Syllabus
Statistics 3080
Fall 2022

Course objectives:

- Understand and apply exploration of the behaviors of statistical methodologies
- Understand and apply new statistical analysis techniques
- Understand and apply appropriate methodologies
- Understand and apply efficient programming in R

Course format:
The course will be flipped, meaning that lectures are delivered by video and in-person class meetings are used for corresponding activities. Students are required to watch a video lecture prior to each class meeting. The in-person class meetings will be used for examples, group discussion, and work on a daily assignment.

Class information:
Section 001 Tuesday/Thursday 9:30-10:45am in Wilson 325
Section 002 Tuesday/Thursday 11am-12:15pm in Wilson 325

Instructor information:
Dr. Gretchen Martinet
Pronouns: she/her
Contact: MS Teams Chat (gaf9f)
Office hours: Mondays 9:30-11am and Thursdays 1-2pm on MS Teams

Course assistants:
Maura Gillis, Katie Shewell, Sifan Tao
Office hours: Times and locations available on MS Teams

Office hours policies:
The following policies will apply to all instructor and course assistant office hours to be able to answer as many questions for as many students as possible.

1. All office hours will be open-door with a queue. To discuss personal situations, students should schedule an appointment with the instructor.
2. Students should **not** expect that variations of the questions "How do I start this?", "Is this correct?" or "What is wrong with this?" will be answered.
3. Students should **not** expect that there will be space available in the room to sit and continue to work during **in-person** office hours.

4. Students should **not** expect that significant portions of material from a missed class will be explained.

Ed Discussion posting policies:
The appropriate category on Ed Discussion should be used for all non-personal questions and comments.

1. Existing posts should be checked to determine if the question has already been asked.
2. New questions should be asked in a post with a title following this naming convention: Direction - Topic/idea of question. For example: Q1b - apply inputs.
3. Posting direct answers to homework problems or daily assignment questions is not permitted.
4. Impolite or offensive posts will not be tolerated and any such post will be removed. If necessary, disciplinary action will be taken against any student who continues inappropriate posting.

Prerequisites:
1. Introductory statistics (STAT 1100, STAT 1120, STAT 2020, or STAT 2120)
2. Introductory programming (STAT 160x or CS 111x)

Suggested resources:
Internet resources

- Google search results
- RStudio cheat sheets (Base R, R Markdown, Graphics, and many others)

Book resources
Note: Electronic copies may be available through the UVa Library.

- *Discovering Statistics Using R* by Field, Miles, and Field
- *R Cookbook* by Teetor
- *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data* by Wickham

Software:
The software introduced and featured in this course is R. RStudio is a software that runs R with additional user friendly features. RStudio will be used for all in-class R demonstrations and examples.

Both R and RStudio are free for download for all operating systems. R will need to be downloaded first. RStudio Desktop is the recommended version for download.

Homework assignments will require the use of R Markdown to create PDF documents, which uses a type-setting platform called LaTeX. LaTeX can be installed by running the following two commands in the R Console.

```
install.packages("tinytex")
tinytex::install_tinytex()
```

Daily assignments:
Each daily assignment will consist of various questions relating to the associated video lecture. Each assignment will be due on Gradescope at 11:59pm.

Students will work in groups and so are encouraged to collaborate on daily assignments, however, all group members must actively participate in the discussion. Giving or receiving answers without active participation is a violation of the Honor Code and will be treated as such.

Students will receive one point for answering each question and one point for a correct answer. Points will be accumulated throughout the semester. At the end of the semester, a scale will be set to determine the course grade percentage. The maximum will be set to be reasonably attainable for students who answer each question seriously.

Homework:
There will be 11 weekly homework assignments. Each assignment will be due on Gradescope on the corresponding Tuesday by 11:59pm Eastern and returned on the following Monday morning (Eastern).

Homework scores will be based on both correctness and coding efficiency. Any regrade requests must be submitted on Gradescope by the following Sunday by 11:59pm Eastern to be considered. Students are allowed two unchanged grade regrade requests during the semester before further regrade requests will not be accepted. If review of a regrade request finds that a fair score would be lower, credit will be deducted.

Each homework assignment will require the use of R and students will submit the PDF of their commented R code and applicable output created using R Markdown and knit directly to PDF. File types other than knit directly to PDF will not be accepted.

Students are encouraged to collaborate on homework assignments, however, copying any portion of another student's code is a violation of the Honor Code and will be treated as such.

