GVPT 421

Advanced Quantitative Analysis

Spring 2018

**Contact Information**

Professor Sarah E. Croco ([scroco@umd.edu](mailto:scroco@umd.edu))

T/Th: 2-3:15

TYD 2106 10:00am

Office hours: By appointment

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**Introduction**

This is a class about *how* to do political analysis using the programming language R. As such, it is primarily a skills-building class as opposed to course where we discuss theoretical ideas about politics. This is not to say that politics has no place in this—far from it. But rather it is a heads up that this class will likely be very different from GVPT courses you’ve taken before.

This is my first time teaching this class. I say this for a few reasons.

First, I am SUPER excited to share this material with you. I’ve spent the last year or so becoming familiar with what R can do. While I still have a lot to learn, what I have learned is pretty cool. Moreover, I think learning R is *enormously valuable* for students. Based on my experiences with recent graduates, being able to work with data intelligently, a firm understanding of statistics, and some knowledge of programming are all very good things to have on one’s c.v. Employers value these skills in their own right, but also because they know that people who have these skills can pick up other useful skills quickly.

TL; DR: Being able to say you know R will REALLY HELP YOU STAND OUT to potential future employers.

Second, there may need to be some adjusting of the syllabus on the fly. **I will never make a deadline sooner than stated below.** I am anticipating a need for adjustment since I’ve never taught R this way, nor have I used a “flipped classroom” set up before. Finally, even though I’ve done a lot of planning, some lessons may just not work for a variety of reasons, so we may need to adjust. I may also have to add some readings. I also want to get a lot of input from you guys (see below), which may also inspire revisions along the way. Put differently, please be patient with me if there are some bumps. We are on this journey together, my friends.

**The Books**:

You can buy the books in the bookstore or online. All are required. With the exception of the last one (which is free online), I would suggest getting hard copies of all of them, but you should feel free to get e-copies if you prefer.

*R for Dummies* (2nd edition) by Andrie de Vries and Joris Meys (abbreviated below as dvm)

*Visualize This: The FlowingData Guide to Design, Visualization, and Statistics.* (1st edition) by Nathan Yau.

*R Graphics Cookbook*: *Practical Recipes for Visualizing Data* (2nd edition) by Winston Chang;

*R for Data Science* by Garrett Grolemund and Hadley Wickham (abbreviated below as gw)

Note: this is book is available for FREE online. You can buy a hard copy if you want on Amazon, but I’d just go for this, because free.

http://r4ds.had.co.nz/index.html

**Software:**

We will be using R and R-Studio in this class.

The R software is FREE and works with any computer.

<https://cran.r-project.org/mirrors.html>

There are instructions on how to download R and the associated data files/packages in the books and online (just check the table of contents of the dvm or gw books). Basically, pick a mirror site from the page above that is close to you. Then download it. You can get the free version (R-Studio Desktop). It’s the first option on this page.

https://www.rstudio.com/products/rstudio/download/

**A Note on R**

I realize that some of you may have never used R before, while some of you may have used it in GVPT 100/201. Both are fine. I assume **no**knowledge of R on day one of the class. I also recognize that learning R for the first time can be a frustrating experience. I GET IT. I also get that this may not be your cup of tea, and that’s fine. If you are really resistant to a whole class dedicated to programming, DO NOT TAKE THIS CLASS. I won’t take it personally if you drop! I don’t want people to be miserable!

**Expectations**

Here’s what I expect of you.

