



CALCULUS AND TOPICS IN STATISTICS (SURNAMES A-H)

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| Enrollment year | 2015/2016 |
| Academic year | 2015/2016 |
| 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 | MORA MARIA GIOVANNA - 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

About 30 hours of tutoring: a tutor will propose and solve exercises, in preparation to the written exam.

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)
 "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

In itinere tests: none
 Written exam (compulsory) and oral exam (optional)
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Sustainable development goals - Agenda 2030

[\\$|bl legenda sviluppo sostenibile](#)