

# The thcover package

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## Abstract

Complying with the rules defined by French universities for the layout of front and back covers of PhD thesis is often difficult. Exceptionally, the WYSIWYG approach could be an advantage: resorting to a text processing application like MS-Office or Libre-Office to produce a PDF version, that can be incorporated by using the `pdfpages` package.

We propose here a pure pdfL<sup>A</sup>T<sub>E</sub>X solution for the thesis of some Paris's region universities. Another advantage is that the metadata are automatically added to the PDF, and also that a PDF/A file can be easily produced.

## 1 Introduction

Some templates, generally provided as  $\star$ -Office files or PDF files, are defined with a single column with centered material, and the problem is simply to cope with the size of the font of different lines, and the proper spacing of successive lines <sup>1</sup>.

Some others are really layout-driven with absolutely positioned material, and often some background material like images<sup>2</sup>. In such cases, the sizes and spacing are fixed, and the problem reduces to implement the absolute positioning on the page, with the proper fonts, colors, sizes. . .

Furthermore, one typical problem common to all institutions is the formatting of the committee list, which slightly differ from one to another, even if all of them handle basically the same information.

In what follows we describe the package `thcover` specifically written for this purpose, at this stage for the four universities “Université PSL”, “Sorbonne Université”, “Université de Paris”, and “Université Paris-Saclay”<sup>3</sup>.

## 2 Installation

All the files must be unpacked in a place where L<sup>A</sup>T<sub>E</sub>X can find them. The best place could likely be a `tex/latex/thcover/` sub-directory of a **TDS compliant folder**, usually named `texmf`<sup>4</sup>.

If do not have the rights to write in the main `texmf` directory, or do not want to alter it, the normal procedure consist in creating a personal T<sub>E</sub>X directory, say<sup>5</sup> `~/mytexmf`, and tell to the database handler to browse it when refreshing. If you finally do not success for that, simply put the required files in your working directory.

The TeX files of the package contains the main style `thcover.sty`, 4 definition files (one per institution : `PSLcover.def`, `SUcover.def`, `UPcover.def`, `UPSaclaycover.def` and two sample files `testcover.tex` and `testcover_meta.tex`, and beside this, several PDF files providing the backgrounds and some logos.

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<sup>1</sup>See the templates from Sorbonne Université or Université de Paris.

<sup>2</sup>See the templates from Université PSL or Université Paris-Saclay

<sup>3</sup>Since the development of this package, some alternative appeared on the web. . .

<sup>4</sup>On Windows it is usually `C:\Programs\MiKTeX 2.9` or `C:\Programs\MiKTeX`. For both Linux/Unix and Mac OS X, using TeXLive distribution, it is generally in `/usr/local/texmf/<year>/texmf-dist` or something similar; furthermore, on Mac OS X it is symlinked to `/Library/TeX/Root`. In any case, you can get a hint about its location by using `kpsewhich article.cls` on the command line.

<sup>5</sup>Here `~` is your home directory, on Windows: `C:\Users\<yourname>\`, and Mac OS X: `/Users/<yourname>/`.

## 3 Usage

Once the files ready, add in your preamble : `\usepackage[<options>]{thcover}`. These options are provided as keys-pairs or boolean (meaning `true` when present without value).

### 3.1 Options

A single option is mandatory:

**etab** A string identifying the university, presently among SU, PSL, UPSACLAY, UP. No default.

The other (optional) *string* options are :

**lang** A string identifying the main language of the thesis: `french` or `english`, which defines the version of the title shown on the front cover, ~~except for PSL, where both are already printed~~. Default to the active language when `babel` is loaded, and otherwise to `french`.

**meta** A string providing the name of the file containing metadata (see § 3.3 below). Default to `\jobname_meta.tex` (where `\jobname` is the base name of the main file).

**pdf** A string specifying the PDF version to be the produced. Recognized values are `pdf14`, `pdf15`, `pdf17` and `pdfa`. See below (§ 3.4) for option `pdfa` requesting the production of a PDF/A-2b file. Default<sup>6</sup> to `pdf15`.

An (optional) *number* option:

**startpage** An number which defines the (not printed) page number assigned to the front cover. Without this option, it's page would be 1, and this could conflict in `hyperref`'s target assignment to others pages<sup>7</sup> where `\value{page}=1`. Default to `-1`.

The (optional) *boolean* options are:

**arial** If `true` request the loading of an Arial-like (font for typesetting the front cover page. If `false` the default Sans serif font is used<sup>8</sup>. Required for PSL and UPSaclay. Default to `true`.

**creativecommons** Whether or not include on the front cover page the standard Creative Commons icons  for the license BY-NC-ND . Default to `false`.

**Exemple:**

```
\usepackage[etab=SU,meta=test_meta.tex,arial=true,creativecommons]{thcover}
```

### 3.2 Commands

The package defines two types of to user commands :

- The commands to be used in your main  $\text{\LaTeX}$  file to produce the cover pages:
  - `\frontcover` which produces the first coverpage.
  - `\backcover` which produces the fourth coverpage.
  - `\maketitle` to produce both of them.
- Commands like `\author` or `\thesisname` to be used in the meta-data file, detailed in § 3.3

<sup>6</sup>Presently most programs produce PDF 1.7 format file, and you could need to set `pdf` to `pdf17` or `pdfa`.

