Professor McDonald  
FNCE 5352 – Financial Programming and Modeling  
February 25, 2020  
Prerequisites for R Programming Section

# Course Materials

Course materials can be found at https://github.com/mattmcd71/fnce5352\_spring2020

We will be using the book “R for Data Science” by Hadley Wickham and Garrett Grolemund. The book is available online at <https://r4ds.had.co.nz/index.html>. It is free and licensed under the [Creative Commons Attribution-NonCommercial-NoDerivs 3.0](http://creativecommons.org/licenses/by-nc-nd/3.0/us/)

If you’d like a hard copy of the book, it is available from Amazon (<https://www.amazon.com/Data-Science-Transform-Visualize-Model/dp/1491910399/ref=sr_1_3?ie=UTF8&qid=1548809834&sr=8-3&keywords=r+for+data+science>)

Additionally, we will use the book “Feature Engineering and Selection” by Max Kuhn and Kjell Johnson. Physical copies are sold by [**Amazon**](https://www.amazon.com/gp/product/1138079227/ref=as_li_tl?ie=UTF8&tag=apm0a-20&camp=1789&creative=9325&linkCode=as2&creativeASIN=1138079227&linkId=c801e78acfc3bc022dbed02af4851962) and [**Taylor & Francis**](https://www.crcpress.com/Feature-Engineering-and-Selection-A-Practical-Approach-for-Predictive-Models/Kuhn-Johnson/p/book/9781138079229). An online version is available at <https://bookdown.org/max/FES/>

# R Fundamentals

The course assumes some intermediate understanding of the R programming language. If you would like to get a basic introduction to the R programming language, please visit the following link:

<https://www.rstudio.com/online-learning/>

# R Installation

I will be periodically using R and RStudio interactively during the class instruction. If you would like to follow along during the class, please follow these instructions

Local Installation Instructions:

## R

I’ll be using the most recent version of R locally but I believe that anything > 3.4.1 should be fine.

R can be downloaded from the following link: <https://www.r-project.org/>

## RStudio

RStudio is an Interactive Development Environment for the R programming language. It is very useful. You can download it at:

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

## R Packages

The package installation instructions are:

install.packages(

c(

'AmesHousing',

'C50',

'devtools',

'discrim',

'earth',

'ggthemes',

'glmnet', # See important note below

'klaR',

'lubridate',

'modeldata',

'party',

'pROC',

'rpart',

'stringr',

'textfeatures',

'tidymodels'

),

repos = "http://cran.rstudio.com"

)

That install.packages command may additionally install over 100 more packages.

To verify the installation, try running:

# Installing packages from github (optional)

The caret and Recipe package may need to be installed from github to get all functionality presented in class. Instructions for that are below:

The package installation instructions are:

devtools::install\_github(c(

"tidymodels/tidymodels",

"tidymodels/tune",

"tidymodels/textrecipes",

"koalaverse/vip",

"gadenbuie/countdown"

))

That install.packages command may additionally install over 100 more packages.

# Lessons and Assignments

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| --- | --- | --- | --- |
| **Lecture Date** | **Topic** | **Assignment** | **Reading assignment (before next class)** |
| 25-Feb | Intro to R and Rstudio | R4DS:  5.2.4: Exercises 1, 3  5.3.1: Exercise 1  5.5.2: Exercises 2, 5  (Due 3/3) | R4DS: Sections 1, 5, 6, 7, 8 |
| 3-Mar | Analytic Workflow & Visualization | R4DS:  3.2.4: Exercise 5  3.3.1: Exercise 2  3.6.1: Exercise 1  4.4: Practice 3  (Due 3/10) | R4DS: Sections 2,3,4  FES: Chapters 1 & 3 |
| 10-Mar | Modeling – Introduction & Data Usage |  | R4DS: Sections 9-13 |
| 17-Mar | SPRING BREAK! | None | None |
| 24-Mar | Modeling - Feature Engineering |  | R4DS: Sections 14-16 |
| 31-Mar | Modeling – Resampling & Grid Search | Credit Modeling Project (due 4/28) | R4DS: Sections 17-21 |
| 7-Apr | Regression in R |  | R4DS: Sections 22-25 |
| 14-Apr | Classification in R |  |  |