

BIOS 841: Principles of Statistical Consulting

Spring 2018

Tuesdays and Thursdays, 12:30 - 1:45, Room #2308

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 written and oral communication with collaborators, teamwork, leadership, best practices in study design, data management, data analysis and reporting, and ethical conduct. In-class activities include a brief lectures on consulting topics, guest lectures of consultants practicing in different environments, group activities and role-playing, and student presentations of projects. Class attendance and participation in class discussions is essential. Out-of-class activities will include homework and two major consulting projects. Some components of the course are collaborative, but students are required to do all work independently except when instructed to collaborate.

Professors

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Prerequisites

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

Recommended Texts (Optional)

Alex Reinhart (2015) "*Statistics Done Wrong: The Woefully Complete Guide*", No Starch Press. 152 pp

Gerald van Belle (2008) "*Statistical Rules of Thumb*" 2nd Edition. Wiley.

Javier Cabrera and Andrew McDougall (2002) "*Statistical Consulting*", Springer.

Alan Hoffer (2015) "*Presentation Sin: Practical Guide to Stop Offending and Start Impressing Your Audience*", (public speaking) 208pp.

Course Components

Class participation (25%): Attendance and participation in class activities are essential parts of this course, particularly since we have so many in-class group activities.

Assignments on best practices and skills (20%): A number of 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 that you bring a printed copy as well.

Project #1 (30%): Each group of 4 students will arrange and organized a statistical consulting project. **The students are responsible for finding researchers with whom to collaborate on this project.** This project must be different from any other projects the student working on as a research assistant, employee, or teaching assistant. The work should be statistical and not trivial (e.g. not data entry). The researcher should provide a complete set of specific aims and provide a ready-to-use dataset. Each small group will present three oral reports to the class: brief overview, analysis plans, final report. For each of these presentations, the group will turn in a written report and powerpoint slides on the day of the presentations. A copy of these reports must also be given to the researcher. In each group of 4 students, the students must explain their individual contributions in the final report.

Project #2 (25%):

This in-class consulting project will be organized by the instructors. The study will be in the planning stage. The investigator(s) will be interviewed by the entire class. Each student will then discuss/refine the study design and specific aims, develop a statistical analysis plan, prepare a sample-size analysis, and write a data management plan. The students will then collaborate in four groups: Study Design, Analysis Plans, Sample Size, and Data Management. Each of the four groups will present their results to the investigator(s).

Final grade: **H** = (90%, 100%), **P**=[70%, 90%], **L**=[50%, 70%), **F**=[0%, 50%).

Stay calm and carry on: If your laptop dies, the cat eats your homework, or other disasters occur, remain calm. We will work with you to help you recover, catch up, and complete the work.