

Spring 2005

STATISTICS 580: Statistical Consulting Practicum

Course	kb boomer	Andrea Piccinin
Instructor:	323C Thomas Building 865-3134 boomer@stat.psu.edu	323E Thomas Building 865-3541 piccinin@stat.psu.edu

Class Meetings:

January 10 – February 2

Monday 4:30 – 5:30 in Room 120 Thomas
Thursday 5:15 – 6:15 in Room 327 Thomas

February 7 – April 27

Monday 3:30 – 5:30 in Room 120 Thomas
Wednesday 3:30 – 5:30 in Room 120 Thomas

Office hours: Daily 1:30-3:30 with course instructor or SCC consultant

Statistical Consulting Center Consultants:

RA:	Bing Han	hanbing@stat.psu.edu
Consultant:	Scott Kresge	gsk127@psu.edu

Readings Available: Electronic reserve
JStor
323 Thomas Building

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READINGS AND LECTURE TOPICS

Readings: Reserve materials can be accessed through the online catalog. At <http://www.lias.psu.edu/>, click on the Cat link, and click on the blue course reserves button. From there you can access course reserves by searching under instructor name, course name or course number. Hard copies are available at the SCC.

Boen, J. R. and D. A. Zahn. 1982 Chapter 4. The Ideal Consultant. In *The Human Side of Statistical Consulting*. pp. 29-37.

Boen, J. R. and D. A. Zahn. 1982 "Chapter 5: Choosing a Technique: The Practical Aspects." In *The Human Side of Statistical Consulting*. pp. 39-56.

Finney, D.J. 1982. The questioning statistician. *Statistics in Medicine* 9: pp. 5-13.

Hand, D. J. 1994. Deconstructing Statistical Questions. *Journal of the Royal Statistical Society (Series A)* 157. pp. 317-356 (Jstor)

Kirk, R.E. 1991. Statistical consulting in a university: Dealing with people and other challenges. *The American Statistician* 45: pp.28-34.

Zahn, D. A. 1988. Quality breakdowns: An opportunity in disguise. *1988 ASQC Quality Congress Transactions*, pp. 56-62.

Zahn, D. A. and Boroto. 1983. Being responsible for the success of consulting sessions. *American Statistical Association 1983 Proceedings on Statistical Education*, pp. 107-108.

Zahn, D.A. and Isenberg, D.J. 1983. Nonstatistical Aspects of Statistical Consulting. *The American Statistician* 37: pp. 297-302.

Additional readings on particular topics may be suggested.

Lecture Topics:

Communication
Asking Questions
Managing a Session
Consulting from Start to Finish
Dealing with Difficult Clients

Designed Experiments
Sampling
Designing a Survey
Non-Parametric Statistics
Mixed Models with SAS Proc Mixed

Power Analysis
Measurement
Making Sense of Social Scientists
Missing data

And more (please feel free to make requests)!

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COURSE POLICIES

Class attendance: Required. The practicum is organized around principles of active and collaborative learning. Attendance and participation in class is an integral part of the course. There is no practical way of making up absences. Missed classes will impact your grade.

Requirements for working with clients:

- Exhibit professional behavior.
- Follow all steps of Activity Log.
- Be on time for all scheduled client meetings.
- Meet regularly with SCC instructors and consultants
- Maintain a client file as specified in the handbook. In particular, a final client folder must have (1) final report, (2) draft report, (3) peer-reviewed report with completed form, (4) client request form with five key words, (5) completed Activity Log, (6) completed Information about Short-Term consulting, (7) legible labeled and dated meeting and research notes, (8) first and second meeting summaries, and process summary, (9) copies of any correspondence, (9) information provided by the client, if applicable, and any other materials which would enable us to understand the consulting process.

Paper clip (or binder clip) together, in separate packets, the reports, SCC forms, correspondence, client materials, etc. Clips are available at the Operations Desk.

- All client-related electronic materials must be stored in your SCC directory (F:\Stat580\Home).
- Provide a written recommendation for the client *in a timely fashion*. The norm for this is 10 business days after the first meeting for the Fall and Spring semesters (seven business days in the Summer semester). At least 3 business days prior to your second meeting submit a draft copy for review. Turn in the client file as soon as you have delivered the recommendation to the client, no more than 24 hours after the second meeting.
- Get approval from one of the course instructors for any extended work with the client such as additional hours spent on developing a recommendation, additional follow-up meetings, or data analysis.

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Criteria for assessment: 2 credits for Stat580, 1 credit for Stat581

Stat580: 50% class work, 50% consulting
Stat581: 20% class work, 80% consulting

You will receive grades on written assignments and draft and final versions of your client files. Client files will be graded on Process, Communication Skills, and Technical Accuracy:

- “Process”
 - o Following Activity log and course guidelines (e.g., completeness of file) and displaying responsible behavior
- “Communication”
 - o Quality of written work, including demonstration of a solid understanding of the client’s question, absence of spelling and grammatical errors, and clear presentation of statistical concepts in non-jargon terms
- “Technical Accuracy”
 - o Appropriateness of methods proposed given the client’s statistical background and data

You are expected to complete a minimum of three client files in each semester of Stat580/581. MAS students will replace one client file (in 581) with their MAS comprehensive project.

