CHRISTOPHER G. PRENER, PH.D.

SYLLABUS

SOC 4930 & SOC 5050: QUANTITATIVE ANALYSIS - APPLIED INFERENTIAL STATISTICS

FALL, 2017
SAINT LOUIS UNIVERSITY

Basics

Course Meeting Times

Mondays, 4:15pm to 7:00pm
3600 Morrissey (GeoSRI Lab)

Course Website

https://slu-soc5050.github.io

Chris's Information

Office: 1918 Morrissey Hall
Email: prenercg@slu.edu
GitHub: `@chris-prener`
Slack: `@chris`

Office Hours:

- Mondays, 7:00pm to 7:30pm in 3600 Morrissey (GeoSRI Lab)
- Wednesdays, 3:00pm to 4:00pm in 3600 Morrissey (GeoSRI Lab)
  then 4:00pm to 5:00pm in 1918 Morrissey (Office)

Course Introduction

Figures often beguile me, particularly when I have the arranging of them myself; in which case the remark attributed to Disraeli would often apply with justice and force: 'There are three kinds of lies: lies, damned lies, and statistics'.
Mark Twain (1906)

Course Description

This course provides an introduction to applied statistical analysis for both undergraduate and graduate students with an emphasis placed on statistical techniques that are most common in the sociological literature. The statistical techniques introduced include measures of central tendency and dispersion as well as measures of bivariate association. Multivariate statistical analyses are also introduced along with essential skills for cleaning data, creating plots, and reporting results. While the examples may be specific to the social sciences, the theories and skills that are covered are broadly applicable across academic disciplines.

Course Objectives

This course has four intertwined objectives. After completing the course, students will be able to:

1. *Fundamentals of inferential statistics*: Describe the use of various statistical tests, their requirements and assumptions, and their interpretation; execute these tests both by hand and programmatically using `R`.
2. *Fundamentals of data analysis*: Perform basic data cleaning and analysis tasks programmatically using `R` in ways that support high quality documentation and replication.
3. *Fundamentals of data visualization*: Create and present publication quality plots programmatically using `R` and `ggplot2`.

4. *Quantitative research synthesis*: Plan, implement (using R), and present (using LaTeX and the presentation software of your choice) a research project that uses linear regression to answer a research question.

Core Resources

There are four core documents and resources for this course. This **Syllabus** sets out core expectations and policies for the course. The **Reading List** contains topics, readings (both required and optional), and assignment due dates for each week. These two documents spell out what is *required* for this course. Both of these course documents are available in the `Core-Documents` repository on GitHub.[1]

The **User's Guide** is a companion document that is written with the aim of helping you be *successful* in this course. The idea behind a course User's Guide is to create a reference for many of the intangible, subtle or disparate skills and ideas that contribute to being a successful researcher. It is designed to be a living document and is therefore available on the course's website.[2]

Finally, we will use GitHub's wiki tool to maintain a **Course Wiki** throughout the semester. I will use this as a place to post weekly jotters that provide links to more information, descriptions of issues that are arising with particular parts of the course, and course related announcements. Our wiki will be associated with the `Core-Documents` repository on GitHub.

[1] GitHub is a website designed for collaboratively working on programming and data analysis projects. It is described briefly below (see page 7) and in more detail in the **User's Guide**.

[2] The url of the website is https://slu-soc5050.github.io. A `.pdf` version of the **User's Guide** is also available for students wishing to download a physical copy.

Readings

There are three books required for this course with an optional fourth book. Each book has been selected to correspond with one or more of the course objectives. The books are:

1. David Freedman, Robert Pisani, and Roger Purves (2014). *Statistics*. New York, NY: WW Norton & Company.
2. Charles Wheelan (2013). *Naked statistics: stripping the dread from the data*. New York, NY: WW Norton & Company.
3. Hadley Wickham and Garrett Grolemund (2016). *R for data science*. Sebastopol, CA: O'Reilly.[3]
4. Yihui Xie (2015). *Dynamic Documents with R and knitr*. Boca Raton, FL: CRC Press. (**recommended, not required**)[4]

I do not require students to buy physical copies of texts. You are free to select a means for accessing these texts that meets your budget

[3] The material is also available in a website format here.

