

## **Bios 841: Statistical Consulting**

*Spring 2010*

**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, 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.** 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  
Lisa LaVange - 966-8333, Room 28, Suite 401, CSCC

**Prerequisites:** Instructor consent. Familiarity with either SAS and/or R will be assumed. First year students with a master's degree may be eligible.

**Time & Place:** Tuesdays & Thursdays, 8:00am – 9:15am  
McGavran-Greenberg, Room 1304

**Office Hours:** Dr. Bangdiwala: TBA  
Dr. LaVange: TBA

**Required Text:** *Statistical Consulting: A Guide to Effective Communication* by Janice Derr (University Bookstore).

### **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 problem and data will be given to the students; a researcher will be interviewed by the entire class; and each student will complete the necessary analyses and write a final report. As part of the preparation for the interviews with researchers, students will prepare a list of at least five and no more than ten relevant questions and bring them to class. Following the interviews, students will prepare an outline of their proposed approach to the project and additional questions about the methods they plan to use for class discussion. Each of these projects will be worth a total of 20 points: 2 points for the list of questions and 18 points for the final report.
- *Miscellaneous assignments (5 points each):* A number of miscellaneous assignments will be due throughout the semester. Details on assignments will be given as they are assigned.
- *Major project (35):* 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. You are responsible for finding the researcher with whom to collaborate on this project. We may be able to help on a few projects, but do not rely on our assistance. This project must be

different from anything you are working on as a research assistant, physician assistant, 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. 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.

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 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. The researcher must read and agree to these conditions.

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 us for help in this arena, after you have selected the researcher you will be working with. 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 March. The oral presentation will consist of a 15-minute presentation followed by 5 minutes of questions and answers and will be worth 10 points. Presentations will be due prior to the date that the first presentation takes place and will be shared in advance in order to facilitate class interactions. Each student is expected to actively participate in the Q&A following each presentation. The final report for Project #3, due the last day of classes in April, will be worth 25 points. A copy of the final report must also be given to the researcher.

- *Confidentiality*: Please keep all project data and information confidential. Keep all related files in a read/write protected directory so that other computer users will not be able to access them.
- *Final reports*: The final reports for the three major projects must be **no more** than 12 pages long, including graphs, figures, tables, and references.
- *Assignments in general*: Assignments need to be turned in at the beginning of class. In general, late assignments will not be accepted for credit. Even if the assignment is only a few minutes late, points may be taken off for lateness. However, if you have a genuine emergency, let us know in writing, and an extension of the deadline may occasionally be granted. Many of the assignments will need to be used in class on the same day they are due. Please plan ahead. Incompletes are generally not granted.
- *Class participation*: Attendance and participation in class activities are essential parts of this course, particularly since we have so many in-class group activities.