

## **Syllabus for Introduction to R (2016)**

Monday Small Group Coding for the *How To Learn To Code* Summer Miniseries

### **Basic Information**

**When:** 1:00 pm – 2:00 pm, Mondays, June 13<sup>th</sup> – August 1<sup>st</sup>, 2016 (8 weeks).

**Where:** MacNider 328 (*Location subject to change*)

**Materials and Communications:** All materials for this course will be posted on the course website: <http://mauriziopaul.github.io/intro-to-R/overview>. Slack will be used for posting homework assignments and for communications between classes. At the end of the course, we will make sure materials are available at <https://sakai.unc.edu/portal/site/htltc> for your future reference.

**Class Size:** The class will consist of approximately ~13 students.

### **Instructors**

Katrina Kutchko, email: [kutchko@email.unc.edu](mailto:kutchko@email.unc.edu).

Paul Maurizio, email: [maurizio@email.unc.edu](mailto:maurizio@email.unc.edu).

### **Target Audience**

This course is geared towards graduate students and other UNC-Chapel Hill affiliates who are interested in learning to code by using the statistical programming language R.

### **Prerequisites**

There are no prerequisites for this course. Participants are expected, when possible, to bring their own laptop to class. Students should come to the first session with R and RStudio already installed on their machines, and with their summer calendars/schedules available. Students should also join the Slack group after receiving the invitation via e-mail before the first class.

### **Key Learning Objectives**

*Main Goal:* To be comfortable and proficient in approaching novel coding tasks in R.

*Learning Objectives:*

- Perform simple calculations
- Make simple plots
- Perform multiple operations in sequence, or at once
- Troubleshoot errors
- Exploratory data analysis
- Data wrangling
- Find help for functions
- Basic data modeling and interpretation of results
- Identify problems with your code/analysis (critical self-analysis)
- Format “clean” data and clean up “dirty” data

### **Lectures**

All lectures will be available as pdf files at the website. Some lectures will also have html pages on the website. Lectures will be made available at the start of each class, so that students can follow along on their laptops.

### **Homework Assignments**

Assignments will be distributed after each class. Answers will be posted the day before the subsequent class. Homework assignments will not be graded, however they are meant to be useful for students’ personal development and learning. There is no restriction on working together to complete assignments.

## Communication

We will be using the Slack <https://slack.com> group “LearnR”, at <https://learnr-2016.slack.com>, for posting homework assignments and peer-to-peer conversation. Students in this class will be sent invitations via e-mail to join the Slack group.

## Final Project

We will post the course project description to the website and to Slack after the first or second lecture. We hope the project will build upon topics from all of the lectures, and we will dedicate the last class for reviewing prior lectures and for discussing the project. *The project site is here:* <http://mauriziopaul.github.io/intro-to-R/project/>

## Evaluation

Near the end of the course, we will provide surveys to the students to obtain feedback to help guide the instructors and to help improve the course in the future. There are no grades for this class.

## Policies

Please see the syllabus for the main How to Learn to Code lectures regarding attendance: <http://howtolearntocode.web.unc.edu/class-syllabus/>. There is an 80% attendance requirement in order to receive a certificate of completion for the series. We hope to create a supportive and respectful environment where we can encourage and learn from each other.

## Resources

There are many free resources available online for learning R. We will not be following a single text book however the following books may be of use to you throughout the course:

*R for Data Science*, by Roger Peng

Available for free, with optional donation, at: <https://leanpub.com/rprogramming>

*The Art of R Programming*, by Norman Matloff

Available via UNC-CH, at: <http://site.ebrary.com/lib/uncch/detail.action?docID=10513550>

*A Beginner’s Guide to R*, by Alain F. Zuur, Elena N. Ieno, and Erik Meesters

Available via UNC-CH, at: <http://link.springer.com/book/10.1007%2F978-0-387-93837-0>

*simpleR: Using R for Introductory Statistics*, by John Verzani

Available for free at: <https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf>

*Modern Applied Statistics with S*, by W. N. Venables, B. D. Ripley (for more advanced users)

Available via UNC-CH, at: <http://link.springer.com/book/10.1007%2F978-0-387-21706-2>

## Calendar

Lecture	Date	Room	Instructor	Topic
1	June 13 <sup>th</sup> , 2016	MacNider 328	Paul	Getting Started with R
2	June 20 <sup>th</sup> , 2016	MacNider 328	Katrina	Basic Operations
3	June 27 <sup>th</sup> , 2016	MacNider 328	Paul	Basic Plotting
4	<i>July 5<sup>th</sup>, 2016 (Tue)</i>	<i>Bondurant 3074</i>	Katrina	Loops, Logic, and Apply
5	July 11 <sup>th</sup> , 2016	MacNider 328	Paul	Data Modeling
6	July 18 <sup>th</sup> , 2016	MacNider 328	Katrina	Data Wrangling
7	July 25 <sup>th</sup> , 2016	MacNider 328	Katrina	Advanced Plotting
8	August 1 <sup>st</sup> , 2016	MacNider 328	Paul	Course Project & Review

The building and room number are subject to change. During the first class, we will choose a convenient make-up date for lecture 4, which falls on July 4<sup>th</sup>, a holiday. *July 5<sup>th</sup> was chosen as a convenient date.*

## Syllabus Changes

The instructors may make changes to this syllabus according to the needs of the class. We will notify you of any updates.