

Syllabus - [SYS 2502] R Workshop

Course begin: Monday, January 30

Course end: Monday, May 1

Class meeting: Mon 12:00-1:50pm

Classroom: E304 (tentative)

Led by fourth-year Systems Engineering students

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Under the supervision of

- Professor Reid Bailey (rrbailey@virginia.edu)
- Professor Bill Scherer (wts@eservices.virginia.edu)

Learning objectives

The intent of this course is to give students interactive experience with basic R concepts and coding. The course will be hands-on and will use data sets from industry. In the workshop, four main topics will be covered including basics of R, data visualization, data cleaning and transformations, and statistical testing and predictive modeling. After this course, you will be able to write R code (at both command line and as “scripts”) to:

- Perform functions such as importing data, naming and setting data type variables, adding/removing observations, forming a data frame, selecting a subset of data, etc.
- Create your own functions
- Clean and prepare data, using techniques such as combining datasets, identifying outliers and potentially wrong data, identify missing data, etc.
- Visualize data using various types of plots
- Execute statistical tests such as correlations, hypothesis tests, and simple regression
- Execute other predictive modeling approaches, such as decision trees

Prior to First Class

Install R Studio

- <https://www.rstudio.com/products/rstudio/download/>

Install R

- Windows: <https://cran.r-project.org/bin/windows/base/>
- Mac: <https://cran.r-project.org/bin/macosx/>

We will spend time at the beginning of class dealing with any installation issues

Github page (for data sets and sample R code)

<https://github.com/LProcopi15/RWorkshop.git>