The gsemthesis class*

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Abstract

This article introduces the `gsemthesis` class for LaTeX. The `gsemthesis` class is a Phd thesis template for the Geneva School of Economics and Management (GSEM), University of Geneva, Switzerland. The class provides utilities to easily set up the cover page, the front matter pages, the pages headers, etc. with respect to the official guidelines of the GSEM Faculty for writing PhD thesis. This class is released under the LaTeX Project Public License version 1.3c.

Contents

*This document corresponds to gsemthesis v0.9.2, dated 2015/01/09.

1 Introduction

PhD thesis published within the Geneva School of Economics and Management have to follows some guidelines, especially for the cover page. The `gsemthesis` class is a LaTeX template providing utilities to easily set up these guidelines in your thesis. In addition the class loads several usefull packages generally used when writing a thesis. We recommend the user to have a look to the class definition in Section 3.1 to be aware of the list of packages that the class already includes. The Section 2 details how to start with the `gsemthesis` class and how to configure your thesis. The user interested in customizing the class can read the Section 3 which details the full implementation of the class with usefull comments.

This class was successfully tested with pdfTeX 3.1415926-2.5-1.40.14 (TeX Live 2013/Debian) and with pdfTeX Version 3.14159265-2.6-1.40.15 (TeX Live 2014/Windows).

This class has been written by Emmanuel Rousseaux with contributions from William Aeberhard and Tuan Nguyen.

2 Usage

This Section introduces the use of the `gsemthesis` class. All macros and environments the class provides are described. We assume the user is already familiar with LaTeX.

2.1 Installation

2.1.1 Requirements

2.2 Getting started

To use the class start your document with the command `\documentclass{gsemthesis}`. A minimal file is:

```
\documentclass{gsemthesis}
\begin{document}
Here is it, I started my PhD!
\end{document}
```

2.3 Writing the dissertation in French

The GSEM accepts English and French for PhD thesis dissertations. Default language is English. If you write your dissertation in French, you have to you the `fr` class option as follows:

```
\documentclass[fr]{gsemthesis}
```

2.4 Configuring and printing the cover page

`\printcoverpage` The class provides the GSEM PhD thesis cover page ready to be printed. You can ask to print it by calling `\printcoverpage` just after the `\begin{document}`. Before printing the cover page you first need to configure it with your thesis details: title, author, supervisors, committee, etc. The minimal example becomes:

```
\documentclass{gsemthesis}
\title{My PhD thesis}
\date{\today}
\thesisNumber{480}
... (others configuration commands)
\begin{document}
\printcoverpage
Here is it, I started my PhD!
\end{document}
```

\title \date \authorFirstname \authorLastname \thesisField \thesisCommitteeA-F \thesisNumber

The class uses the classical `\title{`*text*`}` and `\date{`*text*`}` commands of the `book` class to set the title and the date. Instead of using the `\author{`*text*`}` command we provide the two commands `\authorFirstname{`*text*`}` and `\authorLastname{`*text*`}` to separately handle the firstname and the lastname. You specify the PhD you are enrolled in with the `\thesisField{`*text*`}`, among others: Economics, Management, Statistics, Information Systems. Please contact the scientific committee of your PhD to obtain the applicable title. You can specify information about members of your thesis committee with the six `\thesisCommitteeA-F{`*title*`}{`*firstname*`}{`*lastname*`}{`*role*`}` commands. With the *role* field you specify the role played by this member in the committee and his/her affiliation. Generally you specify the role "Chair" in `\thesisCommitteeA`, the role "adviser" for your adviser/co-advisers, and leave the field empty for the other members. When your manuscript has been accepted by your jury, the Faculty attributes a unique thesis number which has to be printed on the cover page. The `\thesisNumber{`*text*`}` allows to supply it.

