

COMM 6661: Statistical Applications in Communication I
Monday and Wednesday 5:30 - 6:50
Journalism 342

Instructor: Robert Bond, Derby Hall 3072, bond.136@osu.edu

Office Hours: Monday and Wednesday 11-12 and by appointment.

Course Description

This course is the first in a sequence of graduate methodology classes required of all students enrolled in the M.A. or Ph.D. program in Communication. Students will acquire working familiarity with the basic principles and theory of descriptive and inferential statistics. Topics will include elementary sampling and issues in data collection, data description, association, probability, and fundamentals of hypothesis testing and inference. Students will gain experience practicing their learning through various assignments using SPSS and R, with an emphasis on writing the “code” or “syntax” rather than the use of the point-and-click interface.

Course Materials

- **Textbook:** Hayes, A. F. (2005). *Statistical Methods for Communication Science* (Chapters 1 to 11). New York: Routledge.
- Additional, supplementary readings and PDFs distributed by CARMEN, as needed.
- SPSS for Windows or Mac.
- R for Windows or Mac.
- A calculator with a square root function, for occasional hand computations.

Evaluation

Midterm Exam (25%)

There will be a two-part midterm examination on October 9 and October 11 that requires you to demonstrate that you are comfortable with the methods and concepts outlined in the course thus far. The midterm will be open notes and open book, but should not be approached casually because of this. This exam will be given only once. No makeup exam will be provided if you miss it, and it will not be given early to accommodate your schedule. Please let me know as soon as possible if you have any conflict.

Final Exam (25%)

You will be given a take home final exam on the last day of class that is due no later than 10AM on Monday, December 11. A dataset will be distributed to you and your job will be to read the

data (import the data to statistical software), do any needed data manipulation, conduct several analyses, and interpret and describe the results. You may turn in the exam early if desired.

Take-home assignments (50%)

At several points during the semester you will be given a homework assignment to complete. The due date of each assignment will be announced when the assignment is distributed. **You may NOT work with other students when working through the assignments, and you must submit your own *independently written* answers for each problem.** It is a violation of the Code of Student Conduct to prepare your written answers together and/or submit answers that are in effect copies of each other, wither in whole or in part. It is a violation of course policies and the OSU code of Student Conduct to exchange answers, electronically or otherwise, or to collaborate in any way on these assignments. Violators of this policy will be sent to the Committee on Academic Misconduct in accordance with university policy.

For some questions, there will simply be a right or wrong answer. For others, partial credit may be earned by showing your work and the logic you used to arrive at the answer you did. Writing quality will matter when I grade your assignments. Be specific, precise, attentive to detail, and careful in how you phrase your answers, as you will be graded based on your actual answer (what is on the page), not what you intended to say or said awkwardly. Do not wait until the last minute to start the assignments, as procrastination will show in the quality of your work. Use Word or another word processing program you are comfortable with. Use the symbol font for Greek symbols when needed, and **learn to use Microsoft's Equation editor** or some other mathematics system (Latex is a great typesetting option). Be careful in your formatting or mathematical equations, and be aware of order of operations rules. Be proud of what you submit.

You are expected to either (a) turn in a hard copy of your assignment with all sheets stapled together. An assignment is determined to be late if the **hard copy** is not delivered to me in class on the date the assignment is due.

The answers for each question will be provided soon after the assignment is due. It is up to you to check your responses with the official answer sheet. If you do not understand any inconsistencies between the official answers and your own, you may contact me for assistance. Frequently, we will discuss the assignments in class after the due date has passed and everyone has turned in their assignment.

Derivation of Final Grade

My grading system is largely a percentage based system where 90%+ = A, 80% - 90%+ = B, 70% - 80%+ = C, 60% - 70%+ = D, less than 60% = E, and any + or - determinations are based on proximity of your grade to the cutoffs. I reserve the right to modify this system *downward* depending on the distribution of grades. In other words, if only one student exceeds the 90% threshold, but five hit 89%, I may choose to move the cutoff for an A to 89%.

