Documentation of the LaTeX class

`unifith.cls`

Version 1.0, 2019-08-07

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Abstract

This document describes how to use `unifith.cls`, a LaTeX document class for the typesetting of the theses of the "University of Florence". The official web page of UniFiTh is http://biccari.altervista.org/c/informatica/latex/unifith.php.

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1   Introduction

After several years in my faculty I noticed that usually students spend a lot of time to refine the aesthetic aspect of their LaTeX documents instead of focusing on the content. This is against the philosophy of LaTeX, which was created to relieve the writer from the typesetter's work. Apart from the time spent, the resulting documents are obviously all different from each other and good aesthetic results are not always achieved. This has a negative impact both on the student's work and on the university. For these reasons I thought that a LaTeX class for the theses of my university would have been a good idea. UniFiTh is the result of my work. It has been developed starting from Sapthesis class of the same author. UniFiTh follows the rules of the Communication Plan of the University of Florence: https://www.unifi.it/ls-36-unifi-comunica.html. At that link you can find the guidelines for the preparation of the documents, the files of the logo and some examples.

To give a look to a document composed by UniFiTh class, compile one of the several examples in the `examples` directory. In those files the page layout and the layout choices are explained. UniFiTh is released under the terms of the latest version (1.3c) of the LaTeX Project Public License.

I would like to thank the Italian TeX user group (GuIT) for the help provided. I would like to thank also Giacomo Mazzamuto and Lorenzo Pattelli and all the users who reported bugs and suggestions.

2   Requirements and installation

The simplest way to install UniFiTh is by the package manager of your TeX distribution (TeX Live or MiKTeX). For manual installation see the `README` file.

The UniFiTh package provides: the `unifith.cls` class file; the documentation `unifith-doc.pdf` (this file) and its source code; the logo of the University of Florence; several usage examples.

UniFiTh explicitly loads the packages xkeyval, etoolbox, geometry, ifxetex, xltxtra, fontenc, textcomp, lmodern, caption, graphicx, color, booktabs, amsmath, fancyhdr. Do **not** include these packages in the preamble of your document!

3 Usage

A LaTeX document based on UniFiTh can be compiled only by the commands `pdflatex` and `xelatex`. In this manual only `pdflatex` will be considered.

As usual, in order to use this class, you need to call it by

`\documentclass[`*options*`]{unifith}`

You have to specify the class options for your case (see Sec. 3.1). Then you have to provide some fundamental information (title, author, etc. . .) by specific commands in the preamble (see Sec. 3.2). Finally, remember to follow a source code structure similar to those of the examples given in App. B and C. Especially the usage of the commands `\frontmatter`, `\mainmatter` and `\backmatter` is mandatory, otherwise the page style of the document will be wrong!

This class supports, at the moment, two languages: Italian and English. English is the default. If your thesis contains only English or very few paragraphs in another language, do not use the `babel` package because completely useless. Instead, if you write in Italian, load the `babel` package with the `italian` option: `\usepackage[italian]{babel}`.

3.1 Class options

The following options can be passed to the `\documentclass` command.

draft The usual `draft` option of the LaTeX Standard Classes.

oneside The usual `oneside` option of the LaTeX Standard Classes.

twoside (default) The usual `twoside` option of the LaTeX Standard Classes.

binding=*length* (zero default binding) The value of this option is an offset of the text column. It is useful to take into account the margin for the binding (ask to your bookbinder for information).

noexaminfo Suppress all the final exam informations. Indeed, by default, UniFiTh shows some information about the final thesis discussion on the back of the title page. By default it shows the phrase "Thesis not yet defended". Otherwise, as explained later, giving the commands `\examdate{...}` and `\examiner{...}` the date and the examiners list are shown.

nodefaultfont Avoid the loading of packages fontenc, textcomp and lmodern.

romandiff See App. D.

fem Use the feminine (only Italian): shows "candidata" instead of "candidato".

3.2 Commands for the title page

As usual, the title page is generated by the \maketitle command. It needs some information that you can supply by the following commands in the preamble.