2.5 Configuring and printing the front matter pages

\printfrontmatter \acknowledgements \abstractEN \abstractFR \dedication

After the cover page the thesis has to provide in a the following order (1) the acknowledgements, (2,3) an abstract in both English and French (the order depending on the main language of your dissertation: if your dissertation is written in English you will start with the English abstract; if your dissertation is written in Frenchyou will start with the French abstract), (4) the table of contents, and (5) an optional dedication. These elements are usually called the front matter. These pages will be printed by calling the `\printfrontmatter` command. The best place for this command is just after the `\printcoverpage` command. To fill these pages use the commands `\acknowledgements{`*text*`}`, `\abstractEN{`*text*`}`, `\abstractFR{`*text*`}`, and `\dedication{`*text*`}`. We suggest you use these commands in the preambule of the document, just after the commands used to set the cover page.

2.6 Introduction and conclusion

\startintroduction \startconclusion

Generally we don't want to number the introduction and the conclusion, but we want they appear in the table of contents. This leads to a specific handling of the creation of these chapter, especially to have correct page headers. Therefore, instead of using `\chapter{introduction}` (respectively `\chapter{conclusion}`) to start a such chapter we provide the function `\startintroduction` (respectively `\startconclusion`) to easily start the chapter with a correct handling of the table of contents and page headers.

2.7 Bibliography

The `gsemthesis` class use the package `biblatex` with the backend biber instead of the package `bibtex` to produce the bibliography. The package `biblatex` is installed by default with any recent version of TeX Live[1] (full installation) and MiKTeX, but you must first configure your TeX Editor to use it.

2.7.1 Configure TeXstudio to run biber

In the TeXstudio preferences (click on Options → Configure TeXstudio), choose the 'Build' tab and modify the 'Default Bibliography' to 'Biber'.

Run 'Build & View' from the 'Tools' menu (or press the two green arrows icon), which will create a PDF but with the bibliography not completed.

Run 'Bibliography' from the 'Tools' menu.

[1] On Ubuntu/Debian, you may have to install it manually: sudo apt-get install texlive-bibtex-extra biber

Run 'Build & View' again to create a PDF with the bibliography.

2.7.2 Configure Texmaker to run biber

In the Texmaker preferences (click on Options → Configure Texmaker), choose the 'Commands' tab and replace `bibtex %` by `biber %` in the field `Bib(la)tex`. You may also browse to the `biber.exe` using the folder icon on the side.

Choose the 'Quick Build' tab and select the second option `PdfLaTeX + Bib(la)tex + PdfLaTex (x2) + View Pdf`

Now your 'Quick Build' button will create a PDF with the bibliography.

2.7.3 Basic commands

To add a bibliography into your document, you have to define your bib file in the pre-amble of your tex file: `\addbibresource{literature-review-topic1.bib}` Then, at the end of your document, the command `\printbibliography` will create the biblography.

2.8 *Draft* mode

When sharing draft versions of your dissertation you may prefer to hide some items of the cover page (thesis committee, thesis number, etc.) and some Sections (acknowledgments, the dedications. etc.) that probably have not been defined yet. For this purpose you can use the `draft` option:

```
\documentclass[draft]{gsemthesis}
```

2.9 Miscellaneous

`itemize*`

The class also provides some optional functions that can turn out to be usefull when writing your thesis. The default `itemize` environment set important spaces between each items, the previous paragraph and the next paragraph. The `itemize*` environment reduces these spaces to allow a more compact (and nicer) presentation of a list item. *Forthcoming.* To add: section in redaction, todonotes

3 Implementation

In this Section the full code of the `gsemthesis` is discussed. The reader interested in customizing the class will find useful comments to understand the design of the class.