Course Policies and Miscellaneous

Late or Absent Assignments and Missed Exams

Unless otherwise notified, assignments are due by the beginning of class on the date due. An assignment will not be accepted more than 24 hours after the due date. The only

exceptions to these rules are totally unforeseen circumstances that are convincingly documented no later than 24 hours after the due date. If you are late turning in an assignment, you make everyone wait for the answers, as the assignment will not be discussed in class until everyone has turned in an assignment or the 24 hour period has passed.

Attendance

There is no formal attendance policy for this course. However, you should always attend class. If I believe attendance is slipping, I reserve the right to create an attendance policy. Not attending class will make learning the course material difficult. Some of the material that will appear on exams will only be presented during lecture, and many of the SPSS techniques to be discussed are not documented anywhere except in class.

COMM 6661 on CARMEN

I will upload data files, powerpoint slides, PDFs of extra readings, and other course-relevant material to CARMEN. Learn to use CARMEN, as you will be asked to use it during class to retrieve materials used in class that day.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

I expect students who believe a classmate has violated this policy to come forth to me so the alleged violation can be investigated and appropriate action can be taken if needed. If possible, your identity will be protected. **You can be found in violation of the Code of Student Conduct for assisting others to violate the Code, including by turning a blind eye when you see it happening.** “Cheating” in graduate school simply cannot and will not be tolerated, and the consequences for doing so are severe.

Note, however, that I understand there is value to study groups and assisting others to acquire the understanding of the material in this class. I **encourage** such study groups and will do what I can to help such groups flourish. But conversations must steer clear of questions related to graded assignments.

Tentative Nature of the Syllabus

This syllabus represents a contract in the works. Events that transpire over the semester may require me to modify the administration of this course and therefore the syllabus. In the event I need to modify the syllabus, I will announce the modification in class and on CARMEN. Ultimately, it is your responsibility to keep up with any such modifications and be aware of current policies, deadlines, etc.

Students with Special Needs

Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

Mathematics Anxiety

Often one of the greatest barriers to mastering material in methodology courses is fear of mathematics. Many students lock up with anxiety when they are asked to do any computation and this anxiety typically interferes with the ultimate goal of *conceptual understanding*. We will attempt to work on making mathematics comfortable for you throughout the semester. In this class most of the computations will be done by computer, although during lecture some basic computations cannot be avoided. You need not understand the mathematics of the formula so much as you need to understand how they are conceptually used. To be sure, you need to be comfortable with basic mathematical operations. This is graduate school, and you have chosen to study the scientific discipline of communication (or a related social science). You will have to think analytically and quantitatively throughout your days as a graduate student here. You will be challenged in this course, but there is no reason why everyone can't do well. The best thing that you can do to enhance your likelihood of success is to approach the course with enthusiasm and a positive attitude toward learning this essential part of the your new academic profession.

With these words of encouragement, at the same time remember that this is a graduate-level course. Although this is an introductory course, it is still intended to be challenging. I expect you to work hard, to prepare for class, and to do what you need to do to learn the material, both in and out of class. You will not succeed if you don't dedicate time and energy to reading and contemplating the material. You will probably find yourself working harder during your first year of graduate school at Ohio State than you have ever worked before.

SPSS & R

SPSS and R are statistical analysis and data manipulation packages widely used throughout the scientific community. These are but two of many statistical software programs you should become familiar with during your days in graduate school. However, because SPSS is the one program most faculty and graduate students in this program are familiar with, we will use it. R, on the other hand, is quickly becoming a standard package for use in many disciplines both in and outside of the social sciences. Familiarity with R will equip you to both better understand the similarity of the various packages and also enable you to take courses in cognate departments that emphasize the package.

R is freely downloadable from <https://www.r-project.org/>. Students should download a copy as soon as possible. R is available on lab computers. Many online resources are available to help students become more familiar with the computing and coding environment.

