Resources for the MADS Python and Statistics Assessments

The resources listed below contain materials that may help you prepare for the Python and Statistics Assessments. You are not required to use any of these resources, they are offered as optional preparation materials. Additionally, use of any of these resources does not necessarily ensure you will pass one or both. You may find that other materials are as helpful or more helpful for your learning or review process, and we encourage you to use any relevant material that helps you review best.

Resources for Python

Python 3 Programming Specialization

Cost: Free, though full access may incur a cost.
Link: https://www.coursera.org/specializations/python-3-programming
Courses 1-4 in this specialization align well with the skills that will be tested in the assessment. Course 5 provides an opportunity to practice skills further and uses Jupyter Notebooks.

Learn Python - Full course for beginners

Cost: Free
Link: https://youtu.be/rfscVS0vtbw

This is a 4 hour YouTube video that covers, through example, most of the content that would be expected (except for topics like Advanced Accumulation).

Programs, Information, and People Textbook (Python 2)

Cost: Free
Link: https://www.programsinformationpeople.org/runestone/static/publicPIP/index.html
This is the textbook that has been used in previous semesters of the School of Information residential course, *Programs, Information, and People*. It is interactive, but there are no lectures, only reading material and exercises. Additionally, please note that this version of the textbook uses python 2, so there may be differences in executing code. However, generally the principles should be the same. If you would like to access an updated version of the textbook that uses python 3, you can do so by auditing one of the first four MOOCs (Massive Open Online Courses) in the Python3 Specialization on Coursera.

Resources that are suggested by Python for Non-programmers

Cost: Free
Link: https://wiki.python.org/moin/BeginnersGuide/NonProgrammers
Not all sources are verified, but they are proposed by python as resources for non-programmers. Some of the resources listed overlap here with the resources listed for Programmers.

Resources that are suggested by Python for programmers

Cost: Free
Link: https://wiki.python.org/moin/BeginnersGuide/Programmers
Not all sources are verified, but they are proposed by Python as resources for non-programmers. Some of the resources listed overlap here with the resources listed for non-programmers.

Python 3 Tutorial for Beginners (Video Series)

Cost: Free
Link: https://www.youtube.com/playlist?list=PL4cUxeGkcC9idu6GZ8EU_5B6WpKTdYZbK
This is a series of videos to teach Python. This is targeted for beginners, and does not cover all topics that could appear in the assessment (such as Inheritance).

Resources for Statistics

Open Michigan

Cost: Free
Link:https://open.umich.edu/find/open-educational-resources/statistics/statistics-250-introduction-statistics-data-analysis
Handouts, Labs, Lecture Notes, and a link to the course youtube channel. Notes are not filled out, so solutions for the lecture notes are not available.

Statistics with Python Specialization

Cost: Free, though full access may incur a cost.
Link: https://www.coursera.org/specializations/statistics-with-python
Courses 1-3 developed by faculty at the University of Michigan's Statistics department. Covers a good amount of the statistics knowledge that we expect students to come in with. Teaches the course in python, though we expect students to complete problems by hand or with a calculator.

Basic Statistics

Cost: Free, though full access may incur a cost
Link: https://www.coursera.org/learn/basic-statistics
One of the courses in the Methods and Statistics in Social Sciences Specialization by University of Amsterdam, this course covers the following topics which are likely to appear on the assessment: descriptive statistics (calculation and interpretation), correlation, regression, probability, probability distributions, sampling distributions, confidence intervals, and significance tests.

Inferential Statistics

Cost: Free, though full access may incur a cost
Link: https://www.coursera.org/learn/inferential-statistics
One of the courses in the Methods and Statistics in Social Sciences Specialization by University of Amsterdam, this course covers the following topics which are likely to appear on the assessment: comparing two groups (categorical or quantitative), Categorical Association (Chi-squared tests), linear regression analysis, and multiple regression analysis along with analysis of variance and non-parametric tests. Note that the Basic Statistics course mentioned above comes before the Inferential Statistics course in the specialization. It assumes that you have taken Basic Statistics and have the prerequisite knowledge.

Statistical Thinking for Data Science and Analytics

Cost: Free, though a certificate can be purchased as well at the completion of the course
Link: https://www.edx.org/course/statistical-thinking-for-data-science-and-analytics
Weeks 2 through 4 cover some of the same topics that will likely appear in the assessment. Please note that you must have an account on EdX to view the course and partake in the material.

Stats 250 YouTube Channel

Cost: Free
Link: http://www.youtube.com/user/stats250
Has video examples of an instructor completing exam problems. Only one lecture is hosted online.

Khan Academy

Cost: Free
Links: https://www.khanacademy.org/math/statistics-probability, https://www.khanacademy.org/math/ap-statistics
It has some instructional videos and problems covering Statistics. "Statistics and Probability" may align closer to the assessment than "AP Statistics", but they cover much of the same content ("AP Statistics" does not include ANOVA, which is likely included in the assessment. "Statistics and Probability" does include this topic).