3.1 Document properties

The class is derived from the standard `book` class as follows:

```
1 \LoadClass[a4paper,12pt,twoside]{book}
```

We set the document encoding to UTF-8

```
2 \usepackage[utf8]{inputenc}
```

We use the `lmodern` vectorial fonts to render the document.

```
3 \usepackage{lmodern}
```

We use the `etoolbox` package for defining class options (fr, draft)

```
4 \usepackage{etoolbox}
```

We add the option *fr*

```
\newtoggle{fr}
\DeclareOption{fr}{\toggletrue{fr}}
```

We add the option *draft*

```
\newtoggle{draft}
\DeclareOption{draft}{\toggletrue{draft}}
```

We process options we just defined

```
\ProcessOptions
```

We use the `geometry` package to set margin properties

```
\RequirePackage[top=2.5cm, bottom=2.5cm, left=2.5cm, right=2.5cm]{geometry}
```

We use the package to handle some specific text spacing (title)

```
\usepackage{setspace}
```

3.2 Colors

We define some nice colors that will be later used for links (url, email, citations, etc.). The `gsemblue` color is the official color (to date 2014.02.20) of the GSEM Faculty.

```
\usepackage{xcolor}
\definecolor{erblue}{HTML}{126199}
\definecolor{erorange}{HTML}{FF7F00}
\definecolor{gsemblue}{HTML}{465F7F}
```

3.3 Graphics

We add some practical packages to handle several image files (.png, .pdf), handle placement of graphics, and handle subfigures

```
\usepackage{graphicx}
\usepackage{float}
\usepackage{subfigure}
```

3.4 Link management

We use the `hyperref` package to manage internal links and set colors for each link type.

```
\RequirePackage{hyperref}
% \hypersetup{%
% colorlinks=true,%
% linkcolor=black,%
% filecolor=gsemblue,%
% citecolor=gsemblue,%
% urlcolor=gsemblue%
% }%
\hypersetup{%
colorlinks=true,%
linkcolor=black,%
filecolor=erblue,%
citecolor=erblue,%
urlcolor=erblue%
}%
```

We use the `url` package for a complete support of external links and define a nice font style.

```
\RequirePackage{url}
\urlstyle{sf}
```

3.5 Maths

We add standard packages from the American Mathematical Society to handle mathematical symbols, environment (equations, etc.) and the Computer Modern font use by default to render math.

```
\usepackage{amssymb,amsmath,amsfonts}
```

3.6 Page headers management

We use the `fancyhdr` package for a fine tuning of headers and footers of the different page type (cover page, chapters, unumbered chapters, etc.)

```
\usepackage{fancyhdr}
```

We set the `fancy` page style (default page style) as follows:

```
\pagestyle{fancy}
\fancyhf{}
\fancyhead[LO]{\thepage\hfill\nouppercase{\leftmark}}
\fancyhead[RE]{\nouppercase{\rightmark}\hfill\thepage}
\fancyfoot[LE,RO]{}
```

We reset the `plain` style

```
\fancypagestyle{plain}{
  \fancyhf{}
  \renewcommand{\headrulewidth}{0pt}
  \fancyfoot[LE,RO]{}
}
```

We define a style for the cover page (actually not used)

```
\fancypagestyle{cover}{
  \fancyhf{}
  \renewcommand{\headrulewidth}{0.5pt}
  \renewcommand{\footrulewidth}{0.5pt}
}
```

We define a style for unumbered chapters (starred chapters)

```
\fancypagestyle{unnumberedchapter}{
  \fancyhf{}
  \renewcommand{\headrulewidth}{0pt}
  \renewcommand{\footrulewidth}{0pt}
  \fancyhead[LO]{\nouppercase{\leftmark}}
  \fancyhead[RE]{\nouppercase{\rightmark}}
  \fancyfoot[LE,RO]{}
}
```

When a new chapter starts on a odd number, we add a blank page to force it to start to a even number. We define an empty style for this blank page

```
\fancypagestyle{empty}{
  \fancyhf{}
  \renewcommand{\headrulewidth}{0pt}
  \fancyfoot[LE,RO]{}
}
```

Then we apply the empty style to odd page before a new chapter

```
\def\cleardoublepage{\clearpage\if@twoside \ifodd\c@page\else
    \hbox{}
    \thispagestyle{empty}
    \newpage
    \if@twocolumn\hbox{}\newpage\fi\fi\fi}
\clearpage{\pagestyle{empty}\cleardoublepage}
```

