

## Biostatistics

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**Objective :** Students can learn basic techniques of data analysis, probability theory and elementary statistical inference concepts and methods

**Textbook :** “*The Practice of Statistics in the Life Sciences*”

By Aaldi & Moore, W. H. Freeman and Company

**Grading rule:** the maximum of the following two formula

1. HW: 30%, Midterm: 30%, Final: 40%
2. HW: 20%, Midterm: 35%, Final: 45%

### References:

“Statistical Methods in the Biological and Health Sciences”

by J. Susan Milton.

“A First Course in Probability” by S. Ross

### Topics overview:

1. Data analysis
  - Plots
  - descriptive measures:
2. Probability theory - Set-based
  - General concepts
  - Applications in genetics
  - Applications in epidemiology
3. Probability and random variables
  - Discrete random variables (general, Binomial, Poisson)
  - Continuous random variables (general, uniform, exponential, normal)
4. From probability to statistics
  - random sample
  - properties of the sample mean (law of large number, central limit theorem, Chebyshev inequality)
5. Confidence interval for the population mean
6. Hypothesis testing