<sup>7</sup>This behavior also depends on the use of the switches `\frontmatter` `\mainmatter` and `\backmatter` that also influence the page numbering.

<sup>8</sup>Actually `TeX Gyre Heros`

Table 1: Commands used to define the meta-data

Command	Definition	Example/Remark
<code>\author</code>	Author full name	Eugène TRIBOULET
<code>\advisor</code>	Advisor full name	Tryphon TOURNESOL
<code>\thesisname</code>	Name of thesis	Thèse de doctorat
<code>\gradename</code>	Name of grade	docteur
<code>\univ</code>	Name of university	de l'Université PSL
<code>\atinstitution<sup>†</sup></code>	Institution of work	à l'École normale supérieure
<code>\atinstitutionacro<sup>†</sup></code>	Acronym of institution	ENS
<code>\atlab<sup>‡</sup></code>	Lab of work	au Laboratoire de tintinologie
<code>\logolab<sup>‡</sup></code>	filename of logo	tintin.pdf
<code>\specialite</code>	Specialty of thesis	Physique
<code>\ecoledoctnum</code>	Number of doctoral school	564
<code>\ecoledoct</code>	Name of doctoral school	Physique en Île-de-France
<code>\ecoledoctacro</code>	Acronym of doctoral school	EDPIF
<code>\titlefr</code>	French title	
<code>\titleen</code>	English title	
<code>\titlemetafr<sup>*</sup></code>	French title for meta-data	wo quotes nor special chars
<code>\titlemetaen<sup>*</sup></code>	English title for meta-data	wo quotes nor special chars
<code>\dateiso</code>	Date of defense	2020-12-31
<code>\resume</code>	Abstract in French	
<code>\abstract</code>	Abstract in English	
<code>\motscles</code>	Keywords in French	
<code>\keywords</code>	Keywords in English	
<code>\jury</code>	Members of the committee	
<code>\reference</code>	Thesis Reference number	defined after defense
<code>\defensecity</code>	City of defense	à Paris
<code>\jointunivname<sup>§</sup></code>	Name of partner institution	Observatoire Royal de Belgique
<code>\jointunivlogo<sup>§</sup></code>	Logo of partner institution	ORB.png
<code>\jointadvisor<sup>§</sup></code>	Foreign co-advisor's name	Hippolyte CALYS

\* Needed only if corresponding title contains special character(s) or linebreak(s).

† Fields mandatory for PSL and UPSaclay, but meaningless for SU and UP.

‡ Fields needed for SU and UP, but optional (if ever allowed) for PSL and UPSaclay.

§ Fields to provide only in case of a joint PhD (with a foreign institution).

### 3.3 Meta-data file

It is necessary to build a meta-data file which contains the settings needed to build the cover pages and that could be also used to set the meta-data of the PDF files. This file is named by default `\jobname_meta.tex`, but this name can be overridden by defining the option `meta`.

The list of the command/values to define in this file is given in table 1. The general rule is that the meta-data file uses macros like the usual `\title` or `\author`, which internally define the corresponding `\@title` and `\@author`, used to build the pages<sup>9</sup>.

The metadata file structure is essentially the same for all target universities. In table 1 are listed all the known elements. Some values may vary slightly from university to another, as described in the table's notes, and in the following list.

We discuss below some specific details.

`\jury` As, the formatting of the committee list on the coverage depends on the university., one can not directly enter a properly formatted tabular. We nevertheless use a list formatted

<sup>9</sup>Unlike the default commands, the associated values containning `\@` are not undefined after use.

Listing 1: Example for committee

```

\jury{
M. & Alfredo & Topolinò & Professeur & Univ. de Genève & Rapporteur \\
M. & Fan & Se-Yeng & Professeur & Univ. de Shanghai & Rapporteur \\
\Mme& Bianca & Castafiore & Cantatrice & Scala di Milano & Examinatrice \\
M. & Séraphin& Lampion & Assureur & \empty & Invité \\
M. & Tryphon & Tournesol & Professeur & Inst. de Moulinsart& Directeur de thèse\\
M. & Hippolyte & Calys & Professeur & Obs. Royal de Belgique & Codirecteur
}

```

like a tabular: lines correspond to committee members, separated by `\\`; in each line, various fields of the member, are delimited by `&`. This list is parsed with different ways depending on institution. The fields’s ordering in each line is mandatory.

Generally speaking commands must be avoided as they could break the parsing algorithm, with two important exceptions:

- The civility for ladies in the committee must be entered with the command `\Mme`.
- If a field is empty, it can be left empty or replaced by the command `\empty`.

An example is provided on Listing 1 on page 4.

