

# STAT 23400 Spring 2022 Syllabus

## Class Meeting and Instructors

Class Meeting:

Section 1, TR 11:00 AM - 12:20 PM   Instructor: Yier Lin      Email:ylin10@uchicago.edu

Class Location: Eckhart 133

## Teaching assistants

## Course Logistics

We will meet in person for class lectures. We will do zoom for the lab components, as well as the office hours. Please only attend the lecture section that you enrolled in since the progress of each section might be slightly different (though they cover the same material).

Lab materials will be posted on canvas each week. Please first review the lab materials by yourself. Our Lead TA will also go over the Lab materials on zoom in the first 30 minutes during the office hour. The recording of the Lab session will be provided on canvas afterward.

Office hours will be held on Zoom. Zoom links will be available on canvas. See below for Schedule of Office Hours.

Questions can also be posted on **Ed Discussion**, and will be answered the same day if posted before 9pm during a weekday, and next day if posted after 9pm. Questions posted during the weekend shall expect to be answered by Monday.

# Office hour (Zoom link can be found on canvas)

## Office hour of Instructors

Except for special circumstances, please **only** go to the office hour of the instructor for your section.

	Time
Yier Lin	Wed 10:00 - 11:00

## Office hour of TAs

# Course Goals

1. Understand the basic principles of probability, distributions of random variables, expectation and variance, and the Central Limit Theorem.
2. Apply estimation and testing methods to analyze single variables or the relationship between two variables in order to understand natural phenomena and make data-based decisions.
3. Model numerical response variables using a single (or multiple) explanatory variables.
4. Use statistical software to summarize data numerically and visually, and to perform data analysis.
5. Interpret results correctly, effectively, and in context without relying on statistical jargon.
6. Critique data-based claims and evaluate data-based decision

# Course Prerequisite

MATH 13300, 15300, or 16200.

**Note:** Students may count either STAT 22000 or 23400, but not both, toward the forty-two credits required for graduation.

**Should I Take STAT20000, STAT 22000, or STAT 23400?** See the overview and comparison of the 3 courses written by the Director of Undergraduate Studies, Dr. Yibi Huang: <https://www.stat.uchicago.edu/~yibi/IntroStat/>

# Textbook

- OpenIntro Statistics, 4th edition, by Diez, Barr, and Cetinkaya-Rundel. Available for free download at <https://www.openintro.org/book/os/>.
- Modern Mathematical Statistics with Applications. 2nd edition, by Jay L. Devore and Kenneth N. Berk.

The electronic copies of these books have been reserved at the library. You can also download the books from the “Library Reserves” tool bar on Canvas.

# Software – R & RStudio

Both are available for FREE. Review Lab0 on canvas for instructions of installation and a quick overview. If you have trouble installing R or RStudio on your computer, please consider to create a free account at R cloud <https://rstudio.cloud/> and install packages relevant for the assignment.

## R Lab Sessions

The objective of the labs is to give you hands on experience with data analysis using R. The labs will also provide you with tools that you will need to complete the assignments successfully.

R Lab materials will be posted on canvas one week in advance.

The labs are designed to take more than one hour. Please be sure to go over the lab materials by yourself.

Our Lead TA will go over the Lab materials on Zoom in the first 30 minutes during the office hour. The recording of the Lab session will be provided on canvas afterwards.

Lab materials might be relevant to your homework. It is very important to make sure you do the lab session each week. You can ask questions about the R Lab sessions during office hours.

Students are NOT required to submit any lab work (even the “On your Own” part), with exception of those lab problems that appear explicitly on a homework assign.

## Grade Components

Homework (30%) + Midterm (30%) + Final (40%)

One assignment per week. Homework will be posted on Canvas (as well as Gradescope) 4:00 pm Thursday and due next Wednesday 11:59pm. Lowest one HW score will be dropped.

**Final Grade Options:** A Quality Grade (A, A-, B+, B, B-, C+, C, C-, D+, D, or F) will be given unless the student has registered for the grade of R (auditing) or arranges a P/F, I or W grade as outlined below.

