LaTeX for Social Scientists

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Course Objectives

The course is targeted on political scientists, sociologists and other social scholars. Accordingly, its main focus is facilitating the social scientific inquiry and publishing by integrating the processes of academic writing and data analysis. Most importantly, the course introduces scholars to the LaTeX markup language and its powerful capabilities of formating articles and creating graphics of a high quality. It includes the crush course on Sweave (a program for integrating R with LaTeX) and other extensions, which allow instantaneous and automatic export of R output (regression tables, simulation graphs, scatter plots etc.) to LaTeX and its subsequent publication in .pdf format. In addition, the course introduces scholars to Beamer – a special class for making presentations in LaTeX. Overall, the course aims to help scholars by simplifying and significantly speeding up the process of academic writing and data analysis, increasing the productivity and the publishing quality of their work.

Course Structure

Seminar 1 ..... Introduction to LaTeX
Seminar 2 ..... Writing articles in LaTeX
Seminar 3 ..... Math and figures in LaTeX
Seminar 4 ..... *Sweave* – R, data analysis and LaTeX
Seminar 5 ..... *Beamer* – making presentations in LaTeX

Prerequisites:

- Basic knowledge of programming
- Familiarity with R
- Personal laptop
- Installed software (freeware): MiKTex, TeXstudio, R, RStudio

Homework

- Each participant prepares his or her Curriculum Vitae in LaTeX (use of templates is permitted)
- Optionally, participants may also try to transform their ongoing LCSR project into the LaTeX format (the help will be provided by the instructor)

Course Outline

Seminar 1: Introduction to LaTeX

What is LaTeX? LaTeX and other TeX macro packages. What are the advantages of using LaTeX over Microsoft Word and other word processing software? What are the drawbacks of using LaTeX? What are the other benefits of using LaTeX? How does it work and what software is required? Use of a markup language and its input (.tex) and output (pdfTeX), typesetting systems (MiKTex) and TeX editors (TeXworks, LyX, TeXstudio). The basics of LaTeX: documentclass, preamble, body, packages, document properties. Text and Math environment. The use of templates. Where to ask for help: best manuals, StackExchange and other websites.

Seminar 2: Writing articles in LaTeX

Documentclass(article) basic features: title page, abstract, sections, paragraphs, headers, footnotes, margins, indents, breaks, vertical and horizontal spaces, fonts, languages. Most used commands and packages. Introduction to BibTex: bibliography, citations, reference styles. Introduction to reference managers: Mendeley.

Seminar 3: Math and figures in LaTeX

LaTeX and mathematics: math mode, equations and formulae, amsmath and mathtools packages. Formating tables in LaTeX, figures and graphs. Brief introduction to producing vector graphics in LaTeX: PGF/TikZ,

Seminar 4: *Sweave* – R, data analysis and LaTeX

R packages for getting LaTeX output. Using LaTeX in R/RStudio via Sweave: specifics of compiling articles, TeX code and R chunks. Auto transformation of R regression outputs and graphs into LaTeX. Producing high-quality tables and figures (in the required format of a journal) for subsequent publishing.

Seminar 5: *Beamer* – making presentations in LaTeX

How to use LaTeX for presentations. Advantages and Disadvantages. Introduction to Beamer: main features, differences and similarities with MS Power Point, slides, themes, structure, animation. How to easily transform your article into a presentation.