Statistics as a Way of Thinking

STA 119F Course Syllabus

Alexander Volfovsky and Kat Husar

Fall 2026

Contents

TL;DR

Course overview

Statistics did not arrive as a finished toolbox. It grew out of attempts to learn from imperfect records in astronomy, population studies, public health, heredity, and many other settings. In this first-year seminar, we will read about those attempts, reconstruct historical arguments, and use small datasets and introductory R to investigate how analytical choices affect conclusions. No previous statistics or programming experience is required.

Required materials

- Stephen M. Stigler, *The History of Statistics: The Measurement of Uncertainty before 1900*. Reading assignments use page numbers from the 1986 printed edition.
- Short primary-source excerpts, source notes, datasets, and starter code provided or linked by the instructors.
- A charged laptop for every lab and for any announced in-class computing activity, with access to R.
- Access to the course website, Canvas, and GitHub. Setup instructions and help will be provided.

Assessment and grading

Assessment	Weight	What it recognizes
Lab attendance	5%	Presence for hands-on work; up to two absences are allowed without penalty.
Lab completion	5%	Completion of the assigned lab work.
Homework	20%	Historical reconstruction, quantitative work, and interpretation; the lowest score is dropped.
Homework presentation in class	10%	Clear explanation of a homework approach, code, and conclusions.
Class discussion lead	10%	Preparation and leadership of an assigned class discussion.
General class discussion	10%	Consistent, thoughtful participation; up to two class absences are allowed without penalty.
Quiz	10%	Understanding of the course's central historical and statistical ideas.
Final project	30%	An integrated investigation bringing together course reasoning, analysis, and communication.
Total	**100%**	

Key policies

Academic honesty

Submitted work must reflect your own understanding. Follow the collaboration rules stated for each assignment, and acknowledge collaborators, sources, data, code, and substantive use of computational or generative AI tools. If you are unsure whether a resource or form of help is allowed, ask an instructor before submitting the work.

Deadlines and late work

You may submit up to two assignments late without penalty. This allowance is shared across labs and homework, and each late submission must be made within two calendar days of its deadline. The lowest homework score is dropped automatically. Other late work or extensions require an arrangement with an instructor. Approved accommodations and university-authorized absences supersede these general allowances.

Attendance

Discussion is part of every lecture, so attendance and participation are essential. You may miss up to two class meetings without a penalty to the general-discussion grade, but this does not excuse a scheduled discussion lead, presentation, quiz, or assignment. You may also miss up to two labs without a penalty to the lab-attendance grade; the associated lab-completion requirement remains. The classroom does not support lecture recording, so recordings will not be available.

Success tips

1. Complete the reading before class and arrive with a question, puzzle, or claim to discuss.
2. Be present and take part in the conversation during lectures and the work during labs.
3. Ask questions early and often, including questions about why a method seemed sensible.
4. Start assignments early enough to investigate choices, debug code, and explain your result.
5. Stay current, and ask for help before a historical, statistical, or computational question begins to compound.

Important dates

The live schedule on the course website lists all class meetings, readings, and deadlines. Check it regularly. Schedule changes and other time-sensitive updates will be announced through Canvas.

Getting help

Questions are encouraged in class, immediately after class, during dinner, in lab, in office hours, on the Canvas discussion forum, and by email. Use the Canvas discussion forum for course questions whose answers may be useful to others. Email either Kat or Alex about routine matters that should be handled privately, including personal or grade-specific questions. For escalating matters, email Alex directly.

This is a seminar rather than a spectator course. Reading, discussion, hands-on analysis, and the final project all matter to the experience of the class.

Course information

Item	Information
Course	STA 119F: Statistics as a Way of Thinking
Term	Fall 2026
Instructors	Alexander Volfovsky and Kat Husar
Email	Alex; Kat
Lecture	Tuesday and Thursday, 10:05–11:20 a.m.; room posted on the course site
Lab	Friday, 11:45 a.m.–1:00 p.m., Link 065
Office hours	Times and locations posted on the course site
Course website	statistical-history.github.io

Course learning objectives

By the end of the course, students will be able to:

1. Explain how important statistical ideas developed in response to particular scientific and social problems.
2. Reconstruct foundational analyses using historical data, hand calculations, and introductory R.
3. Describe a dataset's provenance, unit of observation, measurements, denominators, important omissions, and limitations.
4. Interpret and compare statistical ideas in the settings that gave rise to them rather than treating them as formulas detached from a problem.
5. Evaluate and communicate evidence-based claims with attention to uncertainty, design, measurement, selection, analytical choices, and historical context.

