Experimental Research

Period: a.y. 2026/27

Class times: TBD

Instructor:

Prof. Marco Bonetti

Course description

The course aims at developing the principles and methods of the design, conduct, and analysis of randomized controlled studies. While the focus is on clinical trials, the principles are general.
The duration of the course is 24 classroom hours.
The course is meant for the PhD program in Social and Political Sciences. Students from other PhD programs may also take the course.

Course Materials

References and readings will be provided during the course. Electronic class notes will be distributed after each lecture. R will be used for some parts of the course. Additional handouts and simple R code used during the lectures will also be distributed.

Tentative list of topics

1. Randomization methods: simple, constrained, adaptive.
2. Sample size determination.
3. Estimation from censored and truncated data.
4. Study design and analysis. Protocols.
5. Other topics: p-value adjustment, subgroup analyses, missing data, noncompliance

Assessment Methods

A combination of one assignment (**30%** of the grade) and a final written exam (**70%** of the grade) will determine the final grade.

Faculty Bio

Marco Bonetti has received his undergraduate degree in statistics and economics from the Università La Sapienza of Rome, Italy (1991); his MS and PhD degrees in Statistics from the University of Connecticut, Storrs, CT (1992-1996). He was postdoctoral fellow, research associate, and assistant professor of biostatistics at Harvard University and Dana-Farber Cancer Institute, Boston, U.S.A. (1996-2004). At Bocconi University since 2004, he is currently full professor of statistics and fellow of the research centers Dondena (of which he has been director for 9 years) and BIDSA. He is currently Co-director of the joint MSc program in Data Analytics and Artificial Intelligence for Health Sciences (DAIHS). His research Interests cover biostatistics: the analysis of experimental data; survival analysis; personalized medicine; clinical trials in oncology; screening; risk in health.

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Suggested complementary readings

Additional (EXTRA) readings will be distributed during the course.