

STAT 536 - Design and Analysis of Clinical Studies Jan-Apr. 2010

Instructor Dr. Rollin Brant
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Lectures: Monday, Wednesday 12:00-1:20pm

Pre-requisite: STAT 460 or equivalent

Text: Lachin, JM, *Biostatistical Methods*, Wiley 2000.

Course description : This course will present basic statistical concepts and methodology for the most common types of studies in health sciences research. Topics include studies of agreement, diagnostic tests, clinical trials, standardization, cohort studies, case-control studies, survival analysis, longitudinal data, and other topics. The course is as a core course for students in Statistics following the Biostatistics option in the M.Sc. program. It should also be of interest to students in Statistics and other departments who seek a broad introduction to biostatistics.

Course Outline: textbook references and timetable are approximate.

Week Topics

1	Introduction, Two group comparisons Ch. 1; Ch. 2, Sect. 1-3
2	Likelihood, Inference Ch. 2, Sect. 4,5, 6.1, 6.2, 6.7, 8
3	Study Design Ch. 3, Sect. 1-4 + other sources (TBA)
4	Clinical Measurement Other sources (TBA)
5	Stratified Analysis for Two Groups Ch. 4, Sect. 1, 2, 3.1, 3.3, 3.4, 4, 6
6	Random Effects Ch. 4, Sect. 10, 11.2
7	Case Control and Matched Studies Ch. 5, Sect. 1, 2, 3, 4, 5
8	More on Likelihood Ch. 6, sections TBA
9	Logistic Regression Ch. 7, sections TBA
10	Count data and Poisson Regression Ch. 8, sections TBA
11	(ctd.) Ch. 8, sections TBA
12	Event-Time Data: Survival Analysis Ch. 9, sections TBA
13	(ctd.) Ch. 9, sections TBA

Supplementary References: see next page.

Bibliography

- [1] Douglas G. Altman. *Practical Statistics for Medical Research*. Chapman & Hall Ltd, 1999.
- [2] Martin Bland. *An Introduction to Medical Statistics*. Oxford University Press, 2000.
- [3] N. E. Breslow and N. E. Day. *Statistical Methods in Cancer Research Volume I: The Analysis of Case-control Studies*. Oxford University Press, 1984.
- [4] N. E. Breslow and N. E. Day. *Statistical Methods in Cancer Research Volume II: The Design and Analysis of Cohort Studies*. Oxford University Press, 1987.
- [5] Mitchell H. Katz. *Multivariable Analysis: a Practical Guide for Clinicians*. Cambridge University Press, 1999.
- [6] E. Vittinghoff et al. *Regression methods in biostatistics: linear, logistic, survival, and repeated measures models*. Springer, 2005.