



Welcome to Stat 240!



Spring 2024

Instructor: Sahifa Siddiqua



About Your Instructor





Sahifa Siddiqua (Call me Ms. Sidd!)

- Bachelors in Mathematics from India
- MS and PhD (Ongoing) in Mathematical Statistics from University of Mississippi
- Joined UW-Madison last Fall.



My Promises As Your Instructor

- Homework and exams will faithfully reflect lecture content
- Expectations, deadlines, and grading criteria will be clearly communicated and applied fairly and strictly!
- We will foster an inclusive learning environment for everyone
- We will be responsive, understanding, and accommodating to individual needs and life situations
- **There is no such thing as a stupid question!**



The Big Question



What are you going to learn in this class?



Why This Course Matters...

The goal of this class is to equip you to investigate real world questions using data.

- Translating broad, unclear, plain language questions into rigorous, testable, numeric ones
- Manipulating messy data, thinking critically about what conclusions we can and cannot make from that data
- Presenting those conclusions in a way that makes sense to non-experts as well as experts





...Even if You're Not a Data Scientist

- These principles are universal, even if you won't be coding or doing statistical analysis in your career
- Learn with an open mind... you might surprise yourself!





The Big Picture



How exactly does STAT 240 work?



Stat 240: Big Picture

- There are five sections of the course across two instructors!
- Students of many different years & majors
- We do not expect ANY prior coding or statistics experience

Me



Professor Miranda Rintoul





Course Flow: Big Picture

- First 5ish weeks of semester: Crash Course on R/tidyverse
- Ends with an in-class coding exam (“Midterm 1”) on R/tidyverse
- Next 5ish weeks of semester: Probability & Random Variables
- Ends with in-person exam (“Midterm 2”) on probability/random variables (may include some R concepts from part 1)
- Final 5ish weeks of semester: Statistical Inference, Modeling Real Dataset Exploration/Inference
- Final Exam is in-person, cumulative



Course Flow: Week to Week

- The Canvas home page is your number one resource for all course-related information
- Three lectures per week on course content, same room, same time, conceptual units roughly spanning one week. **Lectures are highly recommended!!**
- The following week, Monday, Tuesday, or Wednesday: in discussion, low-stakes review of previous week with peers, graded on *being there and participating* (bring your laptop)
- Discussions are mandatory!!
- Friday after discussion: individual weekly homework due at 11:59pm, graded for *accuracy and correctness*



Lectures

- Lectures will be recorded, and videos will be posted to Canvas weekly on Kaltura Gallery (not every day)!!
- **Bring your laptops!!** Lectures will frequently include **live coding activities**/checks of understanding, with opportunities to ask questions and interact with your instructor.
- Homework and discussion assignments will assume that you are up to date on lecture material.



Grading

Your overall score is comprised of these weighted categories:

- Discussion Participation (*2 free drops*): **10%**
- Individual Weekly Homeworks (*1 free drop*): **20%**
- Group Project: **10%**
- Midterm 1: **20%**
- Midterm 2: **20%**
- Final Exam: **20%**



Grading

Your letter grade will be evaluated on the basis of this scale. No curve!!

Grade	Fixed Scale
A	92-100%
AB	88-92%
B	80-88%
BC	76-80%
C	64-76%
D	60-64%
F	<60%



Resources

Asynchronous Help	In-Person Help
Coursewide Piazza	Student Hours*
Email Professor and/or your TA	Statistics Learning Center

* Also known as “office hours”



Expectations from students

- Students are expected to be regular in lectures and discussions and participate actively.
- Students are expected to be up-to-date with the course materials and on time with their HW submissions and discussions. No excuse will be accepted for missing HW and discussions except for the ones discussed/shared in advance with me or the TAs.
- Each one of you is expected to collaborate with your group members for discussion assignments and group projects. Failure to do so will result in 0 for your assignments.
- Students need to bring it to our (mine and the TAs) notice if they are having trouble with the course material, software issues, or classmate issues.



Installing R and RStudio



On Your Individual Device



Installing R and RStudio

- Leave directories and settings as **default** unless you know what you're doing!
- <https://posit.co/download/rstudio-desktop/>
- TWO steps!
- First, click “Download and Install R”. Click “Download R for macOS” or “Download R for Windows” depending on what type of computer you have, in the top box.
 - MacOS: Click the .pkg file that applies to your computer
 - Windows: Click “Install R for the first time”, and then “Download R-4.3.2 for Windows”
- Then, back at the above link, click “Download Rstudio Desktop”, which will just give you a file.



