OMS 235, Statistical Methods, Fall 2017
Prof. Brawley, Gettysburg College

Class Information

Lecture: Mondays, Wednesdays, and Fridays 9 – 9:50 AM in Weidensall Hall 412

Labs: Tuesdays 7 – 8 PM (Section C1 only) or Tuesdays 8 – 9 PM (Section C2 only) in Glatfelter Hall 011

Final exam: Thursday, December 14 8:30 – 11:30 AM in Weidensall Hall 412

Email: abrawley@gettysburg.edu

Office and hours: 412 Glatfelter Hall, Mondays and Wednesdays 2 – 3:30 PM, and other times by appointment

Required Materials & Tools

Textbooks:
1. Agresti's *Statistical Methods for Social Sciences* (4th edition)
2. Bobko's *Correlation and Regression: Applications for Industrial Organizational Psychology and Management* (2nd ed.)
3. *Publication Manual of the American Psychological Association* (6th ed.)
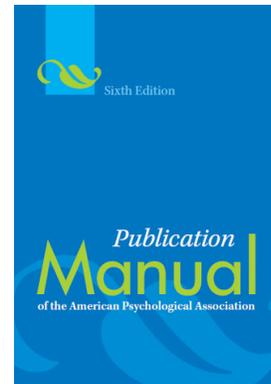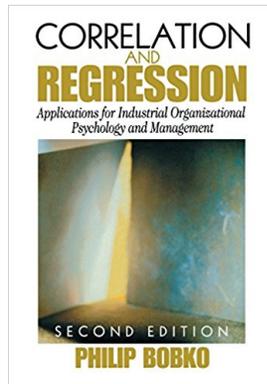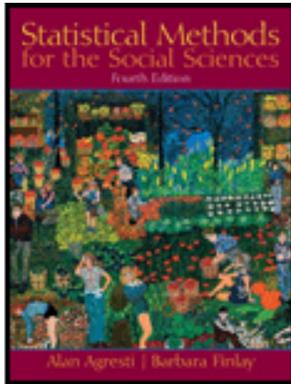
Calculator: You will need a non-graphing calculator with a square root function, such as a TI 30XA or Casio fx-260. For problem sets and during class and lab, you're free to use a phone or computer calculator app. However, on exams, you will not be allowed to use a computer, phone, or graphing calculator, so I strongly recommend practicing with the calculator you'll use for exams.

Software: You will use SPSS for labs and your final project. SPSS is available on the lab computers in Glatfelter 011 (and 014).

Course communication: Check your College email and Moodle regularly.

Course Goals

This class and lab are designed to provide you with the knowledge and tools you will need to understand and use statistics, or the scientific process of designing a study, describing your data, and interpreting results to make an inference. We'll focus on statistics as they're used in organization and management studies, so we'll be learning how to best describe and make conclusions about people within organizations. Our class and lab are designed to achieve two broad goals: (1) develop the basic knowledge you need and (2) provide intensive practice with choosing, doing, and interpreting statistical analyses. More specifically, after taking OMS 235, you will:

- Understand the logic of hypothesis testing in research
- Understand the general linear model and the uses of a number of statistical models derived from it, including *t* tests, analyses of variance (ANOVAs), correlation, and regression
- Be able to choose among these analyses to best solve a problem or answer a question
- Be able to conduct these analyses and interpret their results
- Be able to create and understand graphs that illustrate statistical findings
- Be well-prepared to use your statistical knowledge to address real questions in organizations

Why should you care about statistics? If you want to do research in any form, statistics will be an essential part of your work that you need to be able to do for yourself and to understand when other researchers do. Period. There is no way around this. (Silver lining: glassdoor.com named statisticians' very close cousins "data scientists" the number one job for work-life balance, and folks at Google have labeled it the sexiest job of the 21st century. You're welcome.)

Even if you aren't planning on a career as a researcher, all workplaces are now moving towards using data – and analyses of that data – to make well-informed decisions. Data is everywhere in the current business world! What businesses need is more people like you who will understand what to do with their data in order to get answers and help the business succeed.

A note about math: Statistics does necessarily include a considerable amount of math. However, while getting the correct answer will be important, understanding the meaning of the calculations and final answer will be more important. Email or talk with me if you are interested in supplemental math-focused resources for our class.

Course Requirements

Assignment	#	Points Each	Total Points (% of Grade)
Practice			
Class participation	43	approx. ½	20 (5%)
Lab assignments	10	3	30 (8%)
Problem sets	12	2-3	30 (8%)
Exams			
Quiz	1	20	20 (5%)
Midterm exams	2	60	120 (30%)
Cumulative final exam	1	140	140 (35%)
Final Project			
Final research project	1	40	40 (10%)

Total possible points: 400

Grade	%	Min. Points							
			B	82.5 – 87.4%	330	D+	67.5 – 69.9%	270
A	92.5%+	370	B-	80 – 82.4%	320	D	62.5 – 67.4%	250
A-	90 – 92.4%	360	C+	77.5 – 79.9%	310	D-	60 – 62.4%	240
B+	87.5 – 89.9%	350	**C**	**72.5 – 77.4%**	**290***	F	0 – 59.9%	0
			C-	70 – 72.4%	280			

Your grades will be provided to you on an ongoing basis via Moodle. Please be sure to address any concerns early. Any concerns about specific grades should be addressed within one week of the grades being posted on Moodle.

