UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2019/2020
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

PREREQUISITES	Calculus: functions, derivatives, integrals at one and at least two dimensions
LEARNING OUTCOMES	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). 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. 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. 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. 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.
ASSESSMENT METHODS	Written test consisting of four exercises on the main instruments of probability and inferential statistics, the sufficiency of which is a condition for admission to the oral exam. Each exercise, that is not carried out, involves six penalty points, whereas an exercise partially carried out receives a penalty of less than six points commensurated with the severity of the lack (1 point for a calculation error, 2 points for a wrong relationship between the quantities expressed in the exercise and the applied formulas, 4 points for a wrong choice of the method, provided it is justified in some way). In this way the sufficiency can be obtained even in the case of two exercises entirely and correctly carried out and the other two completely unwound (6 + 6 = 12 points of penalty that subtracted 30 from the start, lead to 18). The written test will be given as an intermediate test and, if not previously passed, eventually repeated before the oral examination. Oral verification on theoretical exposure skills and application to simple real situations. Final mark consists of the average of the two scores of the written and oral, rounded to the upper whole.
EDUCATIONAL OBJECTIVES	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.
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	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
24	Point estimation Interval estimation Parametric test Non parametric test Two- sample test
24	Indipendency test One-way and two-way Analysis of variance Simple and multiple Linear Regression Loglinear models Residual analysis

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

Hrs	Practice
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