UNIVERSITÀ DI PAVIA

Anno Accademico 2016/2017

CALCULUS AND TOPICS IN STATISTICS (SURNAMES A-H)

Enrollment year	2016/2017
Academic year	2016/2017
Regulations	DM270
Academic discipline	MAT/05 ()
Department	DEPARTMENT OF DRUGS SCIENCES
Course	PHARMACY
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	
ECTS	6
Lesson hours	48 lesson hours
Language	ITALIAN
Activity type	WRITTEN TEST
Teacher	ROCCA ELISABETTA - 6 ECTS
Prerequisites	=
Learning outcomes	The course provides tools of Mathematics and Statistics, with an emphasis on applications in the bio-medical field.
Course contents	Mathematics: Percentages and concentrations. Equation of a line. Real functions of real variable: graph, domain, range. Injective, surjective and bijective functions. Operations with functions. Composition of functions. Inverse function. Elementary functions, polynomial and rational functions. Absolute value. Exponential and logarithmic functions. Trigonometric functions. Growth and decay models. Logarithmic and semilogarithmic scales. Translations, dilations, reflections. Monotone functions. Relative and absolute maximizers and minimizers. Notion of limit and its properties. Continuous functions. Weierstrass Theorem. Notion of derivative.

	Tangent line. Derivatives of elementary functions. Derivation rules. Monotonicity criterion. Maximum and minimum problems. Convex functions. L'Hôpital rule. Statistics: Mean value, geometric mean, median, and mode for a frequency distribution. Frequency histogram and frequency polygon. Cumulative frequency graph. Data dispersion: variance and standard deviation of a frequency distribution. Quartiles, interquartile range. Statistical distributions with emphasis on the normal distribution. Fundamental properties of the gaussian distribution. Central limit theorem and confidence intervals. Statistical hypothesis testing: one and two-tailed tests.
Teaching methods	Lessons and Exercises.
Reccomended or required readings	V. Villani, G. Gentili “Matematica 5/ed - Comprendere e interpretare fenomeni delle scienze della vita” (ed. McGraw-Hill)
Assessment methods	In itinere tests: none Written exam (compulsory) and oral exam (optional) and subordinated to the written exam. "Matematica con Elementi di Statistica" (6 CFU) is part of the course "Scienze Matematiche e Fisiche" (12 CFU). Students will acquire the credits only after passing the exams of both courses (“Fisica” and "Matematica con Elementi di Statistica”).
Further information	More informations will be available on the web page:http://matematica.unipv.it/rocca/
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile