

Math 115 Elementary Statistics Syllabus
Agnes Scott College, Fall 2022
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Monday, Wednesday, Friday, 1:55-2:45

Office hours: Mon 3:00-4:00, Tues 2:00-3:00, and by appointment.

Textbook: We're using a free online textbook, Introduction to Modern Statistics, available at <https://openintro-ims.netlify.app>.

Plan: We'll cover most of sections 1-23. There's a more detailed schedule below, but it's subject to change.

Homework: Working problems is vital to learning statistics. There will be homework assigned nearly every week, due at midnight on Wednesdays. I strongly encourage you to work in groups, but you must make sure that you understand the problem completely yourself before submitting your answer. You will turn in some of each assignment on Webwork, which you can access through Canvas. You can submit answers as many times as necessary on Webwork (up to the due date), so I expect that you'll get 100% on each assignment. Some of the assignments you do not need to turn in, but you are responsible for the material - completing only the Webwork assignments is not enough to prepare you for the exams. Math 115 is a 4-credit course. In addition to in-class time, you will be spending time outside of class on various activities. The first and most important activity is to regularly read the text and to work through and understand the examples in each section. You should try to spend time on this every day.

Software: We will be learning the basics of the statistical software R. The tutorials, which we will go through in class, are available at <https://openintrostat.github.io/ims-tutorials/>.

Final project: You will work in groups of three on a final project. You will collect and analyze data on a topic of your choice, and present your results in a short paper and an 8-minute in-class presentation. Your proposal is due on 10/3; a paper draft is due on 11/21, and the final paper is due on 12/5. The presentations will begin on 11/30. Your specific presentation time will not be scheduled until later in the semester, so you must be prepared to present as early as 11/30. There are more details on Canvas.

Honor code and group work: All students are expected to follow the honor code throughout the semester; all exams and assignments should be pledged.

I strongly encourage you to work on the homework in groups. I suggest that you work on the problems by yourself first, making a note of anything giving you trouble; then meet with your group and work through the remaining problems together; and finally submit the solutions by yourself. Every group member must submit her own solutions independently; just copying the group's answers is plagiarism and is unacceptable.

Getting help: Chances are that sooner or later you'll get stuck on something, so don't get frustrated. Think hard, and if you're still stuck, do something else for a while. (It's amazing how often that works.)

My office hours are above - these are times when I'm guaranteed to be in my office waiting to talk to someone. If you want to see me at other times, please let me know and we'll find a time. Student learning assistants in the Math Learning Center will be able to provide help throughout the week. More details, including the schedule, will be posted on Canvas. You are encouraged to use this service, and should think of it as part of your weekly mathematics regimen. Finally, I can't emphasize enough that your classmates are your best source of help.

Course goals: Learn to:

- collect data in a statistically responsible manner
- perform a complete basic analysis of collected data, and understand the value of the computations
- use data to infer information about a population
- critically analyze others' statistical analyses
- perform basic statistical analyses in R
- communicate statistics effectively, both orally and in writing

Exams: We will have two tests and one final exam, all closed-book. The first test covers all material up to that point, the second covers all material since the first, and the final is cumulative.

Assessment: Each test 15%, homework 25%, weekly discussion participation 5%, final project proposal 5%, final project presentation 5%, final project paper 10%, final exam 20%.

Late work: If your project proposal or paper draft is late, you will get a zero on that part of your grade. Late homework and projects won't be accepted, and you won't be allowed to make up missed tests, except under very exceptional circumstances (e.g., the sasquatch attacks - and even then you should get a note from the sasquatch). In the case of a conflict that you absolutely can't resolve (for example, a religious holiday), you may arrange to take a test early.

Attendance and participation: I expect you to be at every class meeting on time, unless you've talked to me about having to be absent or late. However, tardiness or absence will have no (direct) effect on your grade, unless of course you miss a midterm.

Dates and deadlines:

First test: Wednesday, 9/21

Final project proposal due: Monday, 10/3

Second test: Wednesday, 11/2

Project paper draft due: Monday, 11/21

Project presentations begin: Wednesday, 11/30

Project paper due: Monday, 12/5

Final exam: self-scheduled.

Date	Topic
Wed 8/24	Intro, 1 Data
Fri 8/26	More 1, 2 Study design
Mon 8/29	3 Applications/R: Data
Wed 8/31	More 3
Fri 9/2	4 Categorical data
Mon 9/5	Labor Day - no classes
Wed 9/7	5 Numerical data

Date	Topic
Fri 9/9	6 Applications/R: Exploring data
Mon 9/12	More 6
Wed 9/14	7 Linear regression
Fri 9/16	More 7
Mon 9/19	Catch up, review
Wed 9/21	Test 1
Fri 9/23	8 Multiple regression
Mon 9/26	More 8
Wed 9/28	9 Logistic regression
Fri 9/30	More 9
Mon 10/3	10 Applications/R: Modeling; project proposal due
Wed 10/5	More 10
Fri 10/7	Fall break
Mon 10/10	11 Hypothesis testing
Wed 10/12	More 11
Fri 10/14	12 Confidence intervals
Mon 10/17	More 12
Wed 10/19	13 Inference with mathematical models
Fri 10/21	More 13
Mon 10/24	14 Decision errors
Wed 10/26	15 Applications/R: Foundations
Fri 10/28	More 15
Mon 10/31	Catch up, review
Wed 11/2	Test 2
Fri 11/4	16 Inference for a single proportion
Mon 11/7	17 Inference for two proportions
Wed 11/9	18 Inference for two-way tables

Date	Topic
Fri 11/11	19 Inference for a single mean
Mon 11/14	20 Inference for two means
Wed 11/16	21 Inference for paired means
Fri 11/18	22 Inference for many means
Mon 11/21	More 22; paper draft due
Wed 11/23 - Fri 11/25	Thanksgiving break
Mon 11/28	23 Applications/R: Infer
Wed 11/30	Present projects
Fri 12/2	Present projects
Mon 12/5	Summary, review

Course evaluation: Your feedback on the course is extremely valuable to me, the math department, and the administration. In particular, I take your comments very seriously and use them to improve the course the next time I teach it. You are responsible for completing an evaluation of the course at the end of the semester.

Title IX: Agnes Scott is here to help you if you have experienced any form of sexual harassment or violence, dating or domestic violence, or stalking. Please talk to any faculty or staff member with whom you feel comfortable. Faculty and staff members want to support you and have been trained to help. They will also inform the Title IX office so that you learn about options available to you. If you do not want college administrators to know what you have experienced, you may talk to the chaplain, as well as nurses or counselors in the Wellness Center with complete confidentiality. They will not tell anyone what you share with them unless you give your express permission. You may contact the Title IX Coordinator directly at T9Coordinator@agnesscott.edu.

Inclusion: This course adheres to the principles of diversity and inclusion integral to the Agnes Scott community. We respect people from all backgrounds and affirm people's decisions about gender expression and identity. Please let me know your preferred name or gender pronoun if different from the class roster. The Gay Johnson McDougall Center for Global Diversity and Inclusion is centered and grounded in dismantling systems of oppression, including structural and systemic racism, as well as empowering each individual to take action that uplifts and builds community. Students can contact them at diversity@agnesscott.edu or 404.471.6118.

ADA: Agnes Scott College seeks to provide equal access to its programs, services and activities for people with various abilities. If you will need accommodations in this class, please contact the Office of Academic Advising and Accessible Education (404-471-6150) to complete the registration process. Once registered, please contact me so we can discuss the specific accommodations needed for this course.