Lezioni di Statistica medica e informatica

Professor Giuseppe Verlato

Corso online Statistica Medica con excel

1° TURNO
8 marzo
10 marzo
15 marzo
19 marzo

2° TURNO
12 aprile
15 aprile
19 aprile
22 aprile

ORARIO (PER ENTRAMBI I TURNI): 15-18

- **Lezione 1**: intervallo di confidenza di una media o di una proporzione. Criteri per la scelta del test statistico. Test t per dati non appaiati e per dati appaiati, verifica dell'assunto di omoschedasticità.
- **Lezione 2**: -Analisi della varianza. Regressione e correlazione.
- **Lezione 3**: Test del chi-quadrato; misura kappa di concordanza di Cohen. Calcolo della numerosità campionaria.
- **Lezione 4**: Analisi della sopravvivenza: curve di Kaplan-Meier.

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prof Verlato "Validazione di un questionario", mercoledì 3 marzo, ore 15-18

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d.ssa Caliskan "Use R software" (corso in inglese), nelle date sottoindicate, ore 15-18

MARZO 22 - 29
APRILE 12 - 19 - 26
MAGGIO 03 - 10

OBJECTIVES

The course is aimed at presenting basic principles of medical statistics, necessary to study groups of individuals by taking into account inter-individual variability. In particular, the medical student will learn to:

1. Use R software, such as a language essential, programming and to compute simple statistics
2. Probability and distributions of dataset
3. Represent data pertaining to a biological phenomenon with adequate graphics
4. Create and interpret a frequency table, starting from individual data
5. Compute percentiles (or other quantiles) of a biological variable
6. Compute confidence intervals for means and proportions
7. Perform a statistical test to evaluate significance of differences between two means or two proportions.
8. Perform a statistical test to evaluate significance of differences between three or more means.
9. Estimate the relation between two quantitative variables by a linear regression model
10. Perform a power and computation of sample size study

PROGRAM

The following topics will be addressed:
1. Basic statistical methods to describe, interpret and present quantitative information collected on groups of individuals or other statistical units.
2. Probability: definitions, basic rules to compute probabilities and expected events.
3. Main probabilistic models, useful to approximate the distribution of a biological variables within a population (binomial and Gaussian distributions).
4. Basic design in observational and experimental research: random sampling and randomization.
5. Main inferential methods: confidence intervals to estimate parameters, and hypothesis testing to base decisions on experimental/observational evidence.
6. Basic concepts of univariate/multivariate parametric and non-parametric statistical analysis: one-sample t test, Wilcoxon signed-rank test, the paired t test, two-sample t test, One-way Analysis of Variance (ANOVA), Kruskal-Wallis test, linear regression to study quantitative outcomes.
7. Basic concepts of power analysis: power of two-sample t test, power of comparisons of proportions

At the end of the lessons, students will attend a basic exam.

Texts
Dalgaard P, Introductory Statistics with R, Springer, 2002
Altman DG. Practical Statistics for Medical Research. Chapman & Hall, London, 1990 (about 66 pounds)