Introduction to LaTeX
A Method for Scientific Writing

Margarita Tzivaki

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UNIVERSITY OF ONTARIO
INSTITUTE OF TECHNOLOGY

This workshop was developed by G. Clendenning, M. Tzivaki and K. Mills

Installation
On Windows, Linux and Mac

- **Windows:** Install MiKTeX or TeXLive. *After* that install your favourite editor. Configure the path to provide the editor with the exact location of the MiKTeX software.

- **Linux:** Make sure to have the full version of TeXLive, install your favourite editor (use the package manager).

- **Mac:** Install the MacTeX package (http://tug.org/mactex/). Either use the editor that comes with it (TeXShop) or install your favourite editor.

Hint:

If MiKTeX is not working try a different server.

Components
Document Format

Header: Determines the formatting

- Document class: *article*, *book*, *report*, *letter* with options for fonts and printing (equivalent KOMA Skript classes: scr)
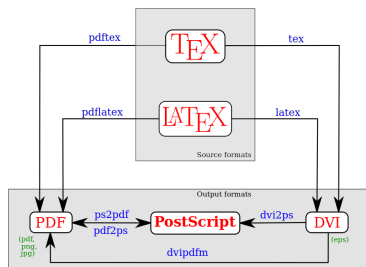 `\documentclass[options]{class}`
- Usepackages: Activation of special macros
  `\usepackage[parameters]{package}`

Main Body: The content of the document that is being formatted by the header

Special Pages: Bibliography, appendix commands

Compiling LATEX

Warning!

The only important file types are .tex, .cls and .sty, .bib and .bst. They are not temporary and should not be deleted.

Layout
Page Style

\pagestyle{'style'} and \thispagestyle{'style'}

- **empty:** Header and footer are cleared
- **plain:** Header is clear, but the footer contains the page number in the center
- **headings:** Footer is blank, header displays information according to document class and page number top right
- **myheadings:** Page number is top right, and it is possible to control the rest of the header
- **fancy:** For better control over the headers and footers \usepackage{fancyhdr}

Formatting
Page Size and Structure

- LaTeX comes with predefined page and margin sizes for every style and document class
- For manipulation: `\usepackage[options]{geometry}`
- The landscape format is an option of the geometry package
- Text in multiple columns:
  `\begin{multicols}{#}...lots of text...\end{multicols}`

Warning!
As LaTeX is a globally recognized set of typesetting defaults, additional page formatting should be done not without reason and always with great care.

Formatting
Colors

`\usepackage{color}` and `\usepackage[options]{xcolor}`

- Define colors: `\definecolor{'name'}{'model'}{'color-spec'}`
- Coloring text: `\textcolor{declared-color}{text}`
- Coloring the background: `\colorbox{declared-color}{text}`

Formatting
Fonts

Various font styles, shapes and sizes are available.

Font encoding can be modified with
`\usepackage['encoding']{fontenc}`

Warning!

For the sake of consistent typography playing a lot with fonts is highly discouraged. This is the work of font and class designers, not end users.