[4] This is recommended, but not required, for students who believe that they will continue working with R after the end of the semester.

and learning style. If ebook editions (e.g. Kindle, iBooks, `pdf`, etc.) of texts are available, they are acceptable for this course. All texts should be obtained in the edition noted above.

All readings are listed on the **Reading List** and should be completed before the course meeting on the week in which they are assigned. Full text versions of most readings not found in the books assigned for the course can be obtained using the library's Electronic Reserves system. The password for the Electric Reserves will be posted on Slack at the beginning of the semester.[5]

[5] Slack is a messaging service designed for group communication. It is described briefly below (see page 7) and in more detail in the **User's Guide**.

GitHub

The majority of course content (sample code, documentation, assignments, and some readings) for this course will be made available using **GitHub**.[6] GitHub is a website used by programmers, data analysts, and researchers to share computer code and projects. GitHub will also be used for assignment submission and feedback. In addition to providing us with platform for hosting course content, using GitHub will give you experience in some of the techniques that researchers use to conduct both open-source and collaborative research.

[6] You will need to sign-up for a free GitHub account and then become a member of the SOC 4930/5050 course organization at the beginning of the semester. A complete introduction to GitHub and how we'll use it is provided in the **User's Guide**.

Slack

We will be utilizing the communication service **Slack** to stay in touch.[7] Slack allows me to post announcements and updates about the course that you will receive alerts to. Any changes to our course GitHub repositories will also be posted there automatically. Slack will also provide us with a space to host virtual office hours. This allows students to monitor the types of questions and issues that are arising, and learn from each other's experiences. Slack can be accessed via a web browser or you can optionally install mobile as well as desktop applications available for both Windows and macOS.

[7] A complete introduction to Slack and how we'll use it is provided in the **User's Guide**.

Software

R and RStudio

The primary tool we will use for data manipulation and analysis is the programming language R. R is open-source, freely available, and highly extensible analysis environment. We'll use RStudio as the "front end" for our analyses. RStudio makes it easier to write R code and to produce well documented analyses. Like the R programming

language itself, RStudio is freely available.[8] Both R and RStudio are available in 3600 Morrissey (GeoSRI Lab), and can be easily downloaded and installed on both Windows and macOS computers.[9]

[8] Please be aware that there is a paid version of RStudio - this is designed for corporations and not single users. There is no need to pay for RStudio!

[9] Details on setting up R and RStudio are included in the **User's Guide**.

Atom

You will also need a text editor for this class. One of the best free text editors is Atom. We will use Atom for spell checking files written in RStudio and for writing in a markup language called Markdown.[10] Markdown is the "official" language for writing documentation on GitHub, and you will use it for formatting written responses to assignments and research files. Atom is available for both Windows and macOS, and can be easily installed on lab computers in 3600 Morrissey (GeoSRI Lab).[11]

[10] Markup languages are used to specify how outputted text will look, as opposed to "what-you-see-is-what-you-get" editors like Microsoft Word that allow you to format your text as you write.

[11] Details on setting up Atom and writing in Markdown are included in the **User's Guide**.

GitHub Desktop

You will need another free application called GitHub Desktop (website). This program allows you to easily copy data from GitHub onto your computer. It also makes it easy to upload files like labs and problem sets to GitHub. It is available for both Windows and macOS, and can be easily installed on lab computers in 3600 Morrissey (GeoSRI Lab).[12]

[12] Details on setting up GitHub Desktop are included in the **User's Guide**.

ShareLaTeX

Finally, we'll use a free web service called ShareLaTeX to create documents using the markup language LaTeX. Students' final projects will need to incorporate LaTeX deliverables. While LaTeX can be downloaded and installed, learning LaTeX online takes away some of the initial challenges with getting a LaTeX installation up and running. It will also allow me to help trouble-shoot issues remotely.[13]

[13] Details on using ShareLaTeX, optionally installing LaTeX locally, and writing in LaTeX are included in the **User's Guide**.