Steps to download R and R-studio

- Web browser -> search “rstudio desktop” -> select “[Rstudio desktop](#)” by Posit (the developer of RStudio)
- Or go to the Posit website “<https://posit.co/download/rstudio-desktop/>” (official website for RStudio)

1: Install R

RStudio requires R 3.6.0+. Choose a version of R that matches your computer's operating system.

R is not a Posit product. By clicking on the link below to download and install R, you are leaving the Posit website. Posit disclaims any obligations and all liability with respect to R and the R website.



DOWNLOAD AND INSTALL R

2: Install RStudio

DOWNLOAD RSTUDIO DESKTOP FOR MACOS 12+

This version of RStudio is only supported on macOS 12 and higher. For earlier macOS environments, please [download a previous version](#).

Size: 664.40 MB | [SHA-256: D0DDD395](#) | Version: 2024.04.2+764
| Released: 2024-06-10



Steps to download R

- Takes you to the official website for R (“<https://cran.rstudio.com>”)

The Comprehensive R Archive Network

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#) ([Debian](#), [Fedora/Redhat](#), [Ubuntu](#))
- [Download R for macOS](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.



Latest version of R is R-4.4.1

R for Windows

Subdirectories:

[base](#)

Binaries for base distribution. This is what you want to **install R for the first time.**

[contrib](#)

Binaries of contributed CRAN packages (for R \geq 4.0.x).

[oldcontrib](#)

Binaries of contributed CRAN packages for outdated versions of R (for R $<$ 4.0.x).

[Rtools](#)

Tools to build R and R packages. This is what you want to build your own packages on Windows, or to build R itself.

R for macOS

This directory contains binaries for the base distribution and of R and packages to run on macOS. R and package binaries for R versions older than 4.0.0 are only available from the [CRAN archive](#) so users of such versions should adjust the CRAN mirror setting (<https://cran-archive.r-project.org>) accordingly.

Note: Although we take precautions when assembling binaries, please use the normal precautions with downloaded executables.

R 4.4.1 "Race for Your Life" released on 2024/06/14

Please check the integrity of the downloaded package by checking the signature:

```
pkgutil --check-signature R-4.4.1-arm64.pkg
```

in the *Terminal* application. If Apple tools are not available you can check the SHA1 checksum of the downloaded image:

```
openssl sha1 R-4.4.1-arm64.pkg
```

Latest release:

For Apple silicon (M1-3) Macs:

[R-4.4.1-arm64.pkg](#)

SHA1-hash: 616560b17092b6d8b814d9cd92d098e52207830
(ca. 94MB, notarized and signed)

For older Intel Macs:

[R-4.4.1-x86_64.pkg](#)

SHA1-hash: e66eb09244121d7db78fb41d3c06a7896c93b5
(ca. 96MB, notarized and signed)

R 4.4.1 binary for macOS 11 (**Big Sur**) and higher, signed and notarized packages.

Contains R 4.4.1 framework, R.app GUI 1.80, Tcl/Tk 8.6.12 X11 libraries and Texinfo 6.8. The latter two components are optional and can be omitted when choosing "custom install", they are only needed if you want to use the `tcltk` R package or build package documentation from sources.

macOS Ventura users: there is a known bug in Ventura preventing installations from some locations without a prompt. If the installation fails, move the downloaded file away from the *Downloads* folder (e.g., to your home or Desktop).

Note: the use of X11 (including `tcltk`) requires [XQuartz](#) (version 2.8.5 or later). Always re-install XQuartz when upgrading your macOS to a new major version.

This release uses Xcode 14.2/14.3 and GNU Fortran 12.2. If you wish to compile R packages which contain Fortran code, you may need to download the corresponding GNU Fortran compiler from <https://mac.R-project.org/tools>. Any external libraries and tools are expected to live in `/opt/R/arm64` (Apple silicon) or `/opt/R/x86_64` (Intel).



- Go back to the Rstudio website after you download and install R.

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OS	Download	Size	SHA-256
Windows 10/11	RSTUDIO-2024.04.2-764.EXE ⬇	262.79 MB	09E1E38A

