7316 – Introduction to R – Spring, 2022

Syllabus

COURSE DESCRIPTION

Important: Please make sure you fulfill the course prerequisites.

This is an introduction to the R statistical programming language, focusing on essential skills needed to perform data analysis from entry, to preparation, analysis, and finally presentation. During the course, students will not only learn basic R functionality, but also how to leverage the extensive community-driven package ecosystem, and how to write their own functions in R. This is a pass/fail course.

Course content is broken up into 6 seminars:

1. Module 1: Introduction to Base R Environment
2. Module 2: Data Manipulation in R
3. Module 3: Loops, Conditionals, and Functions
4. Module 4: Project Management and Dynamic Documents
5. Module 5: Data Visualization and outputs in R
6. Module 6: Introduction to more advanced concepts: optimization, speed, style, and elegance

INTENDED LEARNING OUTCOMES

After completing the course, students be able to:

1. Import and transform data from a variety of sources using standard R functions.
2. Extend basic R functionality through use of packages and user-written programming.
3. Create compelling presentations for data analysis projects
4. Incorporate project management best practices to make project workflows more efficient
5. Understand how to run econometrics model using R, and process visualization and outputs
6. Understand how to use R effectively for machine learning purposes

COURSE PREREQUISITES

Students are required to have taken 5304 Econometrics or 651 Empirical Economics or an equivalent course from another institution. The course is taught by using examples from empirical research and we will not have time to cover the theory of the methods.

No prior knowledge in R is assumed, but students should have some familiarity with working with data beyond Excel spreadsheets.

EXAMINATION

This is a pass/fail course.

LITERATURE

The main reference for the Introduction to R course are:

- Wickham, H., & Grolemund, G. (2016). *R for data science: import, tidy, transform, visualize, and model data*. O'Reilly Media, Inc. https://r4ds.had.co.nz/
- Wickham, H. (2016). *ggplot2: elegant graphics for data analysis*. springer. https://ggplot2-book.org/
- Wickham, H. (2019). *Advanced R*. CRC press. https://adv-r.hadley.nz/

EDUCATIONAL SUPPORT

Have you been granted educational support because of a documented disability? If so, please contact the course director as soon as possible so that adequate accommodations can be made. Contact specialneeds@hhs.se if you have questions about being granted educational support or need a copy of your educational support certificate. Read more at Special Needs on the Portal.