

**Course Name and Number:** CUNY MSDS Bridge Workshop – Winter 2020

**Credits:** non-credit course

**Prerequisite(s):** Admission to Master degree in Data Science

## Course Descriptions:

The Bridge workshop is divided into three course tracks:

1. SQL
2. R Programming
3. Data Science Math

Due to many entering MSDS students taking two or more of the Bridge workshops, there is a single weekly discussion topic that is shared across the three course tracks. Some topics are shared across tracks, such as “Using GitHub” in week 1. The material in the Data Science Math track requires that you are either taking R Programming concurrently or come in with some decent R knowledge.

## Course Learning Outcomes:

By the end of the course, students should be able to:

* Submit and manage their work in GitHub *[all tracks]*
* Write queries that combine and aggregate information from multiple tables in MySQL *[SQL track]*
* Write moderately complex R programs and present their findings in RStudio and rpubs.com *[R Programming Track]*
* Using Python, solve basic math, linear algebra, and statistics problems. *[Data Science Math track]*

## Program Learning Outcomes addressed by the course*:*

Prepare students for success in CUNY’s Master of Science in Data Science (MSDS) program, especially 607: Data Acquisition and Management and 606: Introduction to Statistics and Probability.

## How are these workshops relevant for Data Science professionals?

Working with data, programming, probability, statistics, and linear algebra are core competencies for all data science work.

## Course Meetup Schedule and Office Hours

Meetup Dates for Math & SQL:

SQL & Math: Meetup 1: **Thursday, 16 Jul**

Meetup 2: **Thursday, 23 Jul**

Meetup 3: **Thursday, 30 Jul**

Meetup Timings for Math & SQL:

Math with Python, **7:45-8:25 PM**, Larry Fulton

SQL, **9:15-10:00 PM**, Javier Guillen

Meetup Dates for R Programming

**Tuesdays, 14 / 21 / 28 Jul, 7:45-825 PM**

## Instructions for Dialing in to Weekly Meetups

**Instructions for connecting to the MSDS Bridge meetups can be found in the workshop folder called “Meetup and Office Hours”.** Use your microphone and speakers (VOIP) for audio. You'll sound best with a headset. You can also call in using your telephone. If you do call in to the meeting, please remember to disable the microphone on your computer; otherwise, all the other participants will experience an “echo” effect!

## Office Hours:

Office Hours (cell phone or by Gotomeeting, where we can screen share): by appointment throughout the week. Please ask questions on the “Ask Your Instructor” forum on the course discussion board where other students will be able to benefit from your inquiries. For the most part, you can expect a response to questions by email within 24 to 48 hours. If you get stuck, please ask for help!

**Math and SQL Assignments and Grading**

HW1 33 1/3%

HW2 33 1/3%

HW3 33 1/3%

**R Assignments and Grading:**

|  |  |
| --- | --- |
| HW1 | 25% |
| HW2 | 25% |
| Final Project | 50% |
| TOTAL | 100% |

**Grades:**

A minimum track grade of 80% is required for conditionally accepted students.

*\*You must also receive a grade of 70% or better on each of your weekly assignments.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Quality of Performance** | **Letter Grade** | **Range %** | **GPA/ Quality Pts.** |
| Excellent - work is of exceptional quality | A | 93 - 100 | 4.0 |
|  | A- | 90 - 92.9 | 3.7 |
| Good - work is above average | B+ | 87 - 89.9 | 3.3 |
| Satisfactory | B | 83 - 86.9 | 3.0 |
| Below Average | B- | 80 - 82.9 | 2.7 |
| Poor | C+ | 77 - 79.9 | 2.3 |
|  | C | 70 - 76.9 | 2.0 |
| Failure | F | < 70 | 0.0 |

## 

## How This Course Works

**Meet-ups on Thursdays; Assignments due on following Sundays!** This course is conducted entirely online. Here is what your weekly workload and deliverable schedule will look like:

