Syllabus

Click here to download a PDF of the syllabus.

Course info

Lecture	Section 01	Mon & Wed 10:15 - 11:30 am	Reuben-Cooke 130
	Section 02	Mon & Wed 3:30 - 4:45pm	Social Sciences 136
Lab	Lab 01	Thu 3:30 - 4:45pm	Perkins Link #5
	Lab 02	Thu 5:15 - 6:30pm	Perkins Link #5
	Lab 03	Fri 12 - 1:15pm	Perkins Link #5
	Lab 04	Fri 1:45 - 3pm	Old Chemistry 003

Course Learning Objectives

By the end of the semester, you will be able to…

- analyze real-world data to answer questions about multivariable relationships.
- fit and evaluate linear and logistic regression models.
- assess whether a proposed model is appropriate and describe its limitations.
- use Quarto to write reproducible reports and GitHub for version control and collaboration.
- communicate results from statistical analyses to a general audience.

Course community

Duke Community Standard

As a student in this course, you have agreed to uphold the Duke Community Standard as well as the practices specific to this course.

Inclusive community

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity and in alignment with Duke's Commitment to Diversity and Inclusion. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

Furthermore, I would like to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities. To help accomplish this:

- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. If you prefer to speak with someone outside of the course, your academic dean is an excellent resource.
- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please let me or a member of the teaching team know.

Accessibility

If there is any portion of the course that is not accessible to you due to challenges with technology or the course format, please let me know so we can make appropriate accommodations.

The Student Disability Access Office (SDAO) is available to ensure that students are able to engage with their courses and related assignments. Students should be in touch with the Student Disability Access Office to request or update accommodations under these circumstances.

Communication

All lecture notes, assignment instructions, an up-to-date schedule, and other course materials may be found on the course website, sta210-fa22.netlify.app.

Announcements will be emailed through Sakai Announcements periodically. Please check your email regularly to ensure you have the latest announcements for the course.

Getting help in the course

- If you have a question during lecture or lab, feel free to ask it! There are likely other students with the same question, so by asking you will create a learning opportunity for everyone.
- The teaching team is here to help you be successful in the course. You are encouraged to attend *office hours*[1] to ask questions about the course content and assignments. Many questions are most effectively answered as you discuss them with others, so office hours are a valuable resource. You are encouraged to use them!
- Outside of class and office hours, any general questions about course content or assignments should be posted on the class discussion forum Ed Discussion. There is a chance another student has already asked a similar question, so please check the other posts in Ed Discussion before adding a new question. If you know the answer to a question posted in the discussion forum, you are encouraged to respond!

Email

If there is a question that's not appropriate for the public forum, you are welcome to email me directly. **If you email me, please include "STA 210" in the subject line.** Barring extenuating circumstances, I will respond to STA 210 emails within 48 hours Monday - Friday. Response time may be slower for emails sent Friday evening - Sunday.

Check out the Support page for more resources.

Textbook

While there is no official textbook for the course, readings will primarily be assigned from the following texts (all freely available online).

- R for Data Science by Garret Grolemund and Hadley Wickham

- Introduction to Modern Statistics by Mine Çetinkaya-Rundel and Johanna Hardin

- Tidy modeling with R by Max Kuhn and Julia Silge

- Beyond Multiple Linear Regression by Paul Roback and Julie Legler

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[1]Office hours are times the teaching team set aside each week to meet with students. Click here to learn more about how to effectively use office hours.

Lectures and labs

The goal of both the lectures and the labs is for them to be as interactive as possible. My role as instructor is to introduce you new tools and techniques, but it is up to you to take them and make use of them. A lot of what you do in this course will involve writing code, and coding is a skill that is best learned by doing. Therefore, as much as possible, you will be working on a variety of tasks and activities throughout each lecture and lab. You are expected to prepare for lectures by completing assigned readings, attend all lecture and lab sessions, and meaningfully contribute to in-class exercises and discussion. Additionally, some lectures will feature application exercises that will be graded for completion.