A P/F (Pass/Fail) grade may be given upon written request to the instructor (email is fine) before the final exam starts. The grade of P will be awarded only for work of C- quality or better.

## Exam Dates and Policies

The midterm exam will take place in class May 3rd (only go to your section). We will announce the final exam date as soon as the registrar office makes it available. Both exams are expected to take place **in person**.

Please email the instructor as soon as you can should you need to reschedule your exams.

If applicable, it is your responsibility to submit documentation in advance to the Student Disability Services for special accommodations, and notify the instructor via email.

## Homework Policies

We only accept online submission of homework via Gradescope on Canvas: <https://canvas.uchicago.edu/> (log in with CNet ID and password)

You can type your homework or scan your handwritten homework and then upload it to Gradescope on canvas.

We accept pdf documents only. Many students type their homework in a Word document and convert it to a pdf file before uploading it to Canvas.

If you scan your handwritten homework, please scan it to a pdf file (see the instructions about scanning handwritten work below). We do not accept Word documents because many features in Word, like math formulas, cannot be properly displayed, which causes difficulty in grading.

Please **do not** email your homework to the instructor or the TAs.

About Scanning Handwritten Work: Former students used free smartphone apps, such as CamScanner, Tiny

Scanner, and many basic apps to scan their handwritten work. These apps are easy to use, and automatically adjust the raw smartphone camera photos for maximum black/white contrast. Students can photograph each page one after the other and CamScanner automatically incorporates them into a single pdf document. Please do not submit raw camera photos (not processed through a “scanning” app). Raw photos are essentially unreadable. Raw photos are also extremely difficult to scale appropriately to view on the screen within the Canvas grading tool. You may also use a computer scanner (some multifunction printers can scan too) to scan your document.

Students without a smartphone or a scanner can use any campus copy machine to scan to a pdf file directly to a personal USB stick they plug into the copier. The quality of scanning is generally good so that the output pdf file can be submitted directly without further processing. For each assignment, please combine your work (text, R codes, and graphs) to a single file for submission, so that the graders just need to look at one file, not multiple ones. TAs can assist you if you don’t know how to include R output/graphs in the word document.

A few useful online pdf tools for

1. Merging multiple PDF files into a single one: <https://www.pdfmerge.com/>
2. Splitting a single PDF files into multiple ones: <https://www.splitpdf.com/>
3. Compressing oversize PDF while optimizing for maximal PDF quality: [https://www.ilovepdf.com/compress\\_pdf](https://www.ilovepdf.com/compress_pdf)
4. The website <https://www.ilovepdf.com/> also provides online tools for conversions between PDF, Word, Powerpoint, Excel, and JPG documents.

You can submit a single homework multiple times, before the due time. So if you want to correct a mistake in your submitted homework, you can just correct it and submitted it again. We will grade the last version that is submitted prior to the submission deadline.

Late homework will NOT be accepted or graded without the instructor’s approval. In case of emergency, email the instructor as soon as possible. Foreseeable conflicts with due dates (e.g., interviews, participation in sport activities, religious observances, ...) must be brought to the instructor’s attention before the due date, preferable with a 24 hour notice. Any assignments submitted late without the approval of the instructor will receive zero credit.

**Homework Collaboration:** You are encouraged to discuss course material and homework with other students, with the following restrictions: You must make an honest attempt at homework problems before discussing them with anyone else. You must do the final write-up independently in your own words, and do your own computer work (codes, graphs). Do NOT share your computer work (codes, graphs) with other students. You may compare final answers with others to check for mistakes. If you receive substantial help on a problem, you must acknowledge it.

- Homework must be coherent and legible. Graphs must be properly labeled. TAs may deduct points for poorly presented solutions.
- Please show your work to get full credits.
- No credit will be given for doing incorrect problems.
- Regrading requests to homework and exams shall be submitted within one week after the grade is released. You are encouraged to check the accuracy of grading of your exams and assignments. This includes checking if correct answers were mistakenly marked wrong or if points were added incorrectly. You shall submit regrading request through Gradescope.