\title{...} Mandatory. Title.

\subtitle{...} Optional. Subtitle (try to avoid a subtitle).

\author{...} Mandatory. Author (student's name).

\IDnumber{...} Mandatory. ID number (*matricola* in Italian).

\course{...} Mandatory. Use the official Italian name of the course.

\courseorganizer{...} Mandatory. Course organizer.

\AcademicYear{...} Academic Year.

\copyyear{...} Mandatory. Copyright year (usually the graduation year).

\thesistype{...} Optional. Type of thesis (usually PhD thesis, Master thesis, and so on.).

\advisor{...} You must specify at least one advisor. If you have more than one advisor, put several advisor commands in the correct order:
\advisor{Prof. Pippo} \advisor{Dr. Pluto}

\coadvisor[...]{...} Optional. Co-advisors of the thesis. Same syntax of the \advisor command. If the optional argument ext is specified, "External advisor" will be printed instead of "Co-Advisor".

\reviewer{...} Optional. Reviewers of the thesis. Same syntax of the \advisor command. The list of the reviewer is preceded by the a text which can be specified by the \reviewerlabel{...} command.

\authoremail{...} Mandatory. Email of the thesis author. It is automatically hyper-linked if hyperref package is loaded.

\versiondate{...} Optional. Date version of the thesis.

\website{...} Optional. Thesis website. Automatically hyper-linked if hyperref
package is loaded.

\ISBN{...} Optional. ISBN

\copyrightstatement{...} Optional. Specify a copyright statement that will
be printed in place of the default one.

\examdate{...} Optional. Date of the final exam.
Example: \examdate{16 February 2010}.

\examiner[...]{...} Optional. Specifies the members of the board of examin-
ers of the final exam. Usage similar to \advisor command. The optional
argument can be used to specify the role of that examiner in the commission.

\cycle{...} Mandatory only for PhD's. Use the form: \cycle{XXII}

\director{...} Only for Specialization. Mandatory.

3.3 Other commands and environments

\dedication{...} A command to compose the dedication.

abstract An environment to compose the abstract of your document. This
environment has an optional parameter to choose the title of the abstract
section. If you use a language for the abstract different from that of the thesis,
consider the \selectlanguage{...} command provided by the babel
package.

acknowledgments An environment to compose the acknowledgments of your
document. This environment has an optional parameter to choose the title of
the acknowledgments section. If you use a language for the acknowledgments
different from that of the thesis, consider the \selectlanguage{...}
command provided by the babel package.

The UniFiTh class defines also the color unifiblue which is the *UniFi blue*:
RGB(0,82,147). Example of usage: \textcolor{unifiblue}{blah blah}

4 Recommendations

- Do **not** change the default layout. If you want to change the interline spacing, do not use the \linespread command. Load instead the setspace package and use, for example, the \onehalfspacing command.

- Do **not** load the packages already loaded by UniFiTh (see Sec. 2).

- As you already should know, LATEX can process only documents in pure ASCII. If you want to insert *directly* other characters, not included in the 128 ASCII characters (for example accented letters), you have to use a particular text encoding for your source file. Then you have to "tell" to LATEX which encoding you have chosen by the packages inputenc. It is always recommended to use UTF-8 character encoding and specify this choice also by the *magic lines* at the beginning of the source code (see the examples in App. B and C).

- Respect the following thesis structure:

  - Title page (\maketitle command)
  - Dedication (\dedication command)
  - Abstract (abstract environment)
  - Acknowledgements (acknowledgments environment)
  - Table of contents (\tableofcontens command)
  - Chapters
  - Appendices
  - Bibliography

- It is recommended to avoid or limit the acknowledgments in a thesis, it is not very professional. The dedication should be enough.

- Do not put any preface in your thesis. The preface should be written only by an eminent expert in the field to comment exceptionally important results of the student.

- Usually tables and figures are centered. Remember that, according to the typographic rules, the table captions should be placed **above** the table, whereas the figure caption should be placed **below** the figure.

