



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2022/2023
BACHELOR'S DEGREE (BSC)	MANAGEMENT ENGINEERING
SUBJECT	STATISTICS
TYPE OF EDUCATIONAL ACTIVITY	A
AMBIT	50292-Matematica, informatica e statistica
CODE	06644
SCIENTIFIC SECTOR(S)	SECS-S/02
HEAD PROFESSOR(S)	LOMBARDO ALBERTO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	12
INDIVIDUAL STUDY (Hrs)	192
COURSE ACTIVITY (Hrs)	108
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	LOMBARDO ALBERTO Thursday 12:00 14:00 Stanza docente

DOCENTE: Prof. ALBERTO LOMBARDO

PREREQUISITES	Calculus: functions, derivatives, integrals at one and at least two dimensions
LEARNING OUTCOMES	<p>Knowledge and ability to understand At the end of the course the student will have knowledge of the basic tools of probability calculation (including the main random variables), of classical and Bayesian inferential statistics (punctual and interval estimation and verification of parametric and non-parametric hypotheses) and of statistical dependence analysis. between variables (analysis of variance and simple and multiple regression).</p> <p>Ability to apply knowledge and understanding The student will be able to use the aforementioned tools in the industrial and business field, contributing to enriching the whole of his analysis tools through modern non-deterministic methods.</p> <p>Autonomy of judgment The student will be able to interpret the main results of programmed experiments, as well as to organize and read the data coming from his own company.</p> <p>Communication skills The student will acquire the ability to communicate and express problems related to non-deterministic phenomena, transferring the need to use suitable tools to his team.</p> <p>Learning skills The student will learn the principles of the probabilistic and statistical methodology and will be able to acquire new information, as well as to read the results of any statistical software.</p>
ASSESSMENT METHODS	<p>the assessment is based on an oral test consisting of two parts. a preliminary test consisting of two exercises on the main probability tools, the sufficiency of which (i.e. reaching the score of 18/30) constitutes a condition for admission to the oral exam in the second part of the oral exam. starting from the maximum score of 30, each exercise not carried out involves 12 penalty points, instead an exercise carried out partially receives a penalty less than 12 points commensurate with the seriousness of the failure (2 point for a calculation error, 4 points for a wrong relationship between the quantities expressed in the exercise and the formulas applied, 8 points for a wrong choice of the method, provided it is justified in some way). in this way, sufficiency can be obtained even in the case of only one exercise carried out entirely and correctly and the other completely not carried out. the second part of the oral test to verify the skills of theoretical exposure and application to simple real situations. the candidate who shows excellent exposure and application skills in real situations will be awarded a maximum score of 30; the candidate who shows a limited ability to display the topics will be assigned a mark equal to 18. the final mark is obtained from the arithmetic mean of the two scores of the written test and obtained in the two parts of the oral exam with rounding to the whole higher.</p>
EDUCATIONAL OBJECTIVES	<p>Management engineers, in their activity, use the quantitative tools, decision supports and methodological rigour typical of engineering sciences, aiming at optimizing solutions. At this aim Statistical vision and method, as tool to describe and analyze processes, are fundamental above all in a moving and varying world that needs a coherent non-deterministic approach to be modeled.</p>
TEACHING METHODS	Class lectures and computer-aided exercises
SUGGESTED BIBLIOGRAPHY	Dispense redatte dal docente e in distribuzione presso alcune tipografie al costo di stampa. Distribuzione del materiale didattico supplementare svolto a lezione ed esercitazione attraverso cloud di Ateneo

SYLLABUS

Hrs	Frontal teaching
24	<p>Introduction to Probability Random Variables. Discrete random Variables: binomial, Poisson, negative Binomial, Ipergeometric Continuous random Variables: exponential, gamma, normal, chi-square, t-Student, F-Fisher Stochastic Convergency, Law of large numbers, Pseudorandom numbers</p>
24	<p>Point estimation Interval estimation Parametric test Non parametric test Two- sample test</p>
24	<p>Indipendency test One-way and two-way Analysis of variance Simple and multiple Linear Regression Loglinear models Residual analysis</p>

Hrs	Practice
12	Introduction to Probability Random Variables. Discrete random Variables: binomial, Poisson, negative Binomial, Ipergeometric Continuous random Variables: exponential, gamma, normal, chi-square, t-Student, FFisher Stochastic Convergency, Law of large numbers pseudorandom numbers
12	Point estimation Interval estimation Parametric test Non parametric test Two- sample test
12	Indipendency test One-way and two-way Analysis of variance Simple and multiple Linear Regression Loglineari models Residual analysis