

1. Catalog Description

STAT 465: Statistical Communication and Consulting

Blending of the theoretical and practical aspects of statistical consulting. Development of tools necessary to conduct effective consulting sessions, present oral arguments and written reports, work collaboratively to solve problems, and utilize professional publications in statistics. 4 lectures.

2. Required Background and/or Experience

Only open to statistics majors with senior standing.

3. Expected Outcomes

The student should be able to:

- a. Understand the characteristics of an effective consultant, a satisfied client, and a successful consulting session.
- b. Plan and implement a consulting session.
- c. Facilitate effective communication with a client.
- d. Ask appropriate questions in a consulting session.
- e. Deal effectively with a variety of consulting situations.
- f. Explain statistical ideas using language and visuals that are effective for the particular client.
- g. Be aware of issues involving statistical ethics.
- h. Find creative solutions to consulting problems, both individually and as part of a team.
- i. Effectively present oral and written arguments.
- j. Utilize professional publications and resources in statistics and other related fields.

4. Text and References

Possible Text: Derr, J., *Statistical Consulting: A Guide to Effective Communication*, Brooks/Cole Cengage Learning, 2000.

5. Minimum Student Materials

- A calculator
- Access to the textbook
- Computer access with statistical software (EXCEL, Minitab, JMP, R and SAS) and word processing and presentation software (WORD, PowerPoint).

6. Minimum University Facilities

A classroom with:

- A chalkboard and audiovisual equipment.
- A classroom layout that can accommodate a consulting table and chairs for at least six people.
- Videotaping equipment.
- Computer access for each student and the instructor with statistical software (EXCEL, Minitab, JMP, R and SAS) and word processing and presentation software (WORD, PowerPoint).

The Statistics Studio Classroom is essential for this course.

7. Expanded Description of Content

<u>Content</u>	<u>Number of lectures</u>
1) <u>An Introduction to Statistical Consulting</u>	2
a) What is statistical consultation?	
b) Who does statistical consultation?	
c) Who are the clients of a statistical consulting session?	
2) <u>Research in the Field of Statistical Consulting</u>	2
a) Published textbooks and articles	
b) Interviews with practicing statistical consultants	
3) <u>Principles of Professional Practice</u>	2
a) Ethical issues in statistical consulting	
b) Utilizing professional publications and resources in statistics and other related fields	
4) <u>Developing Consulting Skills</u>	12
a) Client expectations	
b) Colleague expectations	
c) The ideal statistical consultant	
d) How to conduct an effective consultation	
e) Non-verbal communication	
f) Asking good questions	
g) Business aspects of consulting	
h) Negotiating a satisfactory exchange	
i) Dealing with difficult situations and difficult clients	
j) Effectively communicating both verbally and graphically about statistics	
k) Working as part of a larger research team	
l) Assessing your consulting skills	
5) <u>Practice Implementing the Many Phases of a Study</u>	6
a) Problem identification	
b) Study design	
c) Data collection	
d) Data management	
e) Preliminary analyses	
f) Follow-up analyses	
g) Development of conclusions	
h) The written report	
i) The oral consultation	
6) <u>Consulting Opportunities</u>	12
a) Observation of statistical consultants in action	
b) Role playing of consulting sessions	
c) Participating as part of a research team	
d) Leading a consulting session	
e) Watching yourself lead a consulting session	
f) Evaluating your skills when leading a consulting session	
Total	36

8. Method of Evaluating Outcome

There is a need for two distinct sets of assessment methods.

For the lecture part of the course, assessment will be primarily based on essay examinations, quizzes, and/or homework assignments. Typically, there will be several quizzes. There may be a midterm. A final assessment (an examination and/or a final consulting project) will be given. Students will be required to show their work, and will be graded not only on the correctness of their answers, but also on their understanding of the concepts and techniques. Homework may be used to promote student understanding.

Much of the course (especially Course Content topics 4, 5, and 6) will require that students participate in and produce consulting scenarios, role-plays, team-based activities, projects, papers, oral collaborations, and consulting experiences. For these activities, an additional set of assessment methods is required. The instructor will judge the level of student preparation, the degree of participation, and the ability to effectively implement desired consulting skills.