**R-workshop syllabus**

**Goal**: introduce students to the analytical programming using the R programming language. Although statistics will be introduced very briefly, it is not a goal of the workshop.

By the end of the course, students will have gained experience in:

* Managing analytical aspects of a project
* Inputting data, manipulating and exporting data
* Conduct basic statistical tests
* Visualize data
* Best practices for writing analytical software
* Getting more help, experience and practice

Pre-survey about student's experience with R (TBDeveloped)

* Analytics experience, for each of the following rank your experience from 0-5 (0=none, 3=took a class and used it, 5=totally comfortable using it regularly): spreadsheets (e.g., Excel), JMP, SAS, Python, R, minitab, MatLab, C++, some other programming language.
* Have you taken a statistics course?

7:45-8PM

June 1 (Monday): brief intro by Matt

* Basic description of the goals of course
* Brief introduction to project management, emphasizing time management
* Link to course materials

9-10AM  
June 2 (Tuesday): R workshop 1:

\*All students will have installed R on the computers that they are using.

\*Students will have downloaded the course materials from Github.

* Introduction to analytics, the usefulness of programming and R
* Present the overarching framework of analytics for a project (document organization, task scheduling, data management, analytics management, keeping an analytics notebook)
* Basic functions/operations and tasks (e.g., do simple calculations on scalars and vectors)
* Objects
* Functions
* Scripting and annotation

June 4 (Thursday): R workshop 2:

* Inputting and managing data overview
* Data structure and spreadsheets
* Data reading functions (read.table)
* Manipulating vectors (sorting, ordering)
* Manipulating matrices
* Loops and applys

June 9 (Tuesday): R workshop 3:

* Calculating basic statistics
* Visualizing data
* Scatterplots and Barplots
* ANOVA

June 16 (Tuesday): R workshop 4:

* Advanced object classes (dataframes and lists)
* Getting data from the HF archive
* Data provenance
* Versioning
* Open Q&A
* Software ethics and hackathons?

post-survey about student's experience with R (TBDeveloped)