*In order to major in OMS, the department requires that you earn a "C" or better in OMS 235, this semester. There are no exceptions to this requirement. Be prepared to work to earn this grade.

Class participation: On all class meeting dates (i.e., Mondays, Wednesdays, and Fridays), participation will be graded. You must be in class to earn credit. In general:
- **full participation credit** will be awarded to students who come to class prepared; are consistently attentive; contribute readily to the conversation or activity without dominating it; make thoughtful contributions where appropriate; show interest in and respect for others' views; participate actively in small groups; push discussions to a "deeper" level of analysis; and make comments or contributions that are "on-point" with the assigned work.
- **reduced participation credit** will be awarded to students who come to class prepared and make thoughtful comments or contributions only when called upon; show interest in and respect for others' views; and participate attentively but passively in small groups.
- **further reduced – or even "0" – participation credit** will be awarded to students who miss class (or an important activity during class – e.g., by arriving late or leaving early), show evidence of minimal preparation, provide incorrect or irrelevant answers to questions and/or avoid participation altogether. Other examples of this level of participation include talking too much, being distracted by electronic devices, or making inappropriate contributions.

Lab assignments: Every lab meeting will involve a graded lab assignment. You will receive details in each lab about these assignments, but generally they are designed to provide training and practice in skills for doing analyses in SPSS and reporting those analyses in APA style.

Problem sets: Statistics can't be really understood without practice. Therefore, hard copies of 12 practice problem sets will be due at the beginning of class on the days listed in the course schedule. These homework assignments will be provided to you on Moodle. Practice problem grades will be effort based. In order to be sure that your efforts are clear, show the steps of your work wherever possible. While collaborating with classmates on problem sets is acceptable (e.g., "do you understand what we're supposed to do on Question 5?"), you must turn in your own work, and it is a violation of the Honor Code to turn in work claimed as your own that was not done by you.

Exams: Exams will be based on the textbooks, lectures, in-class activities, lab assignments, and problem sets. Exam questions may include multiple choice, short answer, true or false, matching, and calculations. Bring a writing utensil (pencil recommended, but not required) and a non-graphing calculator that is not a phone or computer. The final exam will be cumulative. While the midterm exams are not explicitly cumulative, the concepts you learn later in the semester will build on those learned earlier.

Final project: In a final project, you'll work in a small group to conduct your own research study – including developing the research questions, gathering primary or secondary data, analyzing the data in SPSS, and presenting your findings in an oral presentation. You will submit a project proposal prior to submitting the final project. Additional details regarding the final project will be provided to you in class and on Moodle.

Other Important Policies & Information

Attendance: You cannot earn credit for participation or in-class or in-lab assignments without attending class and lab on the days those are graded. You are responsible (whether present or not) for all material covered in the lectures, including any announcements. I'm happy to answer questions about any material after you've had the chance to get this information from a classmate. Per the College's policy, it is your responsibility to request permission to miss class due to scheduled events and to arrange for making up any missed work.

- **What if I know ahead of time that I may need to miss class or lab because of a religious observance, military service, or subpoena?** Absences due to these activities must be provided to me in writing (email is best) prior to the date or dates of absence. Please contact me to arrange for providing necessary documentation and the possibility for making up missed work.
- **What if something unexpected happens and I have to miss class or lab?** For emergency absences (e.g., documented serious incident, documented serious illness), please contact me in writing ASAP to arrange for providing necessary documentation and the possibility for making up missed work.

Late work policy: Late submissions will result in a grade of zero. The only exceptions to this will be in the case of excused emergency absences – please review the above section on attendance.

If electronic copies of files are being accepted for a given assignment, it is your responsibility to ensure that files are not corrupted. When hard copies of work are required, out of fairness to everyone enrolled in our class, electronic copies of work will not be accepted as a substitute. If needed, you may submit hard copies of work directly to my office any time the fourth floor of Glatfelter is open (i.e., weekday business hours). If I am not available, please leave the work underneath my office door.

Electronic devices policy: You will be challenged to think hard and required to actively engage in class in order to earn your grade. Doing this will be even harder if you don't pay attention. I strongly recommend avoiding any electronic devices in class that don't contribute to your participation in or attention to the class. If you find it difficult to resist Snapchatting pics of your outstanding p values to your jealous friends who aren't in this class, work on developing the professional habits now of silencing your phone and using site-blocking browser add-ons during our class and lab.