You are expected to bring a laptop, tablet, or Chromebook to each class so that you can take part in the in-class exercises. Please make sure your device is fully charged before you come to class as the number of outlets in the classroom will not be sufficient to accommodate everyone.

Teams

You will be assigned to a team at the beginning of the semester. You are encouraged to sit with your teammates in lecture and you will also work with them in the lab sessions. All team members are expected to contribute equally to the completion of the labs and project and you will be asked to evaluate your team members throughout the semester. Failure to adequately contribute to an assignment will result in a penalty to your mark relative to the team's overall mark.

You are expected to make use of the provided GitHub repository as their central collaborative platform. Commits to this repository will be used as a metric (one of several) of each team member's relative contribution for each project.

Activities & Assessment

You will be assessed based on six components: application exercises, homework, labs, exams, project, and teamwork.

Application Exercises

Parts of some lectures will be dedicated to working on Application Exercises (AEs). These exercises which give you an opportunity to practice apply the statistical concepts and code introduced in the prepare assignment. These AEs are due within three days of the corresponding lecture period. Specifically, AEs from Monday lectures are due Thursday by 11:59p ET, and AEs from Wednesday lectures are due Saturday by 11:59p ET.

Because these AEs are for practice, they will be graded based on completion, i.e., a good-faith effort has been made in attempting all parts. Successful on-time completion of at least 80% of AEs will result in full credit for AEs in the final course grade.

Labs

In labs, you will apply the concepts discussed in lecture to various data analysis scenarios, with a focus on the computation. Most lab assignments will be completed in teams, and all team members are expected to contribute equally to the completion of each assignment. You are expected to use the team's Git repository on the course's GitHub page as the central platform for collaboration. Commits to this repository will be used as a metric of each team member's relative contribution for each lab, and there will be periodic peer evaluation on the team collaboration. Lab assignments will be completed using Quarto, correspond to an appropriate GitHub repository, and submitted for grading in Gradescope.

The lowest lab grade will be dropped at the end of the semester.

Homework

In homework, you will apply what you've learned during lecture and lab to complete data analysis tasks. You may discuss homework assignments with other students; however, homework should be completed and submitted individually. Similar to lab assignments, homework must be typed up using Quarto and GitHub and submitted as a PDF in Gradescope.

One homework assignment will be dedicated to a *statistics experience*. The statistics experience is an opportunity to engage with statistics and data science outside of the classroom through podcasts, books, seminars, data analysis competitions, and other activities. As you complete these experiences, the goal is to consider how the material you're learning in the course connects with society more broadly.

The lowest homework grade will be dropped at the end of the semester.

Exams

There will be two take-home, open-note exams. Through these exams you have the opportunity to demonstrate what you've learned in the course thus far. The exams will focus on both conceptual understanding of the content and application through analysis and computational tasks. The content of the exam will be related to the content in reading assignments, lectures, application exercises, homeworks, and labs. More detail about the exams will be given during the semester.

Project

The purpose of the final project is to apply what you've learned throughout the semester to analyze an interesting data-driven research question. The project will be completed with your lab teams, and each team will present their work in video and in writing during the final exam period. More information about the project will be provided during the semester.

Grading

The final course grade will be calculated as follows:

Category	Percentage
Homework	35%
Final project	15%
Lab	15%
Exam 01	15%
Exam 02	15%
Application Exercises	2.5%
Teamwork	2.5%

The final letter grade will be determined based on the following thresholds:

Letter Grade	Final Course Grade
A	>= 93
A-	90 - 92.99
B+	87 - 89.99
B	83 - 86.99
B-	80 - 82.99
C+	77 - 79.99
C	73 - 76.99
C-	70 - 72.99
D+	67 - 69.99
D	63 - 66.99
D-	60 - 62.99
F	< 60