SPSS is available on all graduate student office computers in the School of Communication in Derby Hall as well as throughout public computing labs operated by OSU's Office of Information

Technology. It also can be licensed for use on your personal machine by acquiring a copy and installation codes through the OSU Office of Information Technology. For most students in this class, there is no charge for the license. SPSS can be downloaded and installed from OSU, but it will not work without first acquiring the license codes. For details, see

<https://ocio.osu.edu/software/directory/slwin/#spss> for the Windows version

and

<https://ocio.osu.edu/software/directory/slmac/#spss1103> for the Mac version.

You can also contact the School of Communication's technical support personnel in Derby Hall, for assistance.

One of the reasons so many people prefer SPSS for data analysis is that it quite simple to use, with an intuitive graphical user interface that is easy to navigate. While there have recently been some additions to R that add GUI capabilities, I am not familiar with them. I believe it is essential for you to learn to use syntax to have a thriving academic career. Learning syntax can be intimidating (it was for me!), but once you begin to understand the language it becomes much easier. This only occurs with practice and repetition. Not knowing syntax will make working with data more difficult, will make your interactions with other faculty and graduate students more difficult, and will inhibit your ability to learn from one another. At first you will resist this because it will seem like a lot of unnecessary work. But here are some reasons to learn syntax:

- It provides a means of documenting, communicating, and sharing with others what you have done in an analysis (such as advisors and collaborators).
- It allows you to redo or modify an analysis without having to redo all the pointing-and-clicking.
- Some features of SPSS can only be accessed through the syntax system.
- In this class, I will require you to document your work with the syntax you generated in SPSS or R (or both).
- Eventually, you will find it just as easy as pointing-and-clicking.
- What you learn will generalize. Many programs you will learn in graduate school are code- or syntax-driven. You need to learn to think like a programmer as well as a user.
- You will be at a disadvantage in more advanced courses if you can't communicate with a statistical program in its own language.
- It is a marketable skill. It will give you a hiring edge if you decide to pursue a nonacademic career in industry, marketing, government, or any place where research is done.

SPSS and R syntax is are languages, and like learning any language, learning to "speak" SPSS or R takes patience and practice, but it gets easier as your mastery builds. It is a skill you will be constantly developing and honing. We will only begin to scratch the surface of the basics of SPSS and R programming in this class.

Schedule of Lectures and Readings

Scheduling readings for this course is difficult, as I prefer to spend extra time on concepts that students find difficult, and those concepts seem to vary from class to class. As such, I have provided the following course schedule that should *closely approximates* the actual reading schedule we will have for the course. That said, if we get ahead or behind the schedule it is incumbent that the student be aware of this through class attendance. I will make every effort to ensure that the dates

for the midterm exam do not change. It is likely, however, that the schedule for the readings will change slightly throughout the course of the semester.

Unit I: Basic Concepts and Vocabulary, Introduction to SPSS and R

Hayes Chapters 1, 2, and 3

- August 23 – Chapter 1
- August 28 – Chapter 2 & 3
- August 30 – SPSS and R introduction
- September 4 – No Class
- September 6 – SPSS and R introduction

Unit II: Data Description and Visualization

- September 11 – Chapter 4
- September 13 – Chapter 4
- September 18 – Chapter 4
- September 20 – Chapter 4

Unit III: Probability, Independence, and the Normal Distribution

- September 25 – Chapter 5
- September 27 – Chapter 5
- October 2 – Chapter 5
- October 4 – Chapter 5

Midterm Exam covering Units I-III

- October 9
- October 11

Unit IV: Measurement and Estimation Theory

- October 16 – Chapter 6
- October 18 – Chapter 6
- October 23 – Chapter 6
- October 25 – Chapter 6

Unit V: Sampling

- October 30 – Chapter 7
- November 1 – Chapter 7
- November 6 – Chapter 8
- November 8 – Chapter 8
- November 13 – Chapter 8

Unit VI: Hypothesis Testing Concepts and Applications

- November 15 – Chapter 9
- November 20 – Chapter 9
- November 22 – No Class
- December 27 – Chapter 10
- December 29 – Chapter 10
- December 4 – Chapter 11

- December 6 – Chapter 11