LaTeX Course 2011

$\mathcal{F}$rom βasics to αdvanced τypesetting

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About the Course

Course Page:

http://cell.vtt.fi/latex

Suggested preliminary knowledge:

original:	http://tobi.oetiker.ch/lshort/lshort.pdf
copy:	http://cell.vtt.fi/latex/extras/lshort.pdf

Suomeksi:

alkup.:	http://www.tex.ac.uk/CTAN/info/lshort/finnish/lyhyt2e.pdf
kopio:	http://cell.vtt.fi/latex/extras/lyhyt2e.pdf

About the Course...

Suggested book:
Helmut Kopka and Patrick W. Daly, Guide to LaTeX, 4th edition.
In my opinion, the book is very thoroughly written and works perfectly as a reference.

Other suggested books:
The LaTeX Companion, The LaTeX Web Companion, The LaTeX Graphics Companion
These are the fundamental and also the most often cited books. Their only disadvantage is that there are even more pages to read through.

About the Course...

There appears not to be both a **complete** and a **concise** electronic reference to the system. In contrast, the amount of documentation is huge, and most of it is more or less outdated.

$\rightarrow$ The book is a valuable investment.

Some of the electronic references are rather complete: teTeX hypertext help is rather complete, and the TeXlipse plug-in for Eclipse knows quite the well the basic commands.

About the Course...

Most of the texts in natural sciences are written with LaTeX nowadays.

LaTeX is actually part of the scientific heritage, including the other open sourced tools like Linux, PostgreSQL, the BSD-system, Apache, etc.

Keywords: markup languages, GNU and open source.

What is LaTeX?

LaTeX, or precisely LaTeX 2_ε, is a typesetting system for structured documents, including

- books
- scientific papers
- handouts
- research reports
- slides — like now.

What is LaTeX?...

The document format is structured, which means that there are

- logical and (preferably only few)
- typographical

commands mixed with the manuscript text[1].

The text-formatted source can be compiled into different formats, the most common being

- PDF (Portable Document Format) and
- HTML (HyperText Markup Language).

[1] The manuscript has the role of “source code” in this context.

This course is for you, if you. . .

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- compose books,
- publish in natural sciences,
- compose mathematical texts,
- generate (pdf) documents automatically from software,
- just like software that (just) works, or
- just like free / open source software.

Course contents

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1. short introduction
2. logical constructs: lists, environments,...
3. typographical building blocs: lines, boxes, fonts,...
4. mathematical typesetting: $\oint_C \frac{3\pi}{\sqrt[n]{\frac{z-1}{z+1}}} \mathrm{dz}$, ...
5. graphics: adding and drawing images,...
6. other tools: BibTeX for references, drawing images,...

Welcome to the Course!

$$X\beta = y + \epsilon \quad \Leftrightarrow \quad \begin{bmatrix} 1 & x_{11} & \cdots & x_{1M} \\ 1 & x_{21} & \cdots & x_{1M} \\ \vdots & & & \vdots \\ & & & \\ \vdots & & & \vdots \\ 1 & x_{N1} & \cdots & x_{NM} \end{bmatrix} \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_M \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ \\ \vdots \\ y_N \end{bmatrix} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \vdots \\ \\ \vdots \\ \epsilon_N \end{bmatrix}$$