We define the default language of the document.

```
\iftoggle{fr}{
  \usepackage[francais]{babel}
}{
  \usepackage[english]{babel}
}
```

This package provides the commands `\og` and `\fg` for correctly handling French quotes.

```
\usepackage{csquotes}
```

We define the date format for the cover page (non-draft mode).

```
\usepackage{datetime}
\newdateformat{monthyeardate}{\monthname[\THEMONTH] \THEYEAR}
```

3.7 Bibliography management

We use biblatex/biber to process the bibliography with the following settings: (1) citations with more than two authors will always be writen as "First author et al.", (2) this "et al." rule is applied even if it leads to ambiguities between long list of authors with the same first author.

```
\usepackage[backend=biber,natbib=true,style=authoryear-comp,sorting=nymdt,%
maxbibnames=99,mincitenames=1,maxcitenames=2,uniquelist=false]{biblatex}
```

We use the style authoryear to print authors and the year when citing a document in the text. We define a customized sorting style to sort the list of references (printed at the end of the document) according to this (ordered) attributes: name, year, month, day, and title. We define the following sorting scheme:

```
\DeclareSortingScheme{nymdt}{
  \sort{
    \field{presort}
  }
  \sort[final]{
    \field{sortkey}
  }
  \sort{
    \name{sortname}
    \name{author}
    \name{editor}
    \name{translator}
    \field{sorttitle}
    \field{title}
  }
  \sort{
    \field{sortyear}
    \field{year}
  }
  \sort{
    \field[padside=left,padwidth=2,padchar=0]{month}
    \literal{00}
  }
  \sort{
    \field[padside=left,padwidth=2,padchar=0]{day}
    \literal{00}
  }
  \sort{
    \field{sorttitle}
  }
  \sort{
    \field[padside=left,padwidth=4,padchar=0]{volume}
```

```
    \literal{0000}
  }
}
```

3.8 Cover page

3.8.1 System-level functions

The following commands define labels for the different parts of the cover page

```
\def\theFaculty{Geneva School of Economics and Management}

\def\thesisLocationLabel{
  ~ \\[0.4em]%
  \iftoggle{fr}{
    Une thèse soumise à la\\[0.2em]
    \theFaculty\\[0.2em]
    Université de Genève, Suisse,\\[0.2em]
    pour l'obtention du\\[0.2em]
  }{
    A thesis submitted to the\\[0.2em]
    \theFaculty, \\[0.2em]
    University of Geneva, Switzerland,\\[0.2em]
    in fulfillment of the requirements for the degree of\\[0.2em]
  }
}

\iftoggle{fr}{
  \def\thesisByLabel{par}
}{
  \def\thesisByLabel{by}
}
\iftoggle{fr}{
  \def\thesisFieldLabel{Doctorat en}
}{
  \def\thesisFieldLabel{PhD in}
}
\iftoggle{fr}{
  \def\thesisCommitteeLabel{Membres du jury:}
}{
  \def\thesisCommitteeLabel{Members of the thesis committee:}
}
\iftoggle{fr}{
  \def\thesisNumberLabel{Thèse no.}
}{
  \def\thesisNumberLabel{Thesis No.}
}

```

3.8.2 User-level functions

Set up of the cover page and assimilated functions.

`\authorFirstname` Set up the `\theauthorFirstname` variable.

```
\newcommand{\authorFirstname}[1]{\def\theauthorFirstname{#1}}
```

`\authorLastname` Set up the `\theauthorLastname` variable.

```
\newcommand{\authorLastname}[1]{\def\theauthorLastname{\textsc{#1}}}
```

`\thesisField` Set up the `\thethesisField` variable.

```
\newcommand{\thesisField}[1]{\def\thethesisField{#1}}
```

`\thesisCommitteeA` Set up the `\thethesisCommitteeA` variable.

```
\newcommand{\thesisCommitteeA}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeA{}%
\else
  \def\thethesisCommitteeA{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisCommitteeB` Set up the `\thethesisCommitteeB` variable.

