

Applied \LaTeX and Markdown for Social Science Research

Laboratorio de Investigación para el Desarrollo del Ecuador

Syllabus

Instructor: Daniel Sánchez, M.A.

Module length: 4 hours

Level: Introductory **GitHub repository:** <https://github.com/laboratoriolide/applied-latex>

1 Course Description

This short module will introduce the use of the typographic system \LaTeX , focusing on its applied use for social science research. Further, the short module introduces Markdown and its use in conjunction with data analysis software.

2 Contents

The following is a planned outline of the course. This may change depending on the pace of the class. Lecture materials will be uploaded to the module's GitHub repository.

2.1 Lecture 1: Introduction to \LaTeX and document editing

- Introduction to \LaTeX , what is it and what is it for?
- Brief history of \LaTeX
- Preliminary issues
 - Hardware requirements
 - Installation of \TeX distributions
 - Development environments (IDEs: VS Code, \TeX Maker, etc.)
 - Overleaf: using \LaTeX online
 - Identification of keyboard shortcuts and important keycaps
- \LaTeX file structure
- Simple commands
- Packages

- Document classes
- Basic document formatting
- Text handling
 - Alignment
 - Lists
 - Titles, covers and abstracts
 - Indexes
 - Headers and footnotes

2.2 Lecture 2: Math mode, tables and figures

- Introduction to math mode
- Basic symbols and greek letters
- Equations
- Matrices
- Basic tables
- Automated table-making: Excel2LaTeX / Overleaf addins
- Including figures and subfigures

2.3 Lecture 3: Bibliography management with L^AT_EX, complex documents

- BibTeX and BibL^AT_EX
- Zotero integration
- Brief review of Mendeley, Citavi and other integrations
- Citation and bibliography formatting, styling
- Multi-file projects
- Cross-referencing
- Tips for error debugging
- Time-permitting: basic plotting with tikz and pgfplots

2.4 Lecture 4: Integration with statistical packages

- RMarkdown/Quarto
 - Basic Markdown syntax
 - R code chunks
 - Output formats
 - Use of L^AT_EX
- Presenting data analysis results with R
 - *stargazer*
 - *kableExtra*
 - *modelsummary*
 - *gt* and *flextable*
- Stata
 - *estout*
 - *outreg2*

3 Evaluation

Please consult the program’s regulation manual for short module evaluation criteria. All communication will be done through the program’s Slack channel.

3.1 Advanced topics (if time allows)

- Presentations with beamer and Quarto
- Advanced document formatting with classes
- Using L^AT_EX from Word
- *knitr/sweave*
- Codecogs
- Working with Python/Jupyter

Bibliography

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Goossens, Michel, and Rahtz, Sebastian, Mittelbach, Frank. *The L^AT_EX Graphics Companion: Illustrating documents with TeX and PostScript*. 1997.

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- Greenber, Harvey J. A Simplified Introduction to LaTeX.
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- Kottwitz, Stefan. *LaTeX Beginner's Guide*. 1st ed. Birmingham: Pack Publishing, 2011.
- Krummel, Michelle. LaTeX Tutorials (featuring Texmaker). <https://www.youtube.com/watch?v=0ivLZh9xK1Q&list=PL1D4EAB31D3EBC449>.
- Overleaf. Tutorials. <https://www.overleaf.com/learn/latex/Tutorials>.
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