

STAT 550, Techniques of Statistical Consulting

2017/18, Term 2

Instructor: Gabriela Cohen Freue

Time and Place: T/TR, 2:30-4:00 PM, ESB 4192

Description: Course activities will include case studies based on former and current projects submitted to STAT 450, from our Statistical Consulting and Research Laboratory (SCARL), consulting projects of Statistics faculty, and other sources. For each case study, the practical problem will be presented and students will be required to participate in:

- formulation of problems in practical contexts,
- written and oral presentations of proposed approaches,
- data management, data exploration and model building,
- written and oral presentations of results of analyses,
- critical and interactive discussion of all aspects of the case study
- Supervision and mentoring of STAT 450 students.

Additionally students will learn about the broad role of statistics in science through reading and discussion of published studies and real case studies on applied statistics from a range of sources, including the medical, biological and the wider scientific literature.

Objectives: The overall objective of this course is to train students to apply their statistical knowledge, to develop the skills required to work with non-statisticians either as consultant or collaborator, and to communicate effectively, both orally and in writing, with non-statisticians.

Specific objectives are to provide simulated and real exposure to the process of statistical consultation and thereby to develop:

- the techniques required to attain a clear understanding of a client's needs,
- the oral and written skills that facilitate communication with clients,
- the ability to write succinct, comprehensive and understandable reports,
- a working knowledge of the aids, hard and soft, required in consultation,
- an understanding of the processes involved in solving statistical problems,
- an awareness of the knowledge base that underlies statistical consulting.

Practical Prerequisites: A substantial background in the statistical sciences, good oral and written communication skills, and an interest in statistical consultation.

Corequisite: Stat 404 or equivalent.

Recommended Reading:

C. Chatfield (1995). *Problem Solving: A Statistician's Guide*, 2nd edition. Chapman & Hall.

G. van Belle (2002). *Statistical Rules of Thumb*. Wiley

B.S. Everitt and T. Hothorn (2010). *A Handbook of Statistical Analyses Using R*, 2nd edition, Chapman & Hall.

Notes:

1. Stat 550 is **required** of all Statistics graduate students, although students with equivalent coursework or consulting experience may apply for an exemption.
2. Stat 550 is graded on the usual numerical scale based on individual assignments and group work on a real case study.
3. Stat 550 (and 551) develop the skills required for employment as an ASDa RA and for success in jobs involving applied work in statistics (including academic positions).