* For you to be an **engaged** member of the class. This is a small class. I can tell who is actively participating and who isn’t. This is not a class where you can just show up and coast. I hope you will see this as a good thing. Small classes, in my experience, tend to be fun for students and professors alike.
* For you to **try** even when things get frustrating. I know there are going to be times when you want to throw your laptop out the window because you can’t figure out what’s wrong with your code. I HAVE BEEN THERE. Just hang in there, TRY AGAIN, and **ask for help** from your classmates and me. Also, understand that a lot of the time the answer is, “Google it”. This isn’t because I don’t want to tell you the answer, but rather that I’m also in the process of learning as well. I’ll be Googling right along with you!
* For you to play a role in **contributing** to the class. R and data visualization are constantly evolving. Examples in politics are omnipresent; one person can’t keep up. Given this, there are several assignments where you guys have to find examples of R in action or when a particular type of data visualization is used. I’m hoping this will help demonstrate the value of R to you, and that it will also improve the class for everyone. Searching the web to find answers or examples of R is a big part of learning how to use it. I want to give you guys practice in doing this.
* For you to be an **active learner**. This involves two things. 1. Showing up to class and actually working on the assignments. 2. Working through the code *as you read about it in the books.* I can’t stress how critical this is. Learning R isn’t something you can do without DOING it as you are learning it. To this end, there are several assignments where you have to demonstrate to me that you coded while you were reading the books. This isn’t me trying to be mean. You should be doing this for ***every*** reading, even if I don’t have an assignment for it. It’s what I do every time I read about how to program in R. It helps SO MUCH and allows you pick up R much faster.

Other Stuff

*Grade Challenges*

Any challenges to an exam grade must be submitted *in writing no* ***sooner*** than one week after the exams have been handed back.

*Class Attendance and Participation*

Students are expected to have completed all of the assigned readings and homework for each class and be prepared to discuss them. I take attendance. Participation grades will be based on a demonstrated ability to discuss topics covered in the readings and assignments.

Please be on time for class and stay until the end, unless you have made special arrangements with me. Entering late and leaving early is distracting to the instructor and to other students. If you must enter late or leave early, please take the seat nearest an exit and enter or leave as quietly as possible. Two or more disruptions of class that require me to address you directly in any form will lead to a reduction in your participation grade.

***Canvas (ELMS)*:**

Important communication regarding the class is conducted via Canvas. This includes posting of the syllabus, announcements, and grades. Students are required to be proficient users of Canvas and to ensure that their emails registered with Canvas are up to date and checked regularly.

**DO NOT USE CANVAS TO EMAIL ME**. I won’t respond after the first week of class. Use my email provided above. I am for real about this. In fact, I’m gonna go with some crazy big font right now to make my point.

DO NOT EMAIL ME THROUGH CANVAS. Use regular email like you do for contacting literally every other person you know. It’s scroco@umd.edu

**Religious Observance**

In accordance with the University’s policy on the observance of religious holidays, it is the student’s responsibility to inform me of any absences due to these holidays well in advance and **in writing** within the first two weeks of the semester. I am serious about the “in writing” part.

**Absence Due to Illness**

As per University policy students may submit a self-signed note for a medically necessitated absence from a single section during the semester. Such documentation is sufficient unless it coincides with a Major Scheduled Grading Event (e.g., class presentations). Any student missing more than one section or a Major Scheduled Grading Event is required to provide documentation from the Health Center or from an outside health care provider that verifies the dates of treatment and time frame during which the student was unable to meet academic responsibilities.

**Code of Conduct**

It is assumed that all students are familiar with and adhere to the code of academic integrity. See <http://www.studenthonorcouncil.umd.edu/index.html>

**Extra Credit and Class Conduct**

Graded assignments in the class provide students with ample opportunity to demonstrate mastery of the materials. Therefore, **no extra credit assignments** will be assigned in the class. Do not ask if you can make up your own assignment for extra credit. *The answer is no.*

A discussion of current political events will likely take place in both lecture and labs. These discussions can often stimulate strong feelings and heated debate. Students are expected to be respectful of the opinions of others, regardless of whether they share similar opinions or beliefs. Debates will be cut short that do not enhance understanding of course concepts. I expect students to offer substantive comments and questions when appropriate. I also expect students to not dominate a conversation, but to allow a free discussion and exchange of ideas.

**Grades**

Given the more fluid nature of this class, I’m not able to specify all the assignments in advance as I typically would. NONE OF THE ADDED ASSIGNMENTS WILL BE SIGNIFICANT. They will likely be along the lines of “find an example of this” or “write a two-paragraph reaction to this article”. Everything is worth a certain number of points. Your final grade will be a simple calculation of how many points you earned out of the total. Here’s a rough breakdown of how the final grade will shakeout:

Homework: 30%

Projects: 30%

Final Project: 15%

Final Presentation: 5%

Attendance: 5%

Participation: 5%

Assignments and readings can be found on the next page. All assignments are due (uploaded to ELMS) by the start of class unless otherwise noted. Also, you get partial credit for trying. If you are stuck on something, don’t give up. Write up what you did to try to fix it and show me what you tried.

