

PUBLIC HEALTH 446
THE DESIGN, CONDUCT, and ANALYSIS of CLINICAL TRIALS
1.0 Credit
Spring Quarter, 2007: March 26 – June 6, 2007

Time: Mondays 6:00-7:30 pm (Note: some classes may be 6:00-8:00)
Wednesdays 6:00-7:30 pm

Location: 680 N. Lake Shore Drive, Suite 1102
Department of Preventive Medicine
Large Conference Room

Course Director (office hours by appointment):

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I. Course Description

Introduction to fundamentals of clinical trials, including design, conduct, analysis and interpretation of trial results. Topics will include commonly used designs, methods for randomization, blinding and sample size determination, choice of controls, collaborative/multicenter trial requirements and operational issues, data management and data quality issues, interim analysis methods, critical review of clinical trial results, and statistical techniques for analyzing clinical trial data.

II. Prerequisites

Introduction to Biostatistics (PUB HLTH 302) and Introduction to Epidemiology (PUB HLTH 304) or permission of course director to verify equivalent previous course work.

III. Course Objectives

This course is designed to familiarize students with clinical trials, including design, conduct, analysis and interpretation of trial results. After completion of the course, students should be able to:

- a. Identify basic characteristics of a clinical trial and differentiate clinical trials from other types of clinical investigations and epidemiologic studies.
- b. Apply basic principles to design a clinical trial.
- c. Construct randomization schemes and determine sample sizes for trials of simple designs.
- d. Identify the basic ethical principles that should guide the design of clinical trials, apply them in the design of a clinical trial, and use them to critique the designs of others.
- e. Specify variables requiring special attention for quality control and set up monitoring procedures.
- f. Identify and compare various approaches to interim analyses for safety and efficacy studies.
- g. Review critically the published results of a clinical trial.
- h. Apply appropriate statistical techniques for the analysis of data from clinical trials.

IV. Teaching Format

New material will be presented in lectures. Students will be expected to read assigned reading material prior to the lecture or the discussion. Participation in group discussion is mandatory.

V. Student Evaluation

- a) Homework and classroom participation - Class participation and homework assignments will comprise a total of 40% of the final course grade. Students are expected to come to class prepared and to take part in the classroom discussions.
- b) Examinations - There will be a midterm examination (30%) and a final project (30%). The midterm examination may consist of multiple choice, True -False, and short answer questions, and statistical computations, and will be administered in class at the scheduled time. The final project will be a double spaced 10 page (maximum) protocol for a clinical trial, which needs to be handed in by 5pm on Wednesday June 6. Grades will be available Monday June 11.

VI. Required Textbook:

Fundamentals of Clinical Trials, 3rd Edition. Lawrence M. Friedman, Curt D. Furberg and David L. DeMets. Springer-Verlag New York, Inc., 1998. (**Denoted as FFD in IX below.**)

VII. Additional Textbook References:

1. Clinical Trials, A Practical Approach. Stuart J. Pocock. John Wiley & Sons Ltd., 1983.
2. Clinical Trials, A Methodologic Perspective, 2nd Edition. Steven Piantadosi. John Wiley & Sons, Inc., 2005.
3. Clinical Trials in Oncology, 2nd Edition. Stephanie Green, Jacqueline Benedetti, John Crowley. Chapman & Hall/CRC, 2003.

VIII. Course Evaluation:

The Programs in Public Health administer web-based course evaluations to students for each course near the end of the quarter. Your completion of both the unit (course) and faculty evaluation components is required; failure to complete either of the evaluations will result in an incomplete grade until the evaluations are submitted. You will be sent the web link and instructions via email later in the quarter. You will have about two weeks time to complete the evaluations before grades are submitted.

IX. Course Outline (Student assignments in bold. Other assignments will also be due)

March 26	(Mon.)	FFD Chapters 1-3: Methods of investigation in clinical research; Phase I, II, III, IV studies; rationale for randomized controlled trials (RCTs); study questions; primary and secondary endpoints; study population; inclusion/exclusion criteria; generalizability
March 28	(Wed.)	FFD Chapter 4: Types of RCTs (parallel group RCTs; cross-over trials; group randomized designs; equivalence trials)
April 2	(Mon.)	FFD Chapters 5, 6: Randomization, blinding
April 4	(Wed.)	FFD: Chapter 8: Baseline assessment
April 9	(Mon.)	In-class discussion of selected published WHI clinical trials <ul style="list-style-type: none"> • Read designated papers • In-class presentation/discussion (by students) of their proposed term projects
April 11	(Wed.)	<ul style="list-style-type: none"> • In-class presentation/discussion (by students) of their proposed term projects
April 16	(Mon.)	FFD: Chapter 7: Sample Size
April 18	(Wed.)	FFD: Chapter 7: Sample Size (continued)
April 23	(Mon.)	FFD: Chapter 16: Issues in Data Analysis
April 25	(Wed.)	FFD: Chapter 16: Issues in Data Analysis (continued)

April 30	(Mon.)	In-class discussion of selected published clinical trials
May 2	(Wed.)	In-class Midterm Exam
May 7	(Mon.)	FFD: Chapter 15: Monitoring Response Variables
May 9	(Wed.)	FFD: Chapter 15: Monitoring Response Variables (continued), review of published clinical trials
May 14	(Mon.)	FFD: Chapter 18: Reporting and Interpreting Results
May 16	(Wed.)	FFD: Chapter 19: Multicenter Trials
May 21	(Mon.)	Critical Review of Published Trials (continued) <ul style="list-style-type: none"> • Read designated papers
May 23	(Wed.)	Critical Review of Published Trials (continued) <ul style="list-style-type: none"> • Read designated papers
May 28	(Mon.)	Memorial Day Holiday – No Class
May 30	(Wed.)	Term Projects <ul style="list-style-type: none"> • Final student protocols presented and discussed
June 4	(Mon.)	Term Projects <ul style="list-style-type: none"> • Final student protocols presented and discussed
June 6	(Wed.)	Course wrap-up <ul style="list-style-type: none"> • Term Projects due at class time
June 11	(Mon.)	Grades Due