Five tips for success

Your success on this course depends very much on you and the effort you put into it. The course has been organized so that the burden of learning is on you. Your TAs and I will help

you be providing you with materials and answering questions and setting a pace, but for this to work you must do the following:

1. Complete all the preparation work before class.

2. Ask questions. As often as you can. In class, out of class. Ask me, ask the TAs, ask your friends, ask the person sitting next to you. This will help you more than anything else. If you get a question wrong on an assessment, ask us why. If you're not sure about the homework, ask. If you hear something on the news that sounds related to what we discussed, ask. If the reading is confusing, ask.

3. Do the readings.

4. Do the homework and lab.The earlier you start, the better. It's not enough to just mechanically plow through the exercises. You should ask yourself how these exercises relate to earlier material, and imagine how they might be changed (to make questions for an exam, for example.)

5. Don't procrastinate. The content builds upon what was taught in previous weeks, so if something is confusing to you in Week 2, Week 3 will become more confusing, Week 4 even worse, etc. Don't let the week end with unanswered questions. But if you find yourself falling behind and not knowing where to begin asking, come to office hours and work with a member of the teaching team to help you identify a good (re)starting point.

Course policies

Academic honesty

TL;DR: Don't cheat!

All students must adhere to the Duke Community Standard(DCS): Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, and accountability. Citizens of this community commit to reflect upon these principles in all academic and non-academic endeavors, and to protect and promote a culture of integrity.

To uphold the Duke Community Standard, students agree:

- I will not lie, cheat, or steal in my academic endeavors;
- I will conduct myself honorably in all my endeavors;and
- I will act if the Standard is compromised.

Regardless of course delivery format, it is the responsibility of all students to understand and follow all Duke policies, including academic integrity(e.g., completing one's own work, following proper citation of sources,adhering to guidance around group work projects,and more).Ignoring these requirements is a violation of the Duke Community Standard. Any questions and/or concerns regarding academic integrity can be directed to the Office of Student Conduct and Community Standards at conduct@duke.edu.

Collaboration policy

Only work that is clearly assigned as team work should be completed collaboratively.

- The homework assignments must be completed individually and you are welcomed to discuss the assignment with classmates at a high level (e.g., discuss what's the best way for approaching a problem, what functions are useful for accomplishing a particular task, etc.). However you may not directly share answers to homework questions (including any code) with anyone other than myself and the teaching assistants.

- You may not discuss or otherwise work with others on the exams. Unauthorized collaboration or using unauthorized materials will be considered a violation for all students involved. More details will be given closer to the exam date.

- For the projects and team labs, collaboration within teams is not only allowed, but expected. Communication between teams at a high level is also allowed however you may not share code or components of the project or team labs across teams.

- **Reusing code**: Unless explicitly stated otherwise, you may make use of online resources (e.g. StackOverflow) for coding examples on assignments. If you directly use code from an outside source (or use it as inspiration), you must explicitly cite where you obtained the code. Any recycled code that is discovered and is not explicitly cited will be treated as plagiarism.

Late work policy

The due dates for assignments are there to help you keep up with the course material and to ensure the teaching team can provide feedback within a timely manner. We understand that things come up periodically that could make it difficult to submit an assignment by the deadline. Note that the lowest homework and lab assignment will be dropped to accommodate such circumstances.

- Homework and labs may be submitted up to 3 days late. There will be a 5% deduction for each 24-hour period the assignment is late.

- There is no late work is accepted for application exercises, since these are designed to help you prepare for labs and homework.

- The late work policy for exams will be provided with the exam instructions.

- The late work policy for the project will be provided with the project instructions.

Waiver for extenuating circumstances

If there are circumstances that prevent you from completing a lab or homework assignment by the stated due date, you may email Professor Tackett before the deadline to waive the late penalty. In your email, you only need to request the waiver; you do not need to provide explanation. This waiver may only be used for once in the semester, so only use it for a truly extenuating circumstance.