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| **Day** | **Date** | **Topic** | **Readings** | **Assignments (subject to change)** |
| Thursday | 25-Jan | NO CLASS | Donald Trump Twitter readings sent out on ELMS earlier | Take the "quiz" on ELMS about the Trump readings/this class |
| Tuesday | 30-Jan | Getting started in R | dvm: Introduction, Chapters 1, 2, 3, 20, Appendix A + B. | Get R and R-studio working on your computer. |
| Thursday | 1-Feb | Getting started in R | gw: 1.1-1.6, 4.1-4.4, 6.1-6.3, 8.1-8.5, 27.1-27.7 |  |
| Tuesday | 6-Feb | Getting started in R | dvm: Chapters 4, 5, 6. gw: 14-1.-14.6, 15.1-15.5, 16.1-16.5 | Make an R-markdown doc of pages dvm 80-92. |
| Thursday | 8-Feb | Getting started in R | dvm: pg132-140, chapter 12, 13 | Make an R-markdown doc of pages dvm 242-260 |
| Tuesday | 13-Feb | Getting started in R | dvm: Chapters 14,15, gw: 24.1-24.4 | Make an R-markdown doc of pages dvm 300-312, 318-324. |
| Thursday | 15-Feb | Graphics | chang: Chapters 3-4, Yau: pg 1-26, 71-75, 92-101, 108-24 | Make an R-markdown doc of chapters 3-4 of Chang |
| Tuesday | 20-Feb | Graphics | chang: Chapters 5. Yau 180-200 | Make an R-markdown doc of chapter 5 of Chang |
| Thursday | 22-Feb | Graphics | chang: Chapters 6-7. Yau: 203-26, 228-44 | Make an R-markdown doc of chapter 6 of Chang |
| Tuesday | 27-Feb | Graphics | chang: Chapters 8,9,10, 12, 13.6-13.9. Yau chapter 9 | Make an R-markdown doc of chapters 8-9 of Chang |
| Thursday | 1-Mar | Stats Review | Readings TBA |  |
| Tuesday | 6-Mar | Stats Review | Readings TBA | Turn in stats project |
| Thursday | 8-Mar | Basic Mapping | chang 13.17-13.19, yau: 276-88 | Make an R-markdown of the Chang reading |
| Tuesday | 13-Mar | Basic Mapping | Leaflet package. Work on mapping project in class | Upload example of leaflet in use |
| Thursday | 15-Mar | Basic Mapping | Work on mapping project in class | Turn in mapping project by 10pm |
| Tuesday | 20-Mar | SPRING BREAK | SPRING BREAK | SPRING BREAK |
| Thursday | 22-Mar | SPRING BREAK | SPRING BREAK | SPRING BREAK |
| Tuesday | 27-Mar | Scraping | rvest package. | Upload example of rvest in use |
| Thursday | 29-Mar | Scraping | work on scraping project in class | Turn in scraping project by 10pm |
| Tuesday | 3-Apr | Twitter | twitteR package. | Upload example of twitteR in use |
| Thursday | 5-Apr | Twitter | work on twitter project in class | Turn in twitter project by 10pm |
| Tuesday | 10-Apr | Text Mining | tidytext, tm packages | Upload example of tm/tidytext in use |
| Thursday | 12-Apr | Text Mining | work on text mining project | Turn in text mining project by 10pm |
| Tuesday | 17-Apr | Sentiment | Readings TBA | Upload text sentiment example |
| Thursday | 19-Apr | Sentiment | work on sentiment project in class | Turn in sentiment project by 10pm |
| Tuesday | 24-Apr | Work in class/TBD | Brainstorm projects/work on project | work on project |
| Thursday | 26-Apr | Work in class/TBD | work on project | work on project |
| Tuesday | 1-May | Work in class | work on project | work on project |
| Thursday | 3-May | Work in class | work on project | work on project |
| Tuesday | 8-May | Presentations | presentations | All projects due |
| Thursday | 10-May | Presentations | presentations |  |