Academic honesty: If you cheat, plagiarize, or otherwise violate the Honor Code, you will be reported to the College, and the penalty will be decided by Academic Advising and the Honors Commission. Penalties may include failure of the assignment or exam, or failure of the entire course. You will be expected to produce your own original work for all assignments in class. Copying work from any other source – including the Internet, our textbook, other books, other students' work, and/or your own work for any previous projects or classes or semesters – constitutes cheating and/or plagiarism.

Gettysburg College OMS alumni are expected to have the skills obtained in courses like OMS 235. If you don't put in the work to earn these skills now, there's a good chance that your future employer will find that out. Not only will that hurt your own employability, but it will diminish the value of a Gettysburg degree in the eyes of that employer. The Honor Code is in place to protect our College and department's reputation for training excellent consumers and producers of statistical analyses.

Support for students with disabilities: Students with disabilities requesting accommodations should work with the Office of Academic Advising to develop an Individual Education Accommodation Plan (IEAP) to provide to professors. We will work together – using your IEAP as a guide – to establish how accommodations will be implemented for this course. Please inform me ASAP or at least two weeks prior to the first event (e.g., an exam) for which you request an accommodation.

Two important notes about taking notes: Taking notes isn't just a matter of getting a record of what's being said. It's a matter of processing what's being said, then recording that for your own use later – so this is best done by you, by hand. This means you also get to ask questions as we go along, rather than trying to learn everything later. (Plus, it can be difficult to quickly and accurately type equations or electronically reproduce graphs that we'll cover.) Research shows that taking notes by hand improves your learning – taking notes in a notebook instead of your laptop can both minimize distractions and help you learn the material more quickly and thoroughly.

In order to ensure that this class is best suited to our specific class, this semester, and to promote your best learning, I do not provide complete notes outside of class. I do provide outlines to help ensure that your notes are complete, but complete notes will only be provided during the appropriate class sessions.

Date	Last day to…
F 9/8	Drop or add this class
F 11/10	Withdraw with a grade of "W"

Course Schedule

Any changes to this schedule will be communicated to you in class. A&F = Agresti & Finlay text. B = Bobko text.

Week	Date	Class	Readings	Due Dates	Date	Lab
1	M 8/28	Data, statistics, and method basics	A&F 1 & 2		T 8/29	No lab
	W 8/30					
	F 9/1					
2	M 9/4	Sampling & measurement; descriptive statistics	A&F 2 & 3	M 9/4: Set 1	T 9/5	Lab 1
	W 9/6					
	F 9/8			F 9/8: Set 2		
3	M 9/11	Descriptive statistics	A&F 3	M 9/11: Set 3	T 9/12	Lab 2
	W 9/13					
	F 9/15			F 9/15: Set 4		
4	M 9/18	Probability	A&F 4		T 9/19	Lab 3
	W 9/20					
	F 9/22	Quiz				
5	M 9/25	Probability distributions	A&F 4		T 9/26	Lab 4
	W 9/27					
	F 9/29			F 9/29: Set 5		
6	M 10/2	Inferential statistics	A&F 5 (omit 5.5)	M 10/2: Set 6	T 10/3	No lab
	W 10/4					
	F 10/6	Exam 1				
7	M 10/9	Reading day – no class meeting			T 10/10	No lab
	W 10/11	Inferential statistics	A&F 6 (omit 6.6-6.7)			
	F 10/13			F 10/13: Set 7		
8	M 10/16	Independent samples	A&F 7 (7.1-7.3)		T 10/17	Lab 5
	W 10/18					
	F 10/20			F 10/20: Set 8		
9	M 10/23	Independent samples; dependent samples	A&F 7 (7.1-7.5, 7.8)		T 10/24	Lab 6
	W 10/25			W 10/25: Set 9		
	F 10/27					
10	M 10/30	Dependent samples	A&F 7 (7.4-7.5, 7.8)		T 10/31	Lab 7
	W 11/1					
	F 11/3	Exam 2				
11	M 11/6	One-way ANOVA	A&F 12 (12.1-12.2)	M 11/6: Proposal	T 11/7	Lab 8
	W 11/8					
	F 11/10			F 11/10: Set 10		
12	M 11/13	Correlation	B 1 & 2 (p. 12-24, 27-42)		T 11/14	Lab 9
	W 11/15					
	F 11/17			F 11/17: Set 11		
13	M 11/20	Correlation	B 3 (p. 43-48, 58-66)		T 11/21	No lab
	W 11/22	Thanksgiving break – no class meeting				
	F 11/24					
14	M 11/27	Regression	B 6 (p. 118-146, 151-157)		T 11/28	Lab 10
	W 11/29					
	F 12/1			F 12/1: Set 12		
15	M 12/4	The general linear model			T 12/5	No lab
	W 12/6	Final project presentations due 9 AM				
	F 12/8	Final project presentations, continued				
16	Th 12/14	Final exam 8:30 – 11:30 AM				