

## **BST 510 Statistical Consulting Summer 2013**

Monday and Thursday 1-3:30 CRB 1055

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### **Description:**

This course give students exposure to issues arising in biostatistics consulting and collaboration. Students will learn how to identify the scientific objectives of a study and to develop a statistical strategy appropriate for those objectives. The student will become familiar with problems arising in consulting situations, specifically relating to identification of study objectives and framing of research questions, study design, power and sample size determination and choice of analytical approach. The student will learn to communicate through presentation of oral and written reports, and through student and faculty critiques of these reports.

### **Quick Questions:**

We will have “quick question” research and writing assignments. The questions posed are like the ones colleagues often ask each other. Sometimes the answers are easy enough, a matter of pulling the right tool from our standard toolkit. Other times, a question is ill-posed, so that it takes some reflection to figure out what the person is really asking, since the question at first would not seem to make sense in statistical terms. Each reply to a quick question will be limited to two double-spaced pages and will be graded for clarity. You may discuss the questions amongst each other, just as I do with my colleagues. But writing is an *individual* activity; each class member should write *independently*.

### **Biostatistics Consultation:**

We will participate as a group in an actual consultation session where an investigator from the University of Miami clinical and translational research community will be invited in to discuss a particular research question his/her group is working on describing their problem in detail. In this session, you as a class will need to ask questions of the investigator(s) and make sure you understand the research questions/objectives. You will be required to hand in a report summarizing the research questions, and issues that arise, and what you think are the next steps to move their work forward (from the design

and statistical considerations perspective). We will interactively discuss in the following class through presentations led by students.

### **Journal Article Critiques:**

Each student will select a paper from a journal in the medical or biological literature. Each student will present his/her paper and lead the class to critique the appropriateness of the statistical analysis for the primary hypotheses of interest in the paper and the statistical soundness or limitations of the findings in the article. Students will need to identify the scientific questions and endpoints of interest, describe the study design and critique the appropriateness of such, describe the statistical analysis (or lack thereof ) and perhaps suggest more appropriate approaches, and describe the findings of the study and any concerns about the inference from the study. Presentations will be approximately 20 minutes followed by a discussion with Q & A. Copies or weblinks (better) of the articles (up to 10 pages) will be distributed and all students are to read each paper before it is presented in class. These presentations will be scheduled by me.

### **Projects:**

There will be two major projects which will be presented in class, and you will have to prepare a presentation and a final report. One project will focus on designing and investigation and will consist of developing a statistical analysis plan to propose for the investigation. The second project will involve a data set which will need to be analyzed and results reported. More details for these will be explained when the time comes.

### **Course Material:**

I will provide lectures and suggested reading from time to time. Some additional recommended (not required) texts are below:

1. Derr: Statistical Consulting: A Guide to Effective Communication. Duxbury 2000.
2. Cabrera and McDougall: Statistical Consulting. Springer-Verlag 2002.

Date	Lecture/Assignments	Assignments due
June 27	Introduction and overview of course  Lecture Statistical considerations in clinical/translational research  Example problems and discussion  Example problems assigned	
July 1	Lecture : Study Design and Data Analysis  Tips on good presentations  Discuss example problems  Quick question 1 assigned  Introduce major project 1	Example problems
July 4	Independence day-no class!	
July 9 *tuesday	Biostatistics Consulting Session  Discussion on issues arising during consultation  In class discussion concerning Quick question 1	Quick question 1
July 11	Lecture: Sample size and power considerations  Present consulting session reports  Discussion on major project 1	Consulting session presentation/reports due
July 18	Presentations and reports due from project 1; Introduce Major project 2	Presentation/reports project 1
July 21	Journal article presentations Discuss major project 2	Journal article presentation/reports due
July 25	Lecture: Pilot studies Finish journal article presentations Quick question 2 assigned	July 25
July 29	Lecture: Ethics Discuss Quick question 2 Project 2 presentations	Quick question 2
Aug 1	Lecture: Grants Project 2 presentations	Project 2 presentation/reports due

Grades:

Assignments	25
Projects	25
Class participation	50