**Advanced Programming Topics**

**COURSE SYLLABUS**

Term Dates: July 10 – Aug 11

This course is fully online and asynchronous.

Course Website:

**Instructor:**                  Dr. Ami Gates

**Class Website:**          <http://drgates.georgetown.domains/ANLY500/AdvProgrammingTopics.html>

**Assignment Submission:** All class assignments will be submitted directly to Dr. Gates via email.

**Office Hours:**

Online only and via email.

**Contact Information:**   **amg309@georgetown.edu**

**TA Information:**

Justice Suh

jts119@georgetown.edu

**Office Hours:**

Online and by appointment.

**Required Textbooks:**      I am not going to require you to purchase any books for this class. The Internet has many resources and I will create a list of recommended books and readings as well as my set of class lectures. Please see the class website for readings and resources.

**Required Technology:**

1) R and RStudio

2) Anaconda/Python3

3) MS Word

**\*\* Python 2 is not acceptable.**

**COURSE DESCRIPTION**

The Georgetown Analytics program is offering this asynchronous and online course in programming preparation that covers R, Python, and command line use in the summer prior to matriculation. This course is equivalent to three credits, is designed for matriculating MS Analytics students, and is offered free of charge. It is required for incoming students who do not have a computer science degree and adequate preparation.

Note: Students admitted to the program will only have this requirement waived on discussion with the Program Director (Todd Leen) or Program Coordinator (Heather Connor). This course will run during Georgetown Summer Session II (July 10 - August 11). Remember, you must complete this course to matriculate in the fall unless you are granted a waiver by the program.

**COURSE OBJECTIVES**

1.     Become at least an intermediate programming in R, especially for applications in data science, analytics, and visualization.

2. Become at least an intermediate programmer in Python3 9we will use Anaconda), especially for applications in data science, analytics, and visualization.

3.     Learn how to wrangle (prepare and clean) different types of data for analysis in R.

4.     Learn how to wrangle (prepare and clean) different types of data for analysis in Python3.

5.     Learn how use regular expressions for data wrangling in R and Python3.

6. Install, learn, and use packages in R that are specifically helpful for data science. I will include a list on the class website.

7. Install, learn and use packages in Python that are specifically helpful for data science. I will include a list on the class website.

8. Learn visualization tools, including Python/matplotlib, Python/Bokeh, R/Leaflet, R/plot, qplot, ggplot, Tableau, and Plotly.

9. Become familiar with some command-line activities on Windows cmd and/or on MAC command line.

10. Become familiar with Putty and ssh, as well as with basic windows and unix command line operations.

**CLASS METHODS**

This course is designed to promote a considerable amount of practice. Frequent homework assignments/projects will be assigned. This class is fully asynchronous and can be completed at a flexible pace. To allow some flexibility, the class is separated into Modules. Each Module will contain assignments, readings, and due dates. Please see the class website for details.

**CLASS POLICIES**

***Attendance***

This is an online and fully asynchronous class. Due dates must be adhered to so that the entire course can be completed.

***Assignments***

This class will be assignment-based. Students will complete readings, review videos and tutorials, and will practice. Assignments will generally be programming based.

Specifically Assignments and due dates can be located on the class website.

All due dates are 11:59pm ET.

**IMPORTANT:** All assignments will be submitted via email to the Teaching Assistant for the class and please cc me.

***Submission Method:***

1) Gather all required elements of the assignment. This may include code files such as .R or .py, as well as a report in Word, datasets, etc. Place all assignment elements into ONE (1) zip folder. Email that zip folder to the TA and cc me.

2) The **Subject Line of the email** MUST contain the class name Adv Programming Topics AND the Name of the Assignment. If you resubmit – the Subject Line MUST contain the word RESUBMISSION as well as the class name and the assignment name.

3) **\*\* Always\*\* place your full name and your email address** into any email that you send. Type both clearly at the bottom of the email.

***Late Policy***

This class is designed to take you through a significant amount of information and learning in a small period of time. For this reason, you will have to work hard in this class. To offer a level of flexibility, this class will be separated into Modules. Each Module will contain one or more assignments. All assignments within a Module will be due at the end of that Module. **Late assignments can be penalized as a failure.**

***Class Grading:***

This class is pass/fail.

Assignments will be graded normally and a class average will be created for each student.

**\*\*Important \*\* All code (programs) that you submit must run. Otherwise “0” credit will be awarded for that assignment.**

**Passing: 80% or above**

Passing this class means that you have demonstrated that you can move forward into the remaining Analytics graduate level classes and can perform the programming that is requisite to those classes.

Failing means that you have not demonstrated sufficient comprehension or ability to be successful in the Analytics classes.

Pass or Fail grade results will be sent to Dr. Todd Leen.

**EMAIL**

I check my email 6 days per week and am always available via email - **I expect the same from you**. Check your email at least M – F and once over the weekend - so that you do not miss information that I email out to the class. If you have a question, please check the class website first. If you cannot locate the answer or have a personal question or comment, email me anytime.  You can also email the TA for the class, especially about basic grading questions.

***Grades and Points***

Assignments and projects in this class will be graded fairly and consistently. It is not permissible or appropriate to attempt to gain extra points by nagging the TA. If you have a valid grade complaint, your entire paper will be regraded and you will be given the new grade (whether it is higher or lower than the original). You are welcome to ask questions for improvement, but not to regain points.

***Academic Integrity***

Plagiarism or academic dishonesty in any form **will not be tolerated** and **will** result in a failing grade.  All Honor Code violations will be submitted to the Honor Council and can remain as part of your permanent academic record.

It is NEVER worth it – never cheat – always do your own work!

Academic integrity is central to the learning and teaching process.  Students are expected to conduct themselves in a manner that will contribute to the maintenance of academic integrity by making all reasonable efforts to prevent the occurrence of academic dishonesty.  Academic dishonesty includes (but is not limited to) obtaining or giving aid on an examination, having unauthorized prior knowledge of an examination, doing work for another student, and plagiarism of all types, including copying code.

**IF YOU COPY YOU WILL FAIL THIS CLASS and can be removed from the program. DO YOUR OWN WORK 100% of the time. I have a zero tolerance for cheating, sharing, copying, or stealing the work of others. If you have any questions or need clarification, please ask me.**

**Plagiarism**

Plagiarism is the intentional or unintentional presentation of another person's idea or product as one's own. Plagiarism includes, but is not limited to the following: copying verbatim all or part of another's written work; using phrases, charts, figures, illustrations, code, or mathematical / scientific solutions without citing the source; paraphrasing ideas, conclusions, or research without citing the source; and using all or part of a literary plot, poem, film, musical score, or other artistic product without attributing the work to its creator. Students can avoid unintentional plagiarism by following carefully accepted scholarly practices. Notes taken for papers and research projects should accurately record sources of material to be cited, quoted, paraphrased, or summarized, and papers should acknowledge these sources in footnotes.

**GRADING SCALE**

**Passing:    79.5 and up**

**Not Passing:   79.5 and below**

**COURSE ASSIGNMENTS**

Please find a link to a list of all course assignments, modules, requirements, readings, and due dates on the class website.