Data

I will make most of the required data available on Dropbox[14] in a single `.zip` file.[15] These data should be downloaded and extracted as soon as possible after the start of the semester. I will also release some example data as an R package that you will need to download and install. Packages are small programs containing data and code that extend R's functionality. Seeding some data this way will make loading data for in-class examples easier and quicker.

[14] Dropbox is a cloud storage service. You do not need a Dropbox account to download these data. However, I *highly* recommend obtaining a free account and using Dropbox to store files instead of keeping them stored locally on your computer. This should be one element of your strategy for protecting your work, something which is discussed further in the **User's Guide**.

[15] `.zip` files are compressed file directories. Details on working with these files are included in the **User's Guide**.

Course Expectations and Policies

General Expectations for Students

My priority is that class periods are productive learning experiences for all students. In order to foster this type of productive environment, I ask students to follow a few policies:

1. Arrive to class on time and stay for the entire class period.[16]
2. Silence *all* electronic devices before entering the classroom.
3. Do not engage in side conversations. This is disrespectful to the speaker (whether me or a classmate), and can affect the ability of others in the class to learn.
4. Be respectful of your fellow classmates. Do not interrupt when someone is speaking, monopolize the conversation, or belittle the ideas or opinions of others.
5. Complete the assigned readings for each class in advance, and come prepared with discussion points and questions.

[16] If you drive to campus, please get an on-campus parking pass for the semester or use a smartphone app to top off your meter. Leaving class to feed your meter is disruptive for both you and your classmates.

Attendance and Participation

Attendance and participation are important components of this course since we only meet once a week. Students are expected to attend all class sessions; missing even one class can create a significant roadblock for many students. Making up missed classes are your responsibility. Please let me know if you will be missing class so that we can touch base about any assignments, and make sure to obtain notes from a classmate. I do post slides to GitHub, but my slides are intended only to serve as references. Please note that lectures and discussions cannot be recorded by any means (e.g. audio or video recordings, or photographs) without my permission.

Communication

Slack[17] and email are my preferred methods of communication.

[17] More details about Slack and instructions for how to use it are available in the **User's Guide**.

I am on Slack during workday hours, though I may be "away" during meetings and while I teach my other class. I also may have limited availability on Tuesdays, a day that I am not typically on-campus. I will also monitor Slack during weekday evening hours and will respond to messages if I am able. Likewise, I dedicate time to email responses each workday, meaning that my response time is typically within 24 hours during the workweek. Please use your SLU email account when emailing me.

For both email and Slack, if you have not received a response from me after 48 hours (or by end of business on Monday if you messaged me over the weekend), please follow-up to ensure that your message did not get lost in the shuffle.

All messages regarding course updates, assignments, and changes to the class schedule, including cancellations, will be posted on the `_news` channel in Slack. Changes to the class schedule, including cancellations, will also sent to your SLU email account. It is imperative that you check both Slack and your SLU email account regularly.

Please also ensure that all concerns or questions about your standing in the course are directed to me immediately. Inquires from parents, SLU staff members, and others will not be honored.

Electronic Devices

During class periods, students are asked to refrain from using electronic devices (including cell phones) for activities not directly related to the course. For this class, I expect students to limit their use of electronic devices to accessing course software, readings, and notes.

There is evidence that using electronic devices during lectures results in decreased retention of course content [18] and lower overall course performance.[19] Students who are not using a laptop but are in direct view of another student's laptop also have decreased performance in courses.[20] Conversely, students who take notes the "old fashioned way" have better performance on tests compared to students who take notes on laptops.[21]

I therefore ask students to be conscious of how they are using their devices, the ways such use impacts their own learning, and the effect that it may have on others around them. I reserve the right to alter this policy if electronic device use becomes problematic during the semester.