If there are circumstances that are having a longer-term impact on your academic performance, please let your academic dean know, as they can be a resource. Please let Professor Tackett know if you need help contacting your academic dean.

Regrade Requests

Regrade requests must be submitted on Gradescope within a week of when an assignment is returned. Regrade requests will be considered if there was an error in the grade calculation or if you feel a correct answer was mistakenly marked as incorrect. Requests to dispute the number of points deducted for an incorrect response will not be considered. Note that by submitting a regrade request, the entire question will be graded which could potentially result in losing points.

No grades will be changed after the final project presentations.

Class recordings request

Lectures will be recorded on Panopto and will be made available to students with an excused absence upon request. Videos shared with such students will be available for a week. To request a particular lecture's video, please fill out the form at https://forms.gle/NUd12PimLvLR1ghM7.

Please also make sure that any official documentation, such as STINFs, Dean's excuses, NO-VAPs, and quarantine/removal from class notices from student health are also uploaded to the form.

About one week before each exam, the class recordings will be available to all students. These videos will be available until the exam deadline.

Attendance policy

- **COVID Symptoms, Exposure, or Infection:** Student health, safety, and well-being are the university's top priorities. To help ensure your well-being and the well-being of those around you, please do not come to class if you have tested positive for COVID-19or have possible symptoms and have not yet been tested.If any of these situations apply to you, you must follow university guidance related to the ongoing COVID-19 pandemic and current health and safety protocols. If you are experiencing any COVID-19 symptoms, contact student health (dshcheckin@duke.edu, 919-681-9355). Learn more about current university policy related to COVID-19 at coronavirus.duke.edu.

- **Religious accommodations:** Students are permitted by university policy to be absent from class to observe a religious holiday. Accordingly, Trinity College of Arts & Sciences and the Pratt School of Engineering have established procedures to be followed by students for notifying their instructors of an absence necessitated by the observance of a religious holiday. Please submit requests for religious accommodations at the beginning of the semester so that we can work to make suitable arrangements well ahead of time. You can find the policy and relevant notification form here: trinity.duke.edu/undergraduate/academic-policies/religious-holidays

Academic and wellness support

Academic Resource Center

There are times may need help with the class that is beyond what can be provided by the teaching team. In those instances, I encourage you to visit the Academic Resource Center. The Academic Resource Center (ARC) offers free services to all students during their undergraduate careers at Duke. Services include Learning Consultations, Peer Tutoring and Study Groups, ADHD/LD Coaching, Outreach Workshops, and more. Because learning is a process unique to every individual, they work with each student to discover and develop their own academic strategy for success at Duke. Contact the ARC to schedule an appointment. Undergraduates in any year, studying any discipline can benefit! Contact ARC@duke.edu, 919-684-5917.

CAPS

Duke Counseling & Psychological Services (CAPS) helps Duke Students enhance strengths and develop abilities to successfully live, grow and learn in their personal and academic lives. CAPS recognizes that we are living in unprecedented times and that the changes, challenges and stressors brought on by the COVID-19 pandemic have impacted everyone, often in ways that are tax our well-being. CAPS offers many services to Duke undergraduate students, including brief individual and group counseling, couples counseling and more. CAPS staff also

provides outreach to student groups, particularly programs supportive of at-risk populations, on a wide range of issues impacting them in various aspects of campus life. CAPS provides services to students via Telehealth. To initiate services, you can contact their front desk at 919-660-1000.

Important dates

- **Aug 29:** Classes begin
- **Sep 9**: Drop/add ends
- **Oct 10 - 11**: Fall break
- **Nov 11** Last day to withdraw with W
- **Nov 23 - 25:** Thanksgiving recess
- **Dec 9**: Classes end
- **Dec 10 - 13** Reading period
- **Dec 14 - 19**: Final exams

Click here for the full Duke academic calendar.