TeX Installation

If you frequently work with LaTeX, it is generally recommended to have a complete LaTeX installation on your computer. However, in recent years, several online tools have been developed that allow you to use LaTeX in your browser without installation. One notable tool is Overleaf, which also offers collaborative document editing capabilities.

For the LaTeX course, it is sufficient to have a free Overleaf account. For those who also want to work offline or prefer not to create an account, installing the latest 2023 version of the TeX Live distribution is recommended.

The following instructions explain how to install the latest TeX Live distribution. While not necessarily required for the course, it is recommended for long-term use of LaTeX. A functional TeX system essentially consists of two parts: a TeX distribution and an editor.

1 The TeX Distribution

The LaTeX distribution takes care of downloading all necessary files and placing them in the correct locations. Different distributions are available for different operating systems. If there is already an outdated or unused TeX system installed on your computer, it is recommended to *completely* remove it before installing a new one to avoid potential conflicts.

Windows

For Windows, besides TeX Live, the MikTeX distribution is also available. MikTeX is relatively easy to install and can automatically install missing packages. Additionally, there is the proTeXt bundle, which aims to be particularly easy to set up and includes the editors TeXstudio and TeXnicCenter.

To install TeX Live, simply download and run the installer `install-tl-windows.exe`. Choosing the installation scheme `simple install` will download and install all packages and programs included in TeX Live from the internet. Information, instructions, and downloads for TeX Live can be found at: `https://www.tug.org/texlive/`

Mac

For Mac OS, there is the MacTeX distribution, which automatically installs TeX Live and sets up the editor TeXShop. The project page `https://www.tug.org/mactex` offers downloads, instructions, and support.

Unix/Linux

Most Linux distributions have a TeX Live package that can be installed via the system's package manager (apt, emerge, pacman, yum, etc.). It is important to ensure that the latest version of 2023 is available in the package repositories. Alternatively, TeX Live can also be installed manually on Linux.

2 The Editor

With the TeX distribution, we have all the necessary packages and programs to compile TeX files into PDFs. To create TeX files, we need an editor. Essentially, any editor that can save text files in UTF-8 encoding is suitable for TeX. However, there are several editors specifically developed for working with LaTeX, which include syntax highlighting and some useful additional features. These are often called integrated development environments (IDEs), which come with their own PDF viewers and quick access to important TeX functions.

Since most of the time will be spent in the editor, and the actual TeX system works in the background, it is worth putting some effort into choosing the right editor. Below is a list of popular editors.

TeXworks The free editor TeXworks is modeled after TeXShop, available under Mac. It comes with the TeX Live installation on Windows, and it can be installed independently on Linux. TeXworks includes its own PDF viewer and supports syncTeX, which allows navigation between source code and PDF: clicking on a location in the PDF opens the corresponding location in the source code, and vice versa! This can be a very powerful tool, especially for large documents.

TeXmaker A reliable, feature-rich editor for Linux, Mac, and Windows with syncTeX support.

TeXstudio Editor based on TeXmaker, offering additional features like real-time syntax checking.

TeXnicCenter A frequently recommended editor for Windows, automatically included with a MiKTeX installation. syncTeX is possible when used with the Sumatra PDF viewer.

Kile Kile is the KDE editor for LaTeX, but it should also be possible to run it on Mac and Windows. Kile is very easy and intuitive to use, offering all the features needed for efficient work with LaTeX, including an integrated preview function for DVI and PDF files with syncTeX.

Vim, Emacs For the classic editors, Vim-LaTeX and AUCTeX provide plugins that facilitate working with LaTeX. Those who already use Vim or Emacs will likely be happy with them, but for others, the learning curve might be too steep to learn LaTeX and a powerful editor *simultaneously*.

TeXShop A TeX editor for Mac OS, included with MacTeX. The editor is praised for its intuitive and well-integrated interface with the operating system.

Finding an editor that meets personal needs can be a lengthy process, and the list above is only intended to provide some suggestions. In case of doubt, TeXworks provides a good editor for both beginners and advanced users.
A detailed comparison of many TeX editors can be found, for example, on Wikipedia:
https://en.wikipedia.org/wiki/Comparison_of_TeX_editors