[18] Hembrooke, Helene and Geri Gay. 2003. "The Laptop and the Lecture: The Effects of Multitasking in Learning Environments". *Journal of Computing in Higher Education* 5(1): 46-64.

[19] Fried, Carrie. 2008. "In-class laptop use and its effects on student learning". *Computers & Education* 50(3): 906-914.

[20] Sana, Faria et al. 2013. "Laptop Multitasking Hinders Classroom Learning for Both Users and Nearby Peers". *Computers & Education* 62: 24-31.

[21] Mueller, Pam and Daniel Oppenheimer. 2014. "The Pen Is Mightier Than the Keyboard Advantages of Longhand Over Laptop Note Taking". *Psychological Science* 25(6): 1159-1168.

Student Support

If you meet the eligibility requirements for **academic accommodations** through the Disability Services office (located within the Student Success Center), you should arrange to discuss your needs with me after the first class. All discussions of this nature are treated confidentially, and I will make every effort to work with you to come up with a plan for successfully completing the course requirements. Please note that I will not provide accommodations to students who are not working with Disability Services.[22]

If you are a **student-athlete** who is in-season, you should discuss your game schedule with me after the first class and share your travel letter with me as soon as you have a copy. You are reminded that games and tournaments are not excuses for failing to complete assignments, and that NCAA rules prohibit student-athletes from missing classes for practice. Low grades that jeopardize eligibility must be addressed immediately by you, not by a coach or academic coordinator.[23]

I also encourage you to take advantage of the **University Writing Services (UWS) program**. Getting feedback benefits writers at all skill levels and the quality of your writing will be reflected in assignment grades. The UWS has trained writing consultants who can help you improve the quality of your written work. UWS's consultants are available to address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources.[24]

[22] Additional details can be found on the Disability Services website. You can contact them at disability_services@slu.edu or 314-977-3484 to schedule an appointment.

[23] More information about resources and academic support for student-athletes can be found at the Student-Athlete Academic Support Services website.

[24] More information on the UWS program can be found on their website. The UWS program has a number of on-campus locations.

Academic Honesty

All students should familiarize themselves with Saint Louis University's policies concerning cheating, plagiarism, and other academically dishonest practices:[25]

> *Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.*

Any work that is taken from another student, copied from printed material, or copied the internet without proper citation is expressly

[25] This course is also governed by the College of Arts and Sciences' academic honesty policies, which are available on their website.

prohibited. Note that this includes all computer code written for class assignments - each student is expected to author and de-bug their own code.[26] All relevant assignments should include in-text citations and references formatted using the American Sociological Association (ASA) or the American Psychological Association (APA) style guidelines. Any student who is found to have been academically dishonest in their work risks failing both the assignment and this course.

[26] See the **User's Guide** for details on collaboration with your colleagues.

Title IX

All students should familiarize themselves with Saint Louis University's polices on bias, discrimination, and harassment:

> *Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX Coordinator, Anna R. Kratky (DuBourg Hall, Room 36; akratky@slu.edu); 314-977-3886) and share the basic facts of your experience with her. The Title IX coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.*
>
> *If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-977-TALK.*

Consistent with the above policy, I will forward all reports of inappropriate conduct to the Title IX Coordinator's office. Please also be aware that communications over various online systems, including (but not limited to) Slack, GitHub, ShareLaTeX, and Google Apps, are also covered by this policy.

Course Assignments and Grading

Assignments

Attendance and Participation (10%)

As discussed above, both attendance and participation are important aspects of this class. The class participation grade will be based on (a) attendance, (b) level of engagement during lectures and labs, (c) level of engagement on Slack, and (d) class "entry" and "exit tickets".

Weekly Preps (8%)

Before each course meeting, you will need to complete all assigned readings. For a part of these readings, you will also need to complete a textbook exercise.[27] There will be a total of sixteen weekly preps over the course o the semester, each of which is worth 0.5% of your final grade. I will post a YouTube video of me completing the exercise and narrating the process. You should follow along with the video and use it as a guide for completing the exercise yourself. These prep exercises are designed to get you ready for the week's material by exposing you to basic, guided examples before class begins.

