Course Title and Number: Statistical Consulting
STAT 688, CPH/BIOS 688

Description of Course
The goal of this course is to teach statistics students to be effective statistical consultants. This is an advanced course requiring statistical and scientific maturity. This course will provide students with the ability to effectively and accurately acquire and convey information in verbal and written presentations. The course also describes selection and use of tools and statistical methods to analyze and interpret scientific, business and medical studies.

Locations and Times
Lecture, discussion and client meeting review - Wednesday, 2:30 pm – 5:20 pm.
Consulting meetings, TBD

Instructor Information
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Alternate Contact
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Course Prerequisites:
Graduate Level:
Statistics: Probability & Math Statistics sequence (STAT/MATH 564/566)
Regression Analysis (STAT/MATH 571A) / ALT. CPH 576B
Experimental Design (STAT/MATH 571B, or equivalent)
Computing: Working knowledge of Stata, SAS, SPSS, or R (or equivalent)
Preferred: exposure to linear and generalized linear models

Course Objectives and Expected Learning Outcomes
1. Identify and practice communication styles to ensure accurate flow of information between the client and the statistical consultant.
2. Identify the needs of the client through various questioning techniques, select and apply appropriate methods of analysis, and effectively communicate results through oral and written presentations.
3. Practice statistical consulting in a real world setting.
Topics
Introduction to Statistical Consulting
Verbal, Written, and Presentation Communications
Negotiating a Satisfactory Exchange
Anatomy of a Study, Reproducible Research
Methodological Aspects of Statistical Consulting
Analysis Plans, Grant Proposals and Manuscripts

Course Methodology
The course will consist of lectures, presentations from statistical consultants from the university and the community, meeting with university researchers in statistical consulting meetings, and weekly group discussions of consulting projects. (weekly 2 hours lecture, 1 hour meeting with consulting clients, 1 hour discussion)

Teaching Format
Student Centered Learning

Recommended Texts

Required or Special Materials
Access to modern computing with presentation, document preparation, and statistical analysis software.

Required/Recommended Knowledge
Effective communications techniques
Effective oral presentation skills
Effective written communication skills
Statistical knowledge consistent with course prerequisites

Grading Policy
The final grades are assigned according to the student’s completion of the following activities:

Investigator Meeting Summaries – 40% (20% oral; 20% written)
Consulting Project Reports (2) – 20%
Class Participation – 40%

Attendance at lectures and consulting meetings, and class participation are key to success in this course.
Attendance Policy

All students are expected to attend lectures, discussions and assigned consulting meetings. A substantial portion of the course grade is based on participation in class discussions. If you are unable to attend a regularly scheduled consulting meeting, please arrange trading with a classmate. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean designee) will be honored.

Assignment/Testing Schedule/Due Dates

This course requires weekly meetings with university researchers seeking statistical consulting assistance. Weekly verbal and written summaries of these meetings are required, and constitute 40% of the grade. In addition, students will jointly write a summary report for each project to be shared with the project investigator. These extensive summaries constitute an additional 20% of the course grade.

Assignment Format

Students are encouraged to use methods of literate programming and reproducible research as described in class (e.g. R statistics language/LaTeX document preparation system/knitr package. See [http://biostat.mc.vanderbilt.edu/twiki/bin/view/Main/StatReport](http://biostat.mc.vanderbilt.edu/twiki/bin/view/Main/StatReport) for an overview). Investigator meeting summaries will be recorded on the Stat Lab website. Website pages are the preferred medium for documenting progress. Special documents (e.g., photographs, extensive calculations) may be uploaded to the project web page. Project summary reports must be type-written.

Bibliography

Selected readings made available through the course website.

Classroom Behavior

Students are expected to be respectful of the instructor, guest lecturers and other students at all times, including limited talking, emailing, texting, etc. Cell phones may be brought to class but must be on mute or vibrate. If you should need to take an emergency call during class, please leave class quietly.

The Arizona Board of Regents' Student Code of Conduct, ABOR Policy 5-308, prohibits threats of physical harm to any member of the University community, including to one's self.

See: [Disruptive Behavior](#)
[Student Code of Conduct](#)

Notification of Objectionable Materials (if applicable)

Many university research projects involve animal testing, and are required to follow IACUC guidelines ([http://www.iacuc.arizona.edu/](http://www.iacuc.arizona.edu/)). If you choose to not participate in consulting projects involving animal experimentation, it is your responsibility to arrange trading with a classmate.
Special Needs and Accommodations Statement

Students who need special accommodation or services should contact the Disability Resources Center, 1224 East Lowell Street, Tucson, AZ 85721, (520) 621-3268, FAX (520) 621-9423, email: uadrc@email.arizona.edu, http://drc.arizona.edu/. You must register and request that the Center or DRC send me official notification of your accommodations needs as soon as possible. Please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. The need for accommodations must be documented by the appropriate office.

Student Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: University of Arizona Policy Home Page.

Confidentiality of Student Records

http://registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.