

432 Spring 2018 Syllabus

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Key Information

This is the Spring 2018 syllabus page for PQHS / CRSP / MPHP 432: Data Science for Biological, Medical and Health Research II, taught by Professor Thomas Love. The course is given on Tuesdays and Thursdays from 1:00 to 2:15 PM, in a location to be announced.

Course Home Page

The course home page, with links to everything else you'll need, is at <https://github.com/THOMASELOVE/432-2018>.

Dr. Love



Thomas E. Love, Ph.D.

- Professor of Medicine, Population and Quantitative Health Sciences, CWRU
- Director of Biostatistics and Evaluation, Center for Health Care Research & Policy, MetroHealth Medical Center
- Chief Data Scientist, Better Health Partnership
- Track Lead for Health Care Analytics, MS in Biostatistics, Department of Population and Quantitative Health Sciences, CWRU
- Fellow, American Statistical Association

Getting Help!

To get help for anything related to the course, email the Teaching Assistants and Dr. Love at 431-help@case.edu.

- Dr. Love is available on Tuesdays and Thursdays at CWRU, by appointment. To make an appointment, email him at `thomas.love@case.edu`. His office is Wood WG-82 L.
 - If you have any special concerns about the course, need special accommodations or any other issues for Dr. Love, please email or speak with him before or after class.

Chapter 1

Course Description

PQHS 432 (cross-listed as, for example, CRSP 432 and MPHP 432, and formerly known as EPBI 432) is the second half of a two-semester sequence (with PQHS 431) focused on modern data analysis and advanced statistical modeling, with a practical bent (as little theory as possible), emphasizing the key role of thinking hard, and well, about design and analysis in research. The title listed by the registrar is a little dated - I prefer *Data Science for Biological, Medical or Health Research*.

This is a good course for people who want to learn how to use the R language to get information from data, and who want to learn about making comparisons and building models to help make meaningful progress in research, focusing on questions from biology, medicine and public health. We spend time managing and visualizing data, building models and making predictions, and other things thought of as “data science” - in essence, this highly applied course focuses on modern, more than classical, tools for learning from data. The course is taught using the R statistical software and RStudio environments, with the material discussed in 431 assumed in 432. Students learned a lot of R in the 431 course, and that material remains available at <https://github.com/THOMASELOVE/431>. We’ll continue to use R Studio and R Markdown as tools to help make R work better, and perform our research in replicable ways.

1.1 Prerequisites

Taking 432 without 431 is not recommended. The pace can be brisk at times, but all CWRU students who feel up to it are welcome, in any field of study.

1.2 Everything is on the Web

<https://github.com/THOMASELOVE/432-2018> is the place to go for everything related to this course. Please visit any time you need something. I update the web site frequently. You’ll find links there related to:

- Your homework **Assignments**
- **Data and Code** I will provide
- my in-class presentation **Slides**
- instructions and hints related to the **Projects**
- various outside **Texts**
- a detailed **Schedule** of classes and deadlines