Weekly preps are graded using the "check" grading system.[28] Exercise documents will be available in the weekly repositories on GitHub and will detail the deliverables to be submitted to demonstrate completion of the assignment. Replication files that illustrate my approach to each exercise will be posted on GitHub in the `WPReplications` repository once all students have submitted their problem sets.

[27] Think of weekly preps as getting course credit for doing the weekly readings (which you are expected to do anyway!).

[28] See *Grading* on page 17 for details on how this grading scale is applied.

Lab Exercises (16%)

Each course meeting will include time dedicated to practicing the techniques and applying the theories described during the day's lecture. There will be a total of sixteen lab exercises over the course of the semester, each of which is worth approximately 0.63% of your

final grade. These exercises will give you an opportunity to practice skills that correspond with the first three course objectives.[29] Lab exercises will build upon each other, meaning that they will increase in complexity each week.

[29] Think of labs as a low-stakes opportunity to practice specific skills. Their scope will be more limited in comparison to the corresponding week's problem set.

Lab exercises are graded using the "check" grading system.[30] Exercise documents will be available in the weekly repositories on GitHub and will detail the deliverables to be submitted to demonstrate completion of the assignment. Replication files that illustrate my approach to each exercise will be posted in the weekly repositories on GitHub.

[30] See *Grading* on page 17 for details on how this grading scale is applied.

Lab exercises will be completed in small workgroups, though each student is expected to turn in the required deliverables. We will assign students to workgroups and may shuffle their composition over the course of the semester. Completing a lab entails not just successfully submitting the required deliverables but also actively contributing to the group discussions that help to produce them.

Problem Sets (30%)

There will be a total of ten problem sets over the course of the semester, each of which is worth 3% of your final grade. Problem sets will require students to draw on a variety of skills, including cleaning data, performing statistical analyses, producing plots, and reporting results. They are designed to assess your progress with the first three course objectives.[31]

[31] Unlike lab exercises, you should expect problem sets to be more complex and to draw upon previous weeks' skills in a broader way.

Like lab exercises, problem sets will build upon each other. As with labs, students must ensure that they are keeping up with these assignments. Problem set documents will be available in the weekly repositories on GitHub and will detail the deliverables to be submitted to demonstrate completion of the assignment. They will also include a simple rubric describing how each problem set is evaluated.[32] Replication files that illustrate my approach to each exercise will be posted on GitHub in the `PSReplications` repository once all students have submitted their problem sets.

[32] A key aspect of these assignments is not only demonstrating comfort with a particular set of statistical skills, but also demonstrating and evolution in your coding skills as well. The weight given to quality of your code will increase as the semester progresses.

Final Project (36%)

The final project corresponds with the fourth learning outcome. All students will select a set of variables from the 2012 General Social Survey and perform an original data analysis culminating in a series of linear regression models. Each student will be responsible for selecting a research question, establishing a hypothesis, conducting an analysis to test that hypothesis, and presenting the results. This process and project mirrors the steps taken to author a quantitative conference presentation (for all students) and a quantitative journal

article (for students enrolled in SOC 5650). Detailed instructions and rubrics will be made available on GitHub in the `Final-Project` repository.

- All Students:
  Students will be required to submit a brief memo (worth 2%) identifying their topic, a draft research question, and variables of interest on **September 18th**. This will be graded using the "check" grading system.[33] A draft set of presentation slides will be due on **November 13th** and a draft presentation handout will be due on **December 4th**. Final presentations will be due at the class's final exam period on **December 18th** when you will briefly present your findings to your classmates.[34]

- SOC 4930 *only*:
  The draft presentation slides and the draft handout will be graded using the "check" grading system.[35] The final presentation, which should be no more than 5 minutes long, and the final handout will be graded according to the posted rubric. The final project deliverables' grades will be broken down the following way:

SOC 4930 Final Project

Assignment	Weight	Points	Qty.	Total
Memo	2%	20 pts	x1	20 pts
Draft Slides	9%	90 pts	x1	90 pts
Draft Handout	2%	20 pts	x1	20 pts
Final Presentation	18%	180 pts	x1	180 pts
Final Handout	5%	50 pts	x1	50 pts
Total	36%			360 pts

- SOC 5050 *only*:
  The draft presentation slides and the draft handout will be graded using the "check" grading system.[36] The final presentation, which should be no more than 12 minutes long, and the final handout will be graded according to the posted rubric.

