Computer Language Workshop (CLW)
GECO 6910 / Fall 2019

Time and place: Thursday, 8pm - 10pm - room D600

Instructors:

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Course Description: This course will provide a basic understanding and familiarity in working with LaTeX and R. Focus will not be given to technical details but to enabling participants to setting up documents, analysing data and combining both systems. After having taken that course, participants should be comfortable in using LaTeX and R for writing their papers, handling data, performing descriptive and simple econometric analyses with R and creating dynamical and reproducible documents by combining R and LaTeX.

Credit Hours: 0 (hence, also no fees to pay, the course is for free)

Final Grade Calculation: No grades in this course. Enrolled students will receive a 'P' (for participation) in their transcript.

Student Assignments: Students of the CLW are not graded; there will be no compulsory assignments.

Prerequisites: None

Learning Outcomes: After having taken that course, participants should be comfortable in using LaTeX and R for writing their papers, handling data, performing descriptive and simple econometric analyses with R and creating dynamical and reproducible documents by combining R and LaTeX.

Resources: The university provides access to computers in which R and RStudio can be used. However, students are encouraged to bring their own laptops to class so that they can practice with in-class exercises on the spot. The software needed for this workshop is all open source and free. R can be easily downloaded from The R project website. However, for a user-friendly and resourceful interface, the free version of RStudio will be more than enough, as it can be downloaded from the RStudio website. Last, The LATEX project provides the software also online, and it needs to be installed by the start of the course.

General Guidelines: The course will be structured by a combination of lecture and in-class exercises. Instructors will give examples and also give time and support in solving coding exercises on one's own. Office hours for one-to-one or group tutoring will be provided to answer further questions and tackle specific coding issues.

Course Reading and Materials: No compulsory readings.

Helpful literature:

- Kabakoff, Robert. R in Action: Data Analysis and Graphics with R. Manning, 2015.
- Kerns, Jay G. Introduction to Probability and Statistics: Using R. 2018-08-29
- Farnsworth, Grant. Econometrics in R. MIT, 2014.
- Wickham, H. (2014). Advanced R. Chapman and Hall/CRC.
- Wickham, H., & Grolemund, G. R. (2017). R for Data Science: Import, Tidy, Transform, Visualize, and Model Data
- Kopka, H. & Daly, P. W. (2003). Guide to LaTeX, 4th edition, Addison-Wesley Professional

Helpful websites:

- Guru 99. R Tutorial for Beginners: Learning R Programming. 2019. https://www.guru99.com/r-tutorial.html
- LaTeX for Beginners http://www.docs.is.ed.ac.uk/skills/documents/3722/3722-2014.pdf
- LaTeX2ε for authors https://www.latex-project.org/help/documentation/usrguide.pdf
- Venables, Smith, R Core Team. An Introduction to R. https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf

Course Policies:

- Computers with relevant software are recommended at every session.
- There will be no assignments beyond provided readings or additional materials, though the purpose of the course is to encourage active engagement expanding with the programs

Disability Services:
In keeping with the university's policies of providing equal access for students with disabilities, any student with a disability who needs academic accommodations is welcome to meet with us privately. All conversations will be kept confidential. Students requesting any accommodations will also need to contact Student Disability Services (SDS). SDS will conduct an intake and, if appropriate, the Director will provide an academic accommodation notification letter for you to bring to us. At this point, we will review the letter with you and discuss these accommodations in relation to this course. Link to Student Disability Services: (http://www.newschool.edu/student-disability-services/).

University Policies:

- The Academic Honesty and Integrity Policy can be found at
  http://www.newschool.edu/policies
- The Intellectual Property Rights Policy, found at
  http://www.newschool.edu/provost/accreditation-policies/

Course structure

Session 1 and 2 - LaTeX basics and literature

- Setting up LaTeX - MiKTex and TeXstudio
- Tables
- Pictures
- Equations
- Referencing
- The *.bib* file: Setting up a bibliography document
- Collecting and managing bibliography data
- Literature management software

Session 3 - R Introduction

- Setting up R
- Handling basic functions
- Reading in data

Session 4 - Data analysis with R

- *dplyr* package
- Structuring data
- Exporting output

Session 5 - Plotting and integrating visuals

- Plot, *ggplot*
- *Xtable*

Session 6 - Writing documents using R and LaTeX

- Getting to know R-markdown
- How to combine LaTeX and R data
- How to compile a document in RStudio and TeXstudio
- How to work on a common online LaTeX document: using 'Overleaf'
- Examples

Session 7 - BYOR (Bring Your Own Research) / Replication

- Generation of a research output
- Integration into a text environment