Course materials

Required book

Stephen M. Stigler, *The History of Statistics: The Measurement of Uncertainty before 1900*. Reading assignments use page numbers from the 1986 printed edition.

Additional readings and data

The instructors will provide or link short primary-source excerpts, source notes, historical datasets, assignment templates, and starter code. The current reading assignment and all supporting materials will be listed on the course website.

Computing and course platforms

Bring a charged laptop to every lab and to any lecture for which a computing activity is announced. We will use R and GitHub; setup instructions and help will be provided, and no previous programming experience is expected. Students will need access to their Duke Canvas account and a GitHub account.

Communication

The course website is the authoritative source for the current schedule, readings, assignments, and course materials. Labs will be submitted through GitHub. Homework will be submitted through GitHub or Canvas, as specified in each assignment. Announcements will be sent through Canvas, so check Canvas and its email notifications regularly.

Canvas will also host a course discussion forum for questions and conversations that may be useful to the class. Do not post personal, sensitive, or grade-specific matters there; email an instructor instead.

For standard course matters, you may email Kat Husar or Alexander Volfovsky interchangeably. There is no need to send the same routine message to both instructors. For escalating matters, email Alex directly.

Five tips for success

1. **Prepare for the conversation.** Complete the assigned reading before class and arrive with at least one question, puzzle, or claim that you want to discuss.
2. **Be present and participate.** Lectures depend on discussion, and labs depend on hands-on work. Listening carefully, asking questions, testing ideas, and responding to classmates are all forms of useful participation.
3. **Ask questions.** Ask about the reading, the historical setting, the statistical reasoning, the code, and anything else that is unclear. In particular, keep asking what problem a method was meant to solve and which assumptions made it seem sensible.
4. **Treat homework and labs as investigations.** Start early enough to compare choices, debug R code, and explain what a result means rather than merely producing an answer.
5. **Ask for help and stay current.** The historical and statistical ideas build across readings, discussions, and labs. Do not let a confusing idea or technical problem sit unanswered.

Getting help

Questions are encouraged in class, immediately after class, during dinner, in lab, in office hours, through the Canvas discussion forum, and by email. Ask early and ask often: a question that feels basic is frequently useful to the whole class. The Canvas discussion forum is a good place for course questions whose answers may help other students. The instructors can help with historical arguments, statistical ideas, assignments, and R. If a question is personal, sensitive, or grade-specific, email an instructor rather than posting it to the forum or raising it in another group setting.

Course content

Lectures

Lectures are interactive and discussion-heavy. We are interested in understanding the thinking that led to the development of different statistical tools and techniques, rather than treating those tools as finished formulas to memorize. Students are expected to complete the reading and contribute questions, interpretations, and disagreements. Our role as instructors is to guide the discussion and provide relevant historical, mathematical, and computational insights that complement the reading.

Labs

Labs are hands-on sessions in which students work with historical data and reproduce, vary, or critique analyses discussed in lecture. A lab will usually begin with a brief introduction, followed by supported time to work through the exercise in R. There may be time to begin the homework after the lab exercise is complete. Bring a charged laptop to every lab. Completed labs are submitted through GitHub.

Grading

Assessment	Weight
Lab attendance	5%
Lab completion	5%
Homework	20%
Homework presentation in class	10%
Class discussion lead	10%
General class discussion	10%
Quiz	10%
Final project	30%
Total	**100%**

The lowest homework score will be dropped automatically. The remaining homework scores will be averaged and reweighted to the full 20% homework category. Detailed prompts and grading criteria for assignments, presentations, discussion leadership, the quiz, and the final project will be provided separately.

Course policies

Duke Community Standard

As a student in this course, you are expected to uphold the Duke Community Standard and the course-specific expectations below.

Academic honesty

TL;DR: Do not cheat. Submitted work must represent your own understanding. Acknowledge all collaborators, sources, data, code, and substantive use of computational or generative tools.

Collaboration

Only work explicitly designated as collaborative may be completed jointly. On individual work, you may discuss ideas and approaches with classmates unless an assignment says otherwise, but you may not share or copy code, prose, answers, or files. Work assigned to a group may be developed with that group only. Always acknowledge permitted collaboration.

Online resources

Unless an assignment explicitly limits their use, you may consult online resources. Cite any code, language, or ideas that you use directly or as inspiration. Online resources should help you understand and complete the work, not substitute for your own reasoning. Unacknowledged borrowed material is plagiarism.