Please notice that, according to French regulation, the committee president is not known before the defense. The corresponding role will be added in the post-defense version of the thesis

`\atinstitution` & `\atlab` and related. For SU or UP, there is only one *institution*: the university itself. Hence the `\atinstitution` and related fields (like `\atinstitutionacro`) are ignored, and only `\univ` is used; some space is available to (usually but optionally) define the laboratory and display it’s logo. Oppositely, for PSL or UPSaclay, a component of the federal structure, usually the host institution of the PhD, must be provided, and it’s name and logo are displayed. In these cases, the official template does not include at all the laboratory. This package nevertheless provides the ability to display its name and logo, but it is up to you to ensure that this mention is allowed.

`\title**` where **\*\*** stand for `fr`, `en`, `metafr`, `metaen`.

From the administrative point of view, the PhD thesis title is unique, and the others are translations. If you do not provide a language `lang` in the options, or set it to `french`, the French title defined by `\titlefr` will be typeset on the front cover. In the opposite case (option `lang=english`) it is the English `\titleen` which becomes the true “title” (mostly in the case of a thesis written in English). Nevertheless this will not change the titles shown on the fourth cover page. In the metadata, the main title is the one matching the `lang` option. Make sure that this is consistent with your university’s regulation, as the rule is not fixed by law, hence subject to changes.

As for the jury, as much as possible avoid commands in the titles, with two exceptions:

- French quotes («guillemets») must be entered as `\og` and `\fg`, except in the case where your input file is in UTF-8 : the unicode « » can then be used.
- If a (long) title must be broken one or several times, use a `\linebreak[1]` or `\linebreak[2]` to define the suitable places.

If the `\titlefr` or `\titleen` contains these commands, or curly quotes, or any other special character, the PDF metadata could be garbled or completely broken. In such case you must provide cleaned versions in the corresponding `\titlemetafr` or `\titlemetaen` commands.

`\ecoledoctacro` In the case of UPSaclay, this field is not only used to print on the cover page, but also to display the suitable logo on the backpage.

`\abstract & \resume` The maximal size of the English abstract and of French resume is set by default to 1700 characters, spaces included, according to the SUDOC regulation. Some institutions could accept much longer abstract, even though the space available on the back cover can not host them. When the abstract/resume is longer than this maximum, a warning is issued on the back cover, and the whole block of text is resized to fit in the page. These annoying difficulties can be fixed by various workarounds:

- Shortening the Abstract or resume.
- Overriding the preset maximum with, for example, `\gdef\absmaxlength{2400}` before loading `thcover`.
- Suppress the warning by adding `final` in the `\documentclass` options.

### 3.4 PDF/A production

In some (rare) cases you will be requested to provide a PDF file conforming to the **PDF/A specification**. In PDF/A, the A stands for “Archival”, meaning that this format is intended to achieve the best long term archival processes. Theses format (there are more than 10 variants) impose some restrictions to the content in terms of links, fonts or images. The key is that the file must be as much as possible “self contained”. An important condition is that all the fonts are embedded in the file, including those used in PDF figures embedded with `\includegraphics` or `\includepdf`. For further information you will have to search documentation on the Web.

The production of PDF/A with pdfL<sup>A</sup>T<sub>E</sub>X is enabled by the use of the `pdfx` package, provided that you have a recent enough version of `pdftex` and `pdfx` (it works since late 2016 releases : `pdftex`, v 3.14159265-2.6-1.40.16 and `pdfx` v 1.5.4).

The production of a PDF/A file implies to embed more metadata in a specific format named `\jobname.xmpdata`. This file is then converted to an XML version named `pdfa.xmpi`, finally included in the PDF by the mean of the `xmpincl` package.

The option `pdf=pdfa` of the present packages silently creates the `\jobname.xmpdata` file by using the provided metadata and then loads the `pdfx` package with the suited options. In the present state of this package, the target PDF/A specification is a PDF/A level A-2b (based on PDF 1.7) as the more common PDF/A level A-1b is often too restrictive.

The conformance to the standard can be checked with te standalone free softwares **JHOVE** (on the which is based the «Facile» assistant), and **veraPDF**.

## 4 Some notes about implementation

### Caveats

1. This package is intended to be compiled with `pdflatex`. It has not been tested with neither legacy `latex`, nor `xelatex` /`luatex`.
2. The package `hyperref` is not mandatory for using this package (except if you select option `pdf=pdfa`). The meta-data inclusion takes care to select the appropriate method.
3. This package is intended to work with **Latin Modern** as main font and with or without the Arial-like `tgheroes` font when option `arial` is active. and was not tested with another font set.
4. The font `lms` does not has bold small caps : if it is used, the small caps are silently converted in uppercase. The use of `arial` option fixes this problem.
5. We have chosen to not use the large package `tikz` that could ease the absolute positioning and some other tasks, in order to not slow down the compilation for the users who do not

already use it for other purposes. Hence the absolute positioning, when needed, is performed using `textpos`, and the parsing of the committee uses the internal list of `etoolbox` and the string parsing of `xstring`.