Introduction to R*

R is considered the world's most powerful programming language for statistical computing, machine learning and data visualization. This course provides an introduction to R and its most popular integrated development environment (IDE) RStudio. We will cover Base R functionality and some additional packages that make using R more convenient. Examples we look at include data on rock music history and the sinking of the titanic.

Content

Introduction to R and RStudio
- Some background information on R
- How and why to use R together with Rstudio
- Working in the console (command line)
- Data structures in R: vectors, matrices, arrays, lists, data frames, factors
- Atomic data types: logical, numeric, character
- Using R scripts, Functions in R

Data preparation in R
- Base R and recommended packages
- Importing data from and exporting to various data formats
- Creating, transforming and deleting variables; sorting and filtering Describing data sets, obtaining summary statistics

Statistical Analysis
- Correlation analysis, tests of significance
- Regression analysis
- Decision trees

Communicating results: Visualization and Reports
- Introduction to Base R graphics and ggplot2
- Introduction to Reporting using R Markdown

Prerequisites for taking this course

While programming experience may help in learning R, this course does not assume prior programming skills. However, a willingness to write R code is required.

Notice

* This workshop cannot be credited as qualification measures at the Department of Mechanical Engineering. However you are welcome to participate.

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