

Math 130: Introduction to R - Fall 18

[Download this syllabus as a PDF]

Course Description

This course is designed as a primer to get the complete novice up and running with the basic knowledge of how to use the statistical programming language R in an environment that emphasizes reproducible research and literate programming for data analysis. The target audience is anyone who wants to do their own data analysis. The course will cumulate with an peer-evaluated exploratory data analysis on either a pre-specified data set or your data set of choice.

Logistics

- **Instructor:** Robin Donatello
- **Office Location:** Holt 202
- **Office Phone:** 898-5767
- **Office Hours:** Holt 202: M-3pm, W-1pm, R-10am
- **E-mail:** rdonatello@csuchico.edu
- **Course Website:** <https://norcalbiostat.github.io/MATH130/>
- **Prerequisites:** Basic computer literacy

- **Workshop style:** This workshop style class runs from 8/27 - 9/28 only.

	Section 01	Section 02
Meeting Days/Times	TR 2-3:15	TR 12:30-1:45
Meeting Location	Holt 155	Holt 155

Learning Outcomes

By the end of the course, students will be able to

- Import external data into R.
- Calculate summary statistics.
- Create new variables using different data types.
- Create informative data visualizations and tables.
- Perform data management techniques such as subsetting, grouping, summarizing.
- Create a reproducible research document.
- Conduct an exploratory data analysis in a reproducible manner.

Required Materials

- A reliable laptop, chromebook, tablet that can use a browser to access the internet.
- Reliable internet connection while on and off campus.
- A Data Camp account. This is an free online tool to learn R.

Software

During the last week (or earlier) you will install R and R Studio on your personal computer (Mac/PC/*nix only). That way you can take what you've learned in this class and apply it to other classes. Both are free. Walk through installation instructions can be found here: <https://norcalbiostat.netlify.com/post/software-overview/>

- R version 3.5.0 or later. Download from <https://cran.r-project.org/>
- R Studio version 1.1 or later. Download the desktop version from <https://www.rstudio.com/products/rstudio/download/#download>

Time Commitment

For all CSU degree programs and courses bearing academic credit, the “credit hour” is defined as . . . not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit.

This adds up to 15 hours in class, and 30 hours outside of class during these 5 weeks. That's 3 hours in class, and 10 hours of homework per week. If you are new to programming and unfamiliar with computers, you may end up taking the entire time. Be sure to schedule sufficient time during week 5 to work on the project.

You will get out of this class what you put into it. Recall this is just a co-curricular or supplemental basic introductory class. You will not learn everything there is to know about R, nor likely not feel proficient by the time you are done. But you will be solidly on the path where you can continue to learn and improve.

Resources

- Data Science Initiative - <https://datascience.csuchico.edu>
 - Holds Community coding - drop in hours held in the library. Fall 18 hours TBD
 - Weekly seminars and workshops in a variety of languages and topics.
- Chico R Users Google Group. This is our discussion forum to ask (and answer) questions outside of class. **I do not answer coding questions over email.**
 - <https://groups.google.com/forum/#!forum/chico-rug>
- The R Users Meetup group useful if you want to stay connected to the community and learn about upcoming events.
 - <https://www.meetup.com/Chico-R-Users-Group/>

Grading

Credit / No Credit. There are 100 points available in this course. You must earn 70 points to receive credit for the course.

- Attendance: (10 pts)
- Data Camp: (10 pts)
- Assignments:
 - Lab 1 (10 pts)
 - Lab 2 (10 pts)
 - Lab 3 (15 pts)
 - Lab 4 (15 pts)
- Project:
 - Exploratory Data Analysis (20 pts)
 - Peer Review (10 pts)

Schedule of Topics

The general outline of topics is listed below. A detailed most up to date schedule can be found on the course website.

- Intro to the R language and it's packages
 - R Studio suite of awesomeness
 - Reproducible Research with R Markdown
 - Functions
 - Getting data into R
 - Managing the spreadsheet-like data frame
 - Data Visualization
 - Data Manipulation and Aggregation
 - Exploratory Data Analysis
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Policies

Adding and Dropping the course

This course only runs for a few weeks and all materials are available on the course website. It will be difficult to get caught up if you add the class after the first week. The last day to add or drop classes without special permission by the instructor is 9/7/18. No adds or drops are allowed after 9/21/18 without a serious and compelling reason approved by the instructor, department chair, and college dean.

Americans with Disabilities Act

If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations.

Accessibility Resource Center
530-898-5959
Student Services Center 170
arcdept@csuchico.edu

Chico State Basic Needs Project

The **Hungry Wildcat Food Pantry** provides supplemental food, fresh produce, CalFresh application assistance and basic needs referral services for students experiencing food and housing insecurity.

All students are welcomed to visit the Pantry located in the Student Service Center 196, open Monday-Friday, 11am-4pm or call 530-898-4098.

Please visit the Chico State Basic Needs website <http://www.csuchico.edu/basic-needs> for more information.