



## BIOSTATISTICS

Curricular unit: Biostatistics

*Teacher in charge:* Maria do Rosário Oliveira Martins

Other teachers: N/A

*ECTS:* 3

Intended learning outcomes of the curricular unit (knowledge, skills and competences to be developed by the students):

At the end of the unit, students should understand and apply some essential concepts of Biostatistics, seeking to use it with responsibility and judgment in their research in tropical medicine, knowing that consultation and dialogue with statisticians is essential and that the use of statistical programs, along with its advantages have risks that can compromise all research done.

After this unit, students should be able to:

- 1. Identify the importance of statistics at the beginning of the research projects design.
- 2. Evaluate the importance of randomization in the sampling process, collecting data by processes that guarantee its quality.
- 3. Properly use concepts of Exploratory Data Analysis and Descriptive Statistics.
- **4.** Apply the concepts of estimation and some tests of more frequent hypotheses in the tropical medicine, emphasizing the applicability premises.
- 5. Know the general aspects of the SPSS program or other statistical analysis software.

## Syllabus:

- I. Importance of statistics in tropical medicine research
- II. Classification of variables and measurement scales
- III. Population and sample. Sampling methods
- IV. Statistical analysis process stages
- V. Data organization and presentation
- VI. Localization measures (mean, mode, median)
- VII. Dispersion measures (variance, standard deviation, coefficient of variation)
- VIII. Normal distribution, Student t and chi-square distributions
- IX. The central limit theorem
- **X.** Tests and hypotheses and confidence intervals
- XI. Distinction between correlation and causality





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Syllabus: (continuation)

- XII. Pearson's correlation and Spearman's correlation coefficients
- XIII. ANOVA
- **XIV.** Contingency tables, chi-square tests
- XV. Comparison measures between groups: parametric tests vs non-parametric tests