical indices with respect to the type of data that will be analyzed; It will be also introduced the basic notion of the statistical inference.</p> <p>Capacity to apply knowledge and understanding At the end of the course, the student will be able to distinguish the different type of data; to identify the nature of the data available for the analysis; he will be able to use the main statistical indices of descriptive statistics; he will be able to study the dependence structure between two variables in order to make decisions under uncertainty.</p> <p>Making judgments At the end of the course, the student will be able to do a descriptive analysis of a data-set drawn from a population; to be able to extract and summarize informations from a data-set; to be able to choose the type of dependence between two variables.</p> <p>Communication skills At the end of the course, the student will be able to communicate the results coming from a descriptive or inferential analysis by means of simple reports; the student will be able to communicate the obtained results justifying, from a theoretical point of view, the statistical tools used for the analysis.</p> <p>Learning skills At the end of the course, the student will be able to understand the results from a statistical analysis; he will be able to re-elaborate the obtained results.</p>
ASSESSMENT METHODS	<p>The assessment of the examinee's preparation is obtained by a written exam and, in case of positive evaluation, an oral exam.</p> <p>The duration of the written exam is of two hours and it is composed of three exercises and an open question. It is structured in order to make comparable the answers given by the students. The exercises are structured with the aim to verify the knowledge of the statistical tools studied during the course; to this end, they are structured in a clear form, are uniquely interpretable and require the application of the most appropriate statistical indices. The aim of the open question is to verify the knowledge of the theoretical foundations of the discipline; it requires the proof of a theoretical property of a statistical index chosen during the design of the written exam. The evaluation of the written exam is negative if the student does not show the knowledge of the main notions studied during the course. In this case the student is failed.</p> <p>If the written exam is evaluated positively, the student must take an oral exam structured in two parts. In the first part, the student will discuss the errors done in the written exam while in the second part the student will have to answer at least two/three oral questions on the whole program of the course. The final assessment aims to evaluate whether the student has the knowledge and understanding of the topics of the discipline. The student will take a positive evaluation whether he shows a full comprehension of the main arguments of the discipline and, at the same time, his presentation skills allow the transmission of his knowledge to the examiner. Below this threshold, the exam will be evaluated insufficient.</p> <p>Final assessment is graded on a scale the goes from zero to thirty points and it is obtained as sum of the evaluation of the written exam (up to 25/30) and the oral exam (up to 5/30).</p> <p>Compensatory tools and dispensatory measures will be guaranteed by the Disability and Neurodiversity Center - University of Palermo (Ce.N.Dis.) to students with disabilities and neurodiversity, based on specific needs and in implementation of current legislation.</p>
EDUCATIONAL OBJECTIVES	Aim of the course is the introduction to the basic Statistical concepts. It is well known that it is impossible to do an adequate economic analysis without the knowledge of the statistical tools necessary of to do a quantitative analysis. To this end, the course will be focused on that part of the Statistical theory known

	as “Descriptive Statistics” which give us the practical and theoretical tools by means of to describe and summarize the features of an economic data-set.
TEACHING METHODS	Lectures and classroom exercises.
SUGGESTED BIBLIOGRAPHY	<p>Appunti forniti dal docente. S. Borra e A. di Ciaccio (2014) Statistica: metodologie per le scienze economiche e sociali. McGraw-Hill Education (Italy)</p> <p>R. A. Irizarry (2019) Introduction to Data Science: Data Analysis and Prediction Algorithms with R. Chapman & Hall/CRC Data Science</p>

SYLLABUS

Hrs	Frontal teaching
4	Introduction to Descriptive Statistics and R statistical software (import dataset e package tidyverse)
10	Types of statistical variables, graphs and frequency distribution tables
12	Descriptive summary measures from a frequency distribution: averages and measures of variability.
12	Introduction to probability and comparison between empirical and theoretical distribution.
10	Correlation and statistical dependence.
Hrs	Practice
5	Types of statistical data, graphs and frequency distribution tables.
4	Introduction to statistical programming language R
5	Averages and measures of variability.
5	Comparison between empirical and theoretical distribution.
5	Correlation and statistical dependence.