Students may use information previously posted to online forums (such as Stack Overflow) as a resource, but may not post a new question regarding homework assignments. Any code taken from a resource should be cited with a comment that specifies the resource where that code was found. Additionally, all resources consulted should be listed as references in the produced PDF. References do not need be listed in any specific defined format (ie. MLA)

and can be an informal list of URLs.

The lowest three homework scores will be dropped at the end of the semester to account for short-term illness, overloaded weeks, or other temporary unforseen circumstances. For this reason, homework extensions will not be granted. In the case of ongoing extenuating circumstances, please contact the instructor to arrange an appropriate schedule.

Programming quizzes:
There will be three programming quizzes on September 6, September 20, and October 11. Each programming quiz will be timed, open-resource, and given on Gradescope.

Project:
Students will complete a semester-long project in five parts.

- **Part 1:** Students will identify a topic of interest and formulate at least three associated research questions. Students will use R Markdown to create a PDF report of no more than 2 pages clearly detailing the context and feasibility of answering their posed questions. The Part 1 report is due on September 9.
- **Part 2:** Students will review and provide feedback on the Part 1 report of three fellow students following a rubric that will be provided. The peer reviews of Part 1 must be completed by September 23. Feedback on the peer reviews received must be given by September 25.
- **Part 3:** Students will gather data from primary source materials that is appropriate to answer at least one of their research questions, and will clearly describe and summarize this data. Students will use R Markdown to create a PDF report of no more than 7 pages clearly detailing the appropriateness of their data and conclusions. The Part 3 report is due on October 28.
- **Part 4:** Students will review and provide feedback on the Part 3 report of three fellow students following a rubric that will be provided. The peer reviews must be completed by November 11. Feedback on the peer reviews received must be given by November 13.
- **Part 5:** Students will use their collected data to appropriately answer one of their research questions. Students will use R Markdown to create a PDF report of no more than 3 pages clearly detailing their work and conclusions. The Part 5 report is due on December 6.

The project is to be completed by each student individually. Any collaboration between students, aid given, or aid received from anyone other than the instructor or course assistants is a violation of the Honor Code and will be treated as such. Students may use information previously posted to online forums (such as Stack Overflow) as a resource, but may not post a new question regarding their project. All resources consulted should be listed as references in the produced PDF. References do not need be listed in any specific defined format (ie.

MLA) and can be an informal list of URLs. References should be acknowledged in the body of the report, where appropriate, in any common form (footnote notation, parentheses, etc.).

Students will use at least two primary source materials to construct their data. Copying existing data is equivalent to plagiarism, a violation of the Honor Code, and will be treated as such.

More details regarding the project will be given during the semester.

Bonus points:
Students who answer classmates' questions on Ed Discussion with an appropriate and helpful comment will earn bonus points. You may earn up to 2% in bonus points by the end of the semester.

Grade distribution:
The grade distribution is:

Daily assignments: 15%
Homework: 30%
Programming quizzes: 15%
Project: 40% (Part 1: 10%, Part 3: 10%, Part 5: 20%)

Course grades:
The letter grade determination is:

		A	at least 95%	A-	at least 90%
B+	at least 87%	B	at least 83%	B-	at least 80%
C+	at least 77%	C	at least 73%	C-	at least 70%
D+	at least 67%	D	at least 63%	D-	at least 60%
		F	below 60%		

Note: Scores will be maintained and calculated via the gradebook in Collab. There will be no rounding of final calculations for letter grades.

Important dates:

- September 6: Course add deadline
- September 7: Course drop deadline
- September 9: Project part 1 report due
- September 23: Project part 2 peer review deadline
- September 25: Project part 2 peer review feedback due
- October 18: Course withdrawal (W) deadline

- October 28: Project part 3 report due
- November 11: Project part 4 peer review deadline
- November 13: Project part 4 peer review feedback due
- December 6: Project part 5 report due

Emergencies and serious circumstances:
In the event of an emergency or a serious circumstance, please notify the instructor and/or your Association Dean as soon as possible.

Accommodations:
All students with special needs requiring accommodations should present the appropriate paperwork from the Student Disability Access Center (SDAC). It is the student's responsibility to present this paperwork in a timely fashion and to follow up with the instructor about the accommodations being offered. Accommodations for test-taking should be arranged at least 5 business days before an exam.