Statistical Programming in R
STAT 412/612

Fall 2019

Instructor:	Zois Boukouvalas	**Time:**	Th 5:30 PM - 8:00 PM
Email:	boukouva@american.edu	**Room:**	Hurst Hall 210
Office:	Don Myers Building - 222		

Office Hours: Th 3:00PM – 5:00PM, or after class, or by appointment. Always feel welcome to come visit me during my office hours. You are also encouraged to ask me questions online via email or through **Kaltura Capture**. If you are having **ANY** trouble with the class, please come see me about it as soon as possible. **Do not wait until it is too late!**

Course Pages: I will use Blackboard (`https://blackboard.american.edu`) to post any supplementary materials, suggested readings/practice exercises, assignments, and announcements. Sometimes I may also use my personal website (`https://zoisboukouvalas.github.io/`).

Materials:

- R for Data Science by Wickham and Grolemund (O'Reilly) **(Recommended)**
- Laptop computer **(Required)**

Course description: The basics of programming using the open source statistical program R. Imputing data, performing basic analyses, graphing, data types, control structures and functions in R. Most of the course will use the tidyverse packages in R and will use the RStudio IDE (Integrated Development Environment).

Class Structure: This class will be a blend of lecture, class discussion and labs. I want you all to be involved during class and please do not hesitate to ask questions whenever something is unclear to you. You are expected to attend all class meetings, as I believe that attending class regularly contributes greatly to your performance in the course. It is understandable that you may have to miss class on a rare occasion. You are responsible for any assignments or papers given out during any missed class. Please obtain these materials from a colleague BEFORE the next class meeting.
Data scientists must learn to discover solutions for themselves. You should expect to have to research (use Google, stackoverflow, etc) to do your assignments. All you need to do the assignment will NOT have been provided to you in the lectures and course book. This is an essential part of becoming a data scientist!

Assignments & Grading:

Assignments (20% STAT 612) (30% STAT 412): During the semester I will assign, collect, and grade assignments. There will be approximately 10 formal assignments throughout the semester. You may receive assistance from other students in the class and me, but your submissions must be composed of your own thoughts, coding and words. I expect you to get ideas from online resources such as stackoverflow or github when you get stuck. Please cite your source when you do so and be specific about what you have added to it. **I will not accept late assignments.**

Labs (20%): 45-minute labs at the end of each class. Each lab covers the material of the lecture.

Exams (30%): We will have three in-class exams. No make-up exams will be given unless you have an extremely compelling excuse such as observance of a religious holiday (in which case you need to let me know in advance) or a documented medical emergency.

Final Project (30% STAT 612) (20% STAT 412): Students will have to prepare a final project using the tools learned in the class. Work with me to get your topic approved. Your project should involve working with a fairly large real-world dataset to answer some question of interest to you. It should be reproducible and include graphical representations of your data.

Please visit my office hours if you would like to see or discuss your grade at any point during the semester.

Important Dates:

Midterm 1 .... October 10, 2019
Midterm 2 .... November 14, 2019
Thanksgiving Break (No Class) .... November 28, 2019
Project Presentations .... December 5, 2019
Final Exam .... TBA

Learning Objectives: At the end of this course, you are expected to be able to:

- Produce reproducible research using R.

- Use R as a powerful calculator.

- Import data from external sources.

- Perform analyses including hypothesis testing and regression.

- Write basic R programs using control and data structures.

- Install and use packages for specific applications.

- Use graphical tools to visualize and understand data.

Emergency Preparedness: In the event of an emergency, students should refer to the AU Web site http://www.american.edu/emergency and the AU information line at (202) 885-1100 for general university-wide information. In case of a prolonged closure of the University, I send updates to you by email and will post all announcements on Blackboard.

Support Services: A wide range of services is available to support you in your efforts to meet the course requirements.

1. Mathematics & Statistics Tutoring Lab (Don Myers Building) provides tutoring in Intermediate Mathematics and Statistics. http://www.american.edu/cas/mathstat/tutoring.cfm

2. Academic Support and Access Center (MGC 243) offers study skills workshops, individual instruction, tutor referrals, Supplemental Instruction, writing support, and technical and practical support and assistance with accommodations for students with physical, medical, or psychological disabilities. Writing support is also available in the Writing Center, Battelle-Tompkins 228.

3. Center for Diversity & Inclusion (X3651, MGC 201) is dedicated to enhancing LGBTQ, Multicultural, First Generation, and Women's experiences on campus and to advance AU's commitment to respecting & valuing diversity by serving as a resource and liaison to students, staff, and faculty on issues of equity through education, outreach, and advocacy.

4. The Office of Advocacy Services for Interpersonal and Sexual Violence (X7070) provides free and confidential advocacy services for anyone in the campus community who is impacted by sexual violence (sexual assault, dating or domestic violence, and stalking).

Additional Notes:

1. I expect you to be courteous to me and your fellow classmates both inside and outside of the classroom. This generally just involves a bit of common sense. Cell phones need to be silenced and put away during class. Laptops should be out during class time for use only on class activities. Please save texting, typing/sending emails, checking Facebook, etc. for outside of class time.

2. Please let me know during the first week of classes if you have any special needs that require accommodations.

3. Please be sure that you are familiar with AU's Academic Integrity Code, as I am required to report any cases of academic dishonesty to the dean of CAS. For your review: http://www.american.edu/academics/integrity/.