Generative artificial intelligence

Treat generative AI as an online resource. Its use in this course is governed by two principles:

1. **Cognitive responsibility:** Working with AI should support your thinking and learning, not replace them.
2. **Ethical responsibility:** Be transparent about your use of AI and make sure that it complies with academic-integrity expectations.

AI tools for code

You may use AI to ask coding questions or debug code unless an assignment says otherwise. First make a genuine attempt yourself. Verify the output and revise anything you use so that it reflects your understanding and conforms to the course's notation, terminology, and style. Do not copy and paste an assignment prompt into an AI tool; formulate your own question, and do not ask AI to complete the work for you. You must be able to explain every line of code that you submit.

AI tools for narrative

Unless an assignment explicitly permits it, do not use AI to generate narrative text that you then submit, whether copied verbatim or edited first. Submitted prose should express your own reasoning and voice.

AI tools for learning

You are welcome to ask AI tools questions that help you learn. Evaluate their answers critically: AI output may be inaccurate, misleading, or based on assumptions that do not fit the historical problem. Use AI to supplement your understanding, not as a substitute for it.

For every exercise or submission materially informed by AI, identify the tool and model, record the date used, and provide a link to the complete relevant transcript beginning with your prompt. You remain responsible for the accuracy, appropriateness, and integrity of everything you submit. Unacknowledged AI-generated code or prose will be treated as an academic-integrity violation.

If you are uncertain whether a resource or form of assistance is permitted, ask an instructor before submitting the work.

If the academic-honesty policy is violated

Violations will result in no credit for the relevant portion or the entire assignment. They may also result in a further reduction to the overall course grade and may be reported to the Office of Student Conduct and Community Standards for additional action.

Late work and extensions

Deadlines help the class remain in sequence and allow the instructors to provide timely feedback, but the course includes limited flexibility:

- Your lowest homework score will be dropped automatically. The remaining homework scores will be averaged and reweighted to the full homework category.
- You may submit up to two assignments—labs, homework, or one of each—late without penalty. Each must be submitted within two calendar days of its deadline.

If circumstances exceed these allowances, contact either instructor as soon as possible to discuss an extension. Additional extensions require an arrangement with the instructors. These rules do not replace approved accommodations or university-authorized absences.

Regrade requests

If you believe a grade contains a calculation or marking error, send a written request to either instructor within one week after the work is returned. Identify the specific item and briefly explain the suspected error. Regrade requests are not a way to negotiate the number of points deducted or to ask for clarification about feedback; bring those questions to office hours or email.

A regrade may include a review of the entire submission, so the resulting grade may increase, decrease, or remain unchanged. Requests cannot be considered after final course grades have been submitted.

Attendance policy

Every lecture includes discussion that is central to the course, so students are expected to attend and participate in every class meeting. You may miss up to two class meetings without penalty to the general-discussion grade. This allowance does not excuse a scheduled discussion lead, presentation, quiz, or assignment.

Attendance is also required in lab. You may miss up to two labs without penalty to the lab-attendance grade, but missing a lab does not remove the associated lab-completion requirement. A lab that is both missed and submitted late uses one lab-absence allowance and one of the two shared late-submission allowances. If you miss a meeting, you are responsible for reviewing the posted material and catching up before the next class.

Students whose circumstances go beyond these allowances should contact an instructor. Approved accommodations and university-authorized absences continue to apply.

Lecture recordings

The classroom does not support lecture recording, so recordings will not be available. Posted materials cannot fully reproduce the discussions that take place in class. If you miss a meeting, consult the course materials and contact classmates or the instructors for help catching up. Approved accessibility needs will be addressed individually.

Accommodations

Academic accommodations

Students who need disability-related accommodations should register with the Student Disability Access Office (SDAO) and provide the required documentation. SDAO will determine appropriate accommodations and issue a Professor Accommodation Letter. Accommodations are not retroactive and cannot be implemented until the instructors receive that letter. For more information, email sdao@duke.edu or visit Duke Access and Accommodation Services.

Religious accommodations

University policy permits students to be absent from class to observe a religious holiday. Trinity College of Arts & Sciences and the Pratt School of Engineering have established procedures for notifying instructors about these absences. Please notify the instructors and complete the required request near the beginning of the semester so that suitable arrangements can be made well in advance. The policy and notification procedure are available from Trinity College of Arts & Sciences.