Class attendance and participation is required and you will be asked to present a minimum of one client file per 580/581 sequence to the class. MAS students must present one client file in Stat580 and the MAS comprehensive project in Stat581. Each presentation will last 30 minutes, and the sign up form is included in the schedule presented in this syllabus; a master copy will be posted at the SCC.

Course grades will be assigned based on client file grades and overall professionalism (e.g. class attendance and participation, maintaining files on the SCC server, mid-semester meeting with instructor, etc). Students who receive all “excellent” or 4/4 grades will earn an “A” in the course. Grades of “Very Good” or 3.5/4 may result in a final grade of A-. “Good” (3/4) equals B+, 2.5 is B and 2 earns B-. “Fair” (1.5/4) results in C+ and 1.0 is a C. If difficulties are not corrected after one conference with me an “F” grade will result and no additional clients will be assigned.

MAS Comprehensive Project: To fulfill a degree requirement, each MAS student will complete a comprehensive project, which usually is an extension of one short-term client while in Stat581. In each short-term report, advice is provided to the client. In the comprehensive project, you will implement the advice you proposed in the associated short-term report and analyze the client’s data. The MAS project is due 6 weeks (three weeks in the summer term) after the associated short-term file is turned in. A grade for Stat581 cannot be assigned until the MAS project has been accepted by a course instructor and the MAS degree coordinator.

The project consists of data analysis, a written consulting report, and an oral presentation to the class. To avoid having two oral presentations in Stat581, MAS students will present one short-

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term client file in Stat580, satisfying the course requirement, and will present the MAS project in Stat581.

Use of SCC computers and accounts: As a student in STAT580, you will be assigned a subdirectory in your name on the SCC network (F: drive). This account can be accessed from the PCs in Room 424. In addition, you may use SCC computers in 323 Thomas to work on client related activities while an Operations Assistant is on duty (usually Monday through Friday, 8:00 a.m. to 4:30 p.m.). All client-related electronic material must be saved in your F: drive subdirectory in a logical and organized fashion.

PENN STATE POLICIES

All Penn State policies regarding ethics and honorable behavior apply to this course. Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. All University policies regarding academic integrity apply to this course. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. For any material or ideas obtained from other sources, such as the text or things you see on the web, in the library, etc., a source reference must be given. Direct quotes from any source must be identified as such. Any instances of academic dishonesty WILL be pursued under the University and Eberly College of Science regulations concerning academic integrity.

You must provide copies of materials used to write your recommendation report in the client file along with your notes on that material. This includes web pages, pages from books, and lecture notes from previous classes. Plagiarism is treated as a serious offense in this course, with responses outlined below.

Occurrence	Response
First	Warning; -1/2 pt for process
Second	Notification sent to Department Head and academic advisor; -1 pt for process
Third	F grade assigned as semester grade; notification sent to Department Head and academic advisor

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Monday	Wednesday/Thursday
3/14 Class #17: 580 Presentation: _____ 581 Presentation(MAS): _____	W 3/16 Class #18: Discuss on-going projects
3/21 Class #19: 580 Presentation: _____ 581 Presentation(MAS): Shijie Cai	W 3/23 Class #20: Discuss on-going projects
3/28 Class # 21: 580 Presentation: _____ 581 Presentation(MAS): Juan Wu	W 3/30 Class #22: Discuss on-going projects
4/4 Class #23: 580 Presentation: _____ 581 Presentation(MAS): Audra Zakzeski	W 4/6 Class #24: Discuss on-going projects
4/11 Class #25: <i>Last week to assign new clients</i> 580 Presentation: _____ 581 Presentation(MAS): Jiangyue Wang	W 4/13 Class #26: Discuss on-going projects
M 4/18 Class #27: 580 Presentations _____ _____	W 4/20 Class # 28: Discuss on-going projects
M 4/25 Class #29: 580 Presentations _____ _____	W 4/27 Class #30: All Client Files due

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ASSIGNMENTS

		ASSIGNMENT
Due Date	Reading	Topic for short paper (1-2 pages) (bring to class on date due)
M Jan 17	Boen and Zahn, Ch 4 “ <i>The ideal consultant</i> ”	1. What are the similarities and differences in client and consultant perspectives of the consulting experience? As a statistician, how can you consider yourself “ideal” <u>and</u> have a satisfied client?
M Jan 24	Finney “ <i>The questioning statistician</i> ” Kirk “ <i>Statistical consulting in a university</i> ” Zahn and Isenberg “ <i>Non-statistical aspects of statistical consulting</i> ” 580 Handbook Parts 3 & 4	2. How do these readings differ? What advice from Kirk, Finney and Zahn & Isenberg do you think will be most useful in holding a useful and satisfying first client meeting?
R Jan 27	Boen and Zahn, Ch 5. “ <i>Choosing a technique</i> ” 580 Handbook Parts 5 & 6	3. How will you present to your client the risks and benefits of a simple versus a more complex approach?
R Feb 3	Zahn and Boroto “ <i>Being responsible for the success of consulting sessions</i> ” Zahn “ <i>Quality breakdowns</i> ” 580 Handbook Parts 7 & 8	4. What would Zahn and colleagues call a “breakdown”? What do they suggest we do with these breakdowns? (Please do not simply list/recite the steps.)
Within 5&10 bus. days of first meeting		Client recommendation file (3-4 each semester) (draft 7 days, final 10 days)
Within two days of receiving draft file	Classmate’s STAT580 draft Client file	Peer Review
Mar-Jul		Methodology Presentation – 1 in 580 or in 581