  In addition to the presentation, students are expected to complete a final research article of approximately 5000 words. This should be formatted as an empirical journal article, and detailed instructions and a rubric will be provided on GitHub in the `Final-Project` repository. An annotated bibliography with twenty to twenty-five scholarly, peer-reviewed sources is due in class on **October 16th**. A draft paper is due in class on **November**

[33] See *Grading* on page 17 for details on how this grading scale is applied.

[34] Since this is during our finals week session, we will meet from 4:00pm to 5:50pm that evening. The final presentations will take place in Morrissey 27xx.

[35] See *Grading* on page 17 for details on how this grading scale is applied.

[36] See *Grading* on page 17 for details on how this grading scale is applied.

13th. Both the annotated bibliography and the draft paper will be graded using the "check" grading system.[37] The final paper will be due at the presentation session on **December 18th**.

[37] See *Grading* on page 17 for details on how this grading scale is applied.

The final project deliverables' grades will be broken down the following way:

SOC 5050 Final Project

Assignment	Weight	Points	Qty.	Total
Memo	2%	20 pts	x1	20 pts
Draft Slides	4%	40 pts	x1	40 pts
Draft Handout	1%	10 pts	x1	10 pts
Final Presentation	9%	90 pts	x1	90 pts
Final Handout	2%	20 pts	x1	20 pts
Annotated Bib.	4%	40 pts	x1	40 pts
Draft Paper	4%	40 pts	x1	40 pts
Final Paper	10%	100 pts	x1	100 pts
Total	36%			360 pts

Submission and Late Work

Copies of all assignment materials (typically an R Notebook and the corresponding HTML output) should be uploaded to your private assignments repository on GitHub[38] before class on the day that the assignments are due. All assignments will contain details on required deliverables.

[38] See the **User's Guide** for additional details about submitting assignments.

The GitHub submission policy is in place because it facilitates clear, easy grading that can be turned around to you quickly. Submitting assignments in ways that deviate from this policy will result in a late grade (see below) being applied in the first instance and a zero grade for each subsequent instance.

Once the class begins, any assignments submitted will be treated as late. Assignments handed in within 24-hours of the beginning of class will have 15% deducted from the grade. I will deduct 15% per day for the next two 24-hour periods that assignments are late. After 72 hours, I will not accept late work.[39] If you cannot attend class because of personal illness, a family issue, jury duty, an athletic match, or a religious observance, you must contact me beforehand to discuss alternate submission of work.

[39] For this class, this means that all work must be handed in by 4:15pm on the Thursday after the assignment was due.

Extra Credit

From time to time I may offer extra credit to be applied to your final grade. I will only offer extra credit if it is open to the entire class (typically for something like attending a lecture or event on-campus). If I offer extra credit, I will typically require you to submit a short written summary of the activity within a week of the event to obtain the credit. When offered, extra credit opportunities cannot be made-up or substituted if you are unable to attend the event.

Grading

Grades will be included with assignment feedback, which will be disseminated through Github's 'Issues' tool.[40] At midterms and finals, I will upload a summary of all assignment grades to a new 'Issue' on GitHub.[41]

All grades that use a "check" system (the weekly preps, labs, and some aspects of the final project) will be calculated using the following approach. A "check-plus" represents excellent work and will get full credit. A "check" represents satisfactory work and will get 85% of the points available for that assignment. A "check-minus" represents work that needs substantial improvement and will get 75% of the points available for that assignment.