- If the figure has a small width, it is possible to put the figure caption aside the figure using the `sidecap` package (not preloaded by UniFiTh).

- Avoid the use of colors unless really necessary. Remember that the figures should be readable even if they are printed in gray scale!

- Subscripts and superscripts should be in italic if they represent variable quantities, whereas should be in roman if they are simply labels.

- The name of operators should be typed in roman. Example: use sin (`$\sin$`) instead of *sin* (`$sin$`).

- The margin notes are rarely used in scientific documents and should **not** be used in a scientific thesis.

- Do not divide the bibliography per chapter unless it is **really** necessary. This will save you from wasting a lot of time to prepare your LaTeX source code. Order your bibliography alphabetically according to the first author surname: this order is very useful, contrary to the other typical order, the citation order.

A A very brief introduction to the TeX world

Many people want to (or are compelled to) write in LaTeX without studying a basic manual. Here follows a very brief introduction to the TeX world.

TeX, the document preparation system designed by Donald Knuth in 1978, is a program to typeset documents. It is a mark-up language: you write a simple text decorated with TeX commands (source code) which is then compiled to obtain the final product, a document in pdf format. LaTeX is just a set of macros, written in TeX, to simplify the writing of the source code: it can be thought as a simpler programming language with respect to TeX. A source code written in LaTeX can be compiled by several "compilers": `pdflatex` (the most common), or `xelatex`, or others.

The following list of LaTeX manuals, may be especially useful for Italian authors.

- L. Pantieri & T. Gordini, *L'arte di scrivere con LaTeX*, (2017)

- S. Pakin, *The comprehensive LaTeX symbol list*, (2017)

- E. Gregorio, LaTeX*: breve guida ai pacchetti di uso più comune*, (2010)

In order to use LATEX, you have to install a TEX distribution. It contains the compilers, several fonts and other files needed by the compilers and also many *packages*, which can be thought as libraries or extensions of LATEX. The most famous distributions are MiKTeX (available only for Windows), TeX Live (available both for Windows and Linux) and MacTeX (available only for Mac OS).

Finally we discuss the editor, that is the program used to write your source file. Since a source file written in LATEX, like in any other programming language, is a simple text file, you can write your code with any text editor you want (for example Notepad in Windows). However the suggested editors are:

- TeXworks. Already installed with any TEX distribution. Very simple and powerful. Use TeXworks if you are not an expert. Enrico Gregorio has written a very good and brief TeXworks manual in Italian, which can be found at: http://profs.sci.univr.it/~gregorio/introtexworks.pdf.

- TeXstudio (cross-platform), TeXmaker (cross-platform), TeXshop (only for Mac), Kile (only for Linux). Powerful editors.

- **Avoid** other editors unless you know what you are doing!

Finally we explain how to compile the example documents provided in the UniFiTh package. Double click on one of the .tex file in the examples folder. TeXworks should start showing the content of that file. The pdflatex compiler should be automatically selected thanks to the *magic lines* placed at the beginning of the file. Now, in order to compile, press the green button. At the end of the compilation the resulting pdf appears in a separate window. Remember to compile at least three times, because LATEX needs more than one compilation to correctly resolve the internal cross references (for example for the table of contents composition, or when you refer to a figure by the \label – \ref/\pageref mechanism).