* Each week’s material is available after 5:00 p.m. EDT on the Friday before that week’s meet-up.
* You’ll have a list of readings. There will also be a number of short videos to watch over the five weeks.
* There is a short, lightly graded discussion topic each week. Your initial post is due before the Tuesday meet-up, and your response is due end of day the following Friday.
* There are course meet-ups every Thursday. Call in details below.
* For each course track, you’ll submit 3 **weekly assignments** (due end of day EDT on the Sunday after the meet-up) and possibly a **final project** (with a short **presentation** of your final project). Students are expected to complete all assignments by their due dates. Any work turned in after the due date will receive a maximum score of 80%. If solutions have been posted for an assignment before you’ve turned it in, you’ll need to propose an alternative assignment acceptable to the instructor. Future data scientists please take note: there is an overwhelmingly positive correlation between how early students turn in their assignments and their course grades!
* There will often be short ungraded “hands on labs” that will help you prepare for your assignments.
* Working in teams on the projects is strongly encouraged, but not required. The ability to work effectively on virtual teams is an important “soft skill” for data scientists.

## Faculty Contact Information:

Data Science Math

Larry Fulton

[lawrence.fulton@sps.cuny.edu](mailto:lawrence.fulton@sps.cuny.edu)

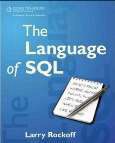
R Programming

Jeffrey Nieman [jeff.nieman@sps.cuny.edu](mailto:jeff.nieman@sps.cuny.edu)

SQL

Javier Guillén [javier.guillen@sps.cuny.edu](mailto:javier.guillen@sps.cuny.edu)

# Course Texts and Software



**Required Text – SQL Track**

*The Language of SQL* by Larry Rockoff. ISBN: 978-1435457515 *[sql track]*

**Required Text – R Programming Track**

*R for Everyone* by Jared Lander. ISBN: 978-0321888037 *[r track]*

**Required Texts – Data Science Math Track**

All of the resources for the Data Science Math track are freely available:

*Doing Math with Python*

<https://www.amazon.com/Doing-Math-Python-Programming-Statistics/dp/1593276400>

*Statistics and Machine Learning in Python*

[*ftp://ftp.cea.fr/pub/unati/people/educhesnay/pystatml/StatisticsMachineLearningPythonDraft.pdf*](ftp://ftp.cea.fr/pub/unati/people/educhesnay/pystatml/StatisticsMachineLearningPythonDraft.pdf)

*Basics of Linear Algebra for Machine Learning*

<https://www.mobt3ath.com/uplode/book/book-33342.pdf>

**Course Software**

We will make use of the R programming environment, RStudio IDE, and MySQL. All are free or open source. Details for obtaining and installing the appropriate software will be provided in the first week’s course materials.

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## Course Tracks Outline:

|  |  |  |  |
| --- | --- | --- | --- |
| **Week (Meetup Date)** | **Data Science Math** | **R** | **SQL** |
| **Week #1: July 12** | Math in Python | R Language Fundamentals; Data Types; Intro to R Markdown and RPubs, | SQL: Querying single tables |
| Functions |
| **Week #2: July 19** | Linear Algebra in Python | R Packages, Basic Data, Data Transformation | SQL: Querying multiple |
| tables |
| **Week #3: July 26** | Statistics in Python | Graphics; Final Projects | SQL: Advanced JOINs |

**ACCESSIBILITY AND ACCOMOMODATIONS**

The CUNY School of Professional Studies is firmly committed to making higher education accessible to students with disabilities by removing architectural barriers and providing programs and support services necessary for them to benefit from the instruction and resources of the University. Early planning is essential for many of the resources and accommodations provided. Please see: <http://sps.cuny.edu/student_services/disabilityservices.html>

## ONLINE ETIQUETTE AND ANTI-HARASSMENT POLICY

The University strictly prohibits the use of University online resources or facilities, including Blackboard, for the purpose of harassment of any individual or for the posting of any material that is scandalous, libelous, offensive or otherwise against the University’s policies. Please see: <http://media.sps.cuny.edu/filestore/8/4/9_d018dae29d76f89/849_3c7d075b32c268e.pdf>

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## ACADEMIC INTEGRITY

Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the educational mission of the City University of New York and the students' personal and intellectual growth. Please see: <http://media.sps.cuny.edu/filestore/8/3/9_dea303d5822ab91/839_1753cee9c9d90e9.pdf>

## STUDENT SUPPORT SERVICES

If you need any additional help, please visit Student Support Services: <http://sps.cuny.edu/student_resources/>

#### **Lawrence V Fulton**

**8:18 PM**

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