I use a point system for calculating grades. The following table gives the weighting and final point totals for all assignments for this course:

Grading Point System

Assignment	Weight	Points	Qty.	Total
Attendance	10%	100 pts	x1	100 pts
Weekly Preps	8%	5 pts	x16	80 pts
Labs	16%	10 pts	x16	160 pts
Problem Sets	30%	30 pts	x10	300 pts
Final Project	36%	360 pts	x1	360 pts
Total	100%			1,000 pts

All feedback will include grades that represent number of points earned. If you want to know your percentage on a particular assignment, divide the number of points earned by the number of points possible and then multiply it by 100.

Final grades will be calculated by taking the sum of all points earned and dividing it by the total number of points possible (1,000). This will be multiplied by 100 and then converted to a letter grade using the following table:

[40] See the **User's Guide** for additional details about receiving feedback and grades assignments.

[41] If you would like a summary of your grades at any other point, please let me know and I will furnish you with a copy of all current grades.

Final Grading Scale

Grade Point	Letter	Percentage
4.0	A	93.0-100
3.7	A-	90.0-92.9
3.3	B+	87.0-89.9
3.0	B	83.0-86.9
2.7	B-	80.0-82.9
2.3	C+	77.0-79.9
2.0	C	73.0-76.9
1.7	C-	70.0-72.9
1.0	D	63.0-69.9
0.0	F	< 63.0

No chances will be given for revisions of poor grades. Incomplete grades will be given upon request only if you have a "C" average and have completed at least two-thirds of the assignments. You should note that incomplete grades must be rectified by the specified deadline or they convert to an "F".

Course Schedule

Course Overview

Week	Dates	Topics
1	August 28th	Course Introduction
2	September 4th	Working with Data (Part 1)
3	September 11th	Describing Distributions
4	September 18th	Probability and Bayes' Theorem
5	September 25th	Distribution of Random Variables
6	October 2nd	Foundations for Inference
7	October 9th	Difference of Means (Part 1)
8	October 16th	Difference of Means (Part 2)
9	October 23rd	Working with Data (Part 2)
10	October 30th	Correlations (Part 1)
11	November 6th	Correlations (Part 2)
12	November 13th	Introduction to Regression
13	November 20th	Multivariate Regression (Part 1)
14	November 27th	Multivariate Regression (Part 2)
15	December 4th	ANOVA
16	December 11th	Chi-Squared & Course Wrap-up
17	December 18th	Finals Week - Presentations

Planned Online Lectures

This semester, we have twp classes that fall on official university holidays: Labor Day (Week 2, **September 4th**) and Fall Break (Week 9, **October 23rd**). These weeks will have materials assigned for them, which will include lectures posted on YouTube. These lectures will be shorter than typical in-class lectures. Students should view these lectures during that week and complete the associated readings and lab exercises. A link to the video for each lecture will be posted on Slack ahead of time.

Reading List

Please consult the stand-alone **Reading List** document for details on readings and assignments for each week.[42]

[42] All course documents including the **Reading List** are available in the `Core-Documents` repository on GitHub.

Class Progression

Each week will be broken down roughly the same way. Class will begin with any relevant "follow-up" from the previous weeks and relevant announcements. We will then segue into a discussion of an `R` specific topic related to the second learning outcome before spending the majority of class focused on the day's main topic, which will typically be related to the first and sometimes third learning outcomes. Around 6:00pm, we will take a short break. Most classes will end with time dedicated to working through the lab exercise.

Scheduling Notes

The weekly schedule may change as it depends on the progress of the class. However, you must keep up with the reading assignments. In the event of a cancellation due to weather or another disruption, I may alter the weekly schedule.

Since this course only meets once per week, cancellations are particularly disruptive. I will make every effort to schedule make-up classes at a time that works for at least a portion of the class. These class sessions will be recorded and made immediately available using YouTube for students who are unable to attend the make-up class. All students will be responsible for either attending the make-up class or watching the lecture as well as completing all readings, lab assignments, and problem sets for make-up classes.