B PhD thesis example

```
% !TeX encoding = UTF-8
% !TeX program = pdflatex
% !TeX spellcheck = en_US


\documentclass[binding=0.6cm]{unifith}

\usepackage{microtype}
\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\usepackage{hyperref}
\hypersetup{pdftitle={My thesis},pdfauthor={Francesco Biccari}}

\title{My thesis}
\alttitle{Optional anternative title (for example different language)}
\author{Francesco Biccari}
\IDnumber{166350}
\course{Corso di Dottorato in Fisica e Astronomia}
\courseorganizer{Dipartimento di Fisica e Astronomia}
\cycle{Ciclo XXXII}
\AcademicYear{2018/2019}

\thesistype{PhD thesis}
\copyyear{2020}
\advisor{Prof. Caio}
\advisor{Dr. Sempronio}
\authoremail{pippo@pippo.com}

\begin{document}

\frontmatter
\maketitle
\dedication{Dedicated to\\ Donald Knuth}

\begin{abstract}
This thesis deals with myself.
\end{abstract}

\tableofcontents

\mainmatter
\chapter{Introduction}
...

\backmatter
\cleardoublepage
\phantomsection % Give this command only if hyperref is loaded
\addcontentsline{toc}{chapter}{\bibname}
% Here put the code for the bibliography. You can use BibTeX or
% the BibLaTeX package or the simple environment thebibliography.
\end{document}
```

C   Laurea (Magistrale) thesis example

```latex
% !TeX encoding = UTF-8
% !TeX program = pdflatex
% !TeX spellcheck = en_US

\documentclass[binding=0.6cm]{unifith}

\usepackage{microtype}
\usepackage[italian]{babel}
\usepackage[utf8]{inputenc}
\usepackage{hyperref}
\hypersetup{pdftitle={La mia tesi},pdfauthor={Francesco Biccari}}

\title{La mia tesi}
\alttitle{Titolo alternativo opzionale (tipicamente in inglese)}
\author{Francesco Biccari}
\IDnumber{166350}
\course{Corso di Laurea Magistrale in Fisica e Astronomia}
\courseorganizer{Scuola di Scienze Matematiche, Fisiche e Naturali}
\AcademicYear{2018/2019}

\thesistype{Master thesis}
\copyyear{2020}
\advisor{Prof. Caio}
\advisor{Dr. Sempronio}
\authoremail{pippo@pippo.com}

\begin{document}

\frontmatter
\maketitle
\dedication{Dedicato a\\ Donald Knuth}

\begin{abstract}
Questa tesi parla di me.
\end{abstract}

\tableofcontents

\mainmatter
\chapter{Introduzione}
...

\backmatter
\cleardoublepage
\phantomsection % Give this command only if hyperref is loaded
\addcontentsline{toc}{chapter}{\bibname}
% Here put the code for the bibliography. You can use BibTeX or
% the BibLaTeX package or the simple environment thebibliography.
\end{document}
```

D Other useful commands

\eu Napier's number, e, in roman.

\iu Imaginary unit, i, in roman.

\der{...}{...} Derivative. The first argument represents the function to derive while the second the variables separated by commas. The differential symbol is automatically inserted. Examples: \der{f}{x}, \der{f}{x,y}, \der{f}{*{3}{x}}, \der{f}{*{2}{x},*{2}{y},z}.

\pder{...}{...} Partial derivative. Same syntax of the \der command.

\rb{...} Roman suBscript

\rp{...} Roman suPerscript

\tb{...} Text suBscript

\tp{...} Text suPerscript

\un{...} Useful command to typeset measurement units in the correct way, e.g. 25\un{m/s}, 13\un{kg\,cm^{-3}}. It can be used both inside or outside the math environment. For heavy usage of measurement units and to insert numbers in the form 1.4e-5, the package siunitx is recommended.

\mnote{...} Fancy margin notes

\g Shortcut for the \degree command. Example: 45\g produces $45°$.

\C Shortcut for the \celsius command. Example: 37\,\C produces $37\,°C$. (Not available in math mode compiling with xelatex).

\A Angstrom. Example: 10\,\A produces $10\,Å$.

\micro Micro prefix. Example: 7\,\micro m produces $7\,µm$.

\ohm Ohm. Example: 100\,\ohm produces $100\,Ω$.

\di Differential symbol with automatic spacing.
Example: \$\int x \di x\$ produces $\int x\,dx$. If you prefer the differential symbol in roman (d) you can give the option romandiff in the document class options.

\x Shortcut for the \times command. E.g.: \$7 \x 10^5\$ produces 7×10^5.