

Applied Methods in Biostatistics

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Objective :

- Learn applied statistical methods including regression analysis, contingency table analysis, ANOVA, multivariate analysis
- Learn statistical software to analyze real data

Textbook:

“The Basic Practice of Statistics in the Life Sciences”

by Baldi & Moore

Reference: “Applied Multivariate Statistics” by Johnson and Wichern

Evaluation: Homework 25 %; Final exam: 40%; term project: 35%

Outline:

1. Analysis of association for numerical data
 - Pearson’s correlation
 - probability theory for bivariate data
 - simple linear regression (estimation, model checking, testing)
 - association vs. causation
 - multiple linear regression
2. Analysis of association for discrete data
 - two-by-two table
 - logistic regression
 - contingency table
3. Experimental design and analysis of variance
4. Multivariate Analysis (not included in the final exam)
 - multivariate normal distribution
 - matrix algebra
 - principle component analysis
 - factor analysis

Term project

- a. group project
- b. topic: self-determined but confirmed by the teacher
- c. process: project proposal → data collection → data analysis using statistical software (R program) → report submission