Statistics 998: Statistical Consulting

Fall 2015

Professor: Bret Larget, 1250A Medical Sciences Center (MSC).

Prerequisites: Instructor's consent.

Time and Location: Tuesdays and Thursdays, 11:00–12:15pm in 1210 MSC.

Office Hours: Thursdays, 1:00–2:30pm or by appointment. I am also typically available to talk to you right after the class.

Required Text: There are no required texts. This course will use the theoretical and methodological tools you acquired previously in other courses. However, many real-world consulting problems will require that you use techniques with which you may not be familiar. Thus, you might need to spend some of your time learning new material.

Course description: The goal of this course is to develop in each student the skills necessary for being a statistical consultant. Emphasized topics include problem solving, the connection between science and statistics, study design, data analysis, issues in data collection, both written and oral communication with scientists, practical aspects of consulting management, and ethics. The course also aims to prepare students for the masters exam in the Department of Statistics.

In-class activities: In-class activities will largely focus on class discussion with emphasis on data analysis for real problems. We will discuss report writing, oral communication, consulting management, consulting philosophy, and ethics. We will have guest lecturers, groups activities, and student presentations.

Class attendance and participation is essential. As part of two major consulting projects, scientists will come to class for interviews. Many written assignments will ask you to reflect on or explain something from the previous class period. These sorts of assignments may be difficult or impossible if you are absent from class.

Course Components:

- *in-class consulting projects.* The course includes two major in-class consulting projects. For each of these projects, background information and data will be given to the students, a scientist will be interviewed on two occasions, and each student will complete the necessary analyses and write a final report. The final report for each of these major consulting projects is worth 25% of the course grade.

- *miscellaneous writing assignments.* There will be many smaller written assignments assigned throughout the semester. On some days you will be asked to turn in a report for a common data analysis. On other days you will be asked to write a short (approximately half-page) response to a question related to the previous class period. Other times, I may ask you to create a key graph of data that addresses a question of interest. Effective communication in writing is essential to good practice in statistical consulting. Details on assignments will be given as they are assigned.

- *oral communication.* Oral communication is essential to good statistical practice. Much of the class time will be devoted to discussion. You need to participate in these discussions on a regular basis. Come to class prepared! Writing assignments and oral discussion are worth 25% of the final course grade.

- *final major project.* A final major consulting project will occur during the last several weeks of the semester. This project will be an individual consulting project organized by the student that culminates in written and oral reports. Details will follow as the semester progresses. The oral report will be given in class in December. The written report will be due December 20. This final project is worth 25% of the course grade.

Academic honesty: Unless otherwise specified, you should work independently and do your own work without assistance or discussion by others. Assignments where group work or discussion is allowed will be specifically stated when the assignment is given. Given the strong importance I wish to place on ethics, I will count on you to follow the expectations that are set for the assignments.