Bios 841: Principles of Statistical Consulting  
Spring 2014

**Summary:** The goal of this course is to develop in each student the skills necessary for being a statistical collaborator/consultant of the highest caliber. Emphasized topics include problem solving, study design, data analysis, ethical conduct, teamwork, career paths, data management, and both written and oral communication with scientists and other potential collaborators. In-class activities include a few lectures on consulting topics, several guest lectures of consultants practicing in different environments, group activities and role-playing, and student presentations of research projects. **Class attendance and participation is essential.** Out-of-class activities include homework and three major consulting projects. As part of two major consulting projects, health research investigators will attend class and answer questions about their research in preparation for the project assignments. A third major consulting project will be arranged and conducted by each student.

**Professors:**  
Shrikant Bangdiwala - 962-3266, Room 35, Suite 401, CSCC  
Rosalie Dominik - 962-4390, Room 13, Suite 401, CSCC  
Paul Stewart - 966-7276, 3105G McGavran-Greenberg Hall

**Prerequisites:** Instructor consent. Familiarity with either SAS and/or R will be assumed. Students must have completed all courses required for their current degree program or be currently enrolled in remaining required courses.

**Time & Place:** Tuesdays & Thursdays, 09:30am – 10:45am  
McGavran-Greenberg #2301

**Office Hours:**  
Dr. Bangdiwala: TBA  
Dr. Dominik: TBA  
Dr. Stewart: TBA

**Required Text:** none

**Course Components:**

- **In-class consulting projects (40%):** Two major in-class consulting projects will be organized by the instructors. For each of these projects, the project (either a study design project or a data analysis project) will be given to the students; a researcher will be interviewed by the entire class; and each student will complete the necessary work and write a final report. As part of the preparation for the interviews with researchers, students will prepare a list of relevant questions and bring them to class. Following the interviews, students will prepare an outline of their proposed approach to the project. Each of these projects will comprise 20% of the final grade. Some components of the project may be collaborative, but students are required to do all work independently unless collaboration is specifically assigned.

- **Miscellaneous assignments (25%):** A number of miscellaneous assignments will be due throughout the semester. Some assignments will be completed during class. Details on assignments will be given as they are assigned. Take-home assignments need to be turned in on SAKAI prior to the beginning of class. Many of the assignments will need to be used in class on the same day they are due, and we will inform you if so so that you bring a printed copy as well.
• **Major project (25%)**: A final major project will be organized by each student and will consist of actual consulting of the same magnitude as done in the first two major projects. **Students are responsible for finding the researcher** with whom to collaborate on this project. Instructors may be able to help find a few projects, but students should not rely on our assistance. This project must be different from anything you are working on as a research assistant, employee, or teaching assistant. Your work should be statistical and not data entry related – the researcher should provide you with a ready-to-use data set if analysis related, or a set of specific aims if design related. You need to make sure that you can finish this a week or so before oral presentations begin, so that you will have sufficient time to adequately summarize your results. All students will turn in their complete written reports on the day the student presentations begin. A copy of the final report must also be given to the researcher. The oral presentation will consist of a 15-minute presentation followed by 5 minutes of questions and answers. The presentation should focus on the consultation process; the actual study results or design should be a secondary aspect of the presentation. Each student is expected to actively participate in the Q&A following each presentation and to turn in questions/comments on 6 other reports.

Be sure to inform the researcher of the scope of your involvement. It should be understood that this is an assignment for a course with a definite time/scope limit. For example, if you perform the analysis, and the researcher is not satisfied with your results, then it is not your responsibility to modify or repeat it. You may, however, choose to continue to work with the researcher after this course is over if you wish. If the contribution you make is a key component of research that results in a publication, you should be listed as a co-author. If the contribution you make is not a key component, but has been helpful, you should be acknowledged in the relevant publications. Please respect any confidentiality agreements, expressed or implied, between you and the researchers. When human subjects are involved, actual names should never be discussed or disclosed. Do not distribute any data you receive from researchers, unless given permission to do so, nor use the data in a manner which would go against their wishes. Please keep all project data and information confidential. Keep all related files in a password protected directory so that other computer users will not be able to access them.

A one paragraph description of your proposed project, including the name and department of the researcher(s) you will be working with and an indication that the researcher agrees to the conditions given above, will be due in February. Also, instructors will prepare a Collaborator Agreement form (explaining the requirements) which the researcher must read and sign before you can begin your project. If the researcher is a student, note that you will have to additionally obtain permission to work with the student from the student’s faculty advisor prior to us approving your project.

Two of the difficult components of this assignment are to define the problem and then to determine the scope of the analysis (this will be done for you in the other two major projects). You may want to ask instructors for help in this arena, after you have selected the researcher you will be working with.

• **Class participation (10%)**: Attendance and participation in class activities are essential parts of this course, particularly since we have so many in-class group activities.

• **Final grade**: Incompletes are generally not granted.