

BIostatISTICS II - Clinical Trials

960:585:01, Spring, 2014

Class Meets Monday 6:40 - 9:20

Lecture Room: SEC Building 202

INSTRUCTOR: Donald R. Hoover
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Hill Center 473
732-445-3428 (fax)
Office Hours – **Wed 1:30 – 3:00**

PREREQUISITES Calculus and Statistics (e.g., one-year calculus, statistical methods, or equivalent courses). Knowledge of Microsoft Word. SAS and/or Excel may be used.

SNOW POLICY Make up lectures have been recorded on Panopto for weeks 8 (Human Subjects) and 14 (Adverse Events, Quality of Life). When classes are cancelled for weather, or other reasons, links to one of these lectures will be posted to the class website and the other lectures rescheduled. You will be responsible for any material including homework assignments in the lecture that has been posted to the web. NOTE – for those who miss Week 1, the lectures for this week are also posted to the class website.

CLASS FINAL The class Final Time slot will be 6:40 – 9:30 on Monday May 12th. As needed, this time slot Will be used for an in class final, presentations or make up if too many snow days lost. Please let me know within 2 weeks if you cannot make this time.

COURSE GRADING SYSTEM

- Class Assignments (30%)
- Midterm (35%)
- Final Report and Class Presentation (35%)
- Attendance and Quizzes (Can Help for Border liners)

CLASS LECTURE NOTES

Class Lecture Notes will be posted at the Course Home Page

<http://stat.rutgers.edu/~drhoover/Biostat-II>

You will need to download these before some classes. The site will be password protected. Instructions on how to access will be given in class

REQUIRED POWER SAMPLE SIZE SOFTWARE

PS Software by Dupont and Plummer. Free – You can download this from

The following website <http://biostat.mc.vanderbilt.edu/wiki/bin/view/Main/PowerSampleSize>

We will also look at Proc Power in SAS, but this is optional

RECOMMENDED TEXTBOOKS [BUT MOST STUDENTS FIND THE CLASS NOTES SUFFICIENT]

Friedman, Furberg and DeMets

Fundamentals of Clinical Trials

Springer-Verlag, New York, NY, 3rd Edition, 1998

Shein-Chung Chow Jen-Pei Liu Design and Analysis of Clinical Trials: Concepts and Methodologies Wiley & Sons, Hoboken, NJ 2004

Meinert CL, Clinical Trials: Design, Conduct and Analysis
Oxford University Press, New York, NY 2012

CLASS OBJECTIVES

This class is intended to teach principals of design, conduct and analysis of clinical trials to statistical and medical researchers. The class will develop skills needed to design protocols, collect and analyze clinical data and be a more proficient reader of clinical trials published in the medical literature. When possible, examples from actual or planned clinical trials will be used.

Topics Covered May Include:

- Overview of Drug Development / Approval Process
- Rationale for Clinical Trials
- Characteristics of clinical trials by phase, design, disease and organization
- Role of Statisticians
- Designing /Planning Clinical Trials
 - Defining the hypotheses
 - Determining the study population of interest
 - Organizational Structure
 - Recruitment of Investigators
 - Developing Evaluation Measures (study endpoints)
 - Basic Clinical Trial Designs
- Determining Feasibility of Clinical Trials
 - Sample Size Estimation
 - Ethical Issues and Informed Consent
 - Recruitment Issues
- Trial Conduct and Monitoring
 - Enrollment of Patients
 - Randomization
 - Data Collection (Form Design)
 - Assessment of Outcomes (Adverse Events, Quality of Life, Cure, Survival)
 - Data Monitoring (quality assurance and monitoring)
- Statistical Analysis (Continuous, Categorical and Survival Data), (Multiple Outcomes and Measures), (Baseline Data, Before-After), (Covariates and Subgroups), (Interim/Sequential Analysis)
- Interpretation, Presentation and Reporting of Results, Evaluation and Comparison of Literature
- Other Issues if Time Permits (Meta Analysis, ICH Guidelines, Budget)

OTHER INTERESTING INFORMATION RELATED TO THIS CLASS

OPTIONAL POWER / SAMPLE SIZE AND WORD PROCESSING SOFTWARE

Daniel Soper Power Calculators. HTML Based –

To use it 1) go to <http://www.danielsoper.com/statcalc/> , 2) then select the “Power Calculator”. You wish. I do not claim to understand everything on this site or that it has been validated, but it looks interesting.

MathType® a Word Processing System that can be used to put mathematical and Statistical formulas into Word, Word Perfect and other Documents. The Rutgers Statistics Department has a site license for this. You can download MathType® From <https://ssl-vpn.rutgers.edu/> You will need to use your Rutgers ID and password to Get into this site and may have to give permission to continue on when prompted with an Invalid Security Certificate message. Once you are into the site, paste this address <http://stat.rutgers.edu/downloads/restricted/MathType66a.exe> into the "Enter Web Address (URL)" and click on Go. The software should then begin to download

SOME IMPORTANT WEBSITES FOR CLINICAL TRIALISTS

- MEDLINE (Search for Articles) <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>
- FOOD AND DRUG ADMINISTRATION www.fda.gov/cder,
<http://www.fda.gov/drugs/guidancecomplianceregulatoryinformation/guidances/default.htm>
- US GOVT REGISTRY OF CURRENT TRIALS <http://clinicaltrials.gov/>
- And yes, WIKEPEDIA http://en.wikipedia.org/wiki/Clinical_trial and it related links

IMPORTANT JOURNALS FOR CLINICAL TRIALISTS

Controlled Clinical Trials, Statistics in Medicine, British Medical Journal, Biometrics, Drug Information Agency Journal, Statistical Methods in Medical Research

SOME READINGS THAT MAY BE GIVEN IN CLASS INCLUDE

- Blumstein 1995
- Belmont Report (URL will be given in class)
- Helsinki Declaration (URL will be given in class)
- NIH Guidelines on Inclusion of Women and Minorities 28 March 1994
- Meinert - Issues of Integrity in design, conduct and analysis of clinical trials 1997
- FDA Guidelines to Write a Plan
- Taha - Mother to Infant Transmission of HIV
- Meinert Letter to Lenfant 1995
- Begg, CONSORT Statement 1996
- Obrien and Fleming - A Multiple Testing Procedure for Clinical Trials 1979
- De Mets - Data Monitoring and Sequential Analysis - An Academic Perspective 1990
- Fleming and DeMets - Monitoring of Clinical Trials: Issues and Recommendations 1993

OTHER USEFUL TEXTBOOKS (Some material covered will be taken from these books. But you will only be responsible for the material that is covered in class. I am trying to get these books placed on reserve)

Altman DG, "Practical Statistics for Medical Research"
Chapman & Hall/CRC 1997 (ISBN # 0-412-27630-5)

Fleiss JL, The Design and Analysis of Clinical Experiments
Wiley & Sons 1986 (ISBN # 0-471-82047-4)

Piantadosi S, Clinical Trials a Methodologic Perspective
John Wiley and Sons, New York, NY 1997

[THIS BOOK IS VERY GOOD FOR THE MATHEMATICALLY ORIENTED]

Green, Bendetti and Crowley SWOG Statistical Center
Chapman & Hall/CRC (ISBN 0-412-99631-6)