```
\newcommand{\thesisCommitteeB}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeB{}%
\else
  \def\thethesisCommitteeB{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisCommitteeC` Set up the `\thethesisCommitteeC` variable.

```
\newcommand{\thesisCommitteeC}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeC{}%
\else
  \def\thethesisCommitteeC{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisCommitteeD` Set up the `\thethesisCommitteeD` variable.

```
\newcommand{\thesisCommitteeD}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeD{}%
\else
  \def\thethesisCommitteeD{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisCommitteeE` Set up the `\thethesisCommitteeE` variable.

```
\newcommand{\thesisCommitteeE}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeE{}%
\else
  \def\thethesisCommitteeE{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisCommitteeF` Set up the `\thethesisCommitteeF` variable.

```
\newcommand{\thesisCommitteeF}[4]{%
\ifx&#3&%
  \def\thethesisCommitteeF{}%
\else
  \def\thethesisCommitteeF{#1~#2~\textsc{#3},~#4}%
\fi
}
```

`\thesisNumber` Set up the `\thethesisNumber` variable.

```
\newcommand{\thesisNumber}[1]{\def\thethesisNumber{#1}}
```

The cover page is created with the following code

`\printcoverpage` Print the cover page of the thesis.

```
\newcommand{\printcoverpage}{%
  \thispagestyle{empty}
  \begin{center}
  \rule{\linewidth}{0.4pt}

  \vspace*{1.2cm}

  {\huge
    {\scshape
      \begin{spacing}{0.8}
        \@title
      \end{spacing}
    }
  }

  \vspace*{1.2cm}

  \thesisByLabel

  \vspace*{0.4cm}

  {\large \theauthorFirstname~\theauthorLastname}

  \vspace*{0.8cm}

  \thesisLocationLabel
  \thesisFieldLabel{~}\thethesisField

  \vfill

  \iftoggle{draft}{
    \iftoggle{fr}{
      \emph{Ébauche}
    }{
      \emph{Draft}
    }
  }

  \vspace*{0.8cm}

  \iftoggle{draft}{~}{\thesisCommitteeLabel}

  \vspace*{0.2em}

  \iftoggle{draft}{~}{\thethesisCommitteeA}

  \vspace*{0.2em}

  \iftoggle{draft}{~}{\thethesisCommitteeB}

  \vspace*{0.2em}

  \iftoggle{draft}{~}{\thethesisCommitteeC}

  \vspace*{0.2em}

```

```
  \iftoggle{draft}{~}{\thethesisCommitteeD}

  \vspace*{0.2em}

  \iftoggle{draft}{~}{\thethesisCommitteeE}

  \vspace*{0.2em}

  \iftoggle{draft}{~}{\thethesisCommitteeF}

  \vspace*{1.4cm}

  \iftoggle{draft}{~}{\thesisNumberLabel{~}\thethesisNumber}

  \vspace*{0.1cm}

  \iftoggle{draft}{\@date}{\monthyeardate\today}

  \vspace*{0.1cm}

  \rule{\linewidth}{0.4pt}
  \end{center}
}
```

3.9 Front matter

`\acknowledgements` Set up the `\theacknowledgements` variable.

```
\newcommand{\acknowledgements}[1]{\def\theacknowledgements{#1}}
```

`\abstractEN` Set up the `\theabstractEN` variable.

```
\newcommand{\abstractEN}[1]{\def\theabstractEN{#1}}
```

`\abstractFR` Set up the `\theabstractFR` variable.

```
\newcommand{\abstractFR}[1]{\def\theabstractFR{#1}}
```

`\dedication` Set up the `\thededication` variable.

```
\newcommand{\dedication}[1]{\def\thededication{#1}}
```

`\printfrontmatter` The front matter pages are created with the following code

```
\newcommand{\printfrontmatter}{%

  \iftoggle{draft}{~}{
    \frontmatter

    \iftoggle{fr}{
      \chapter*{Remerciements}
      \addcontentsline{toc}{chapter}{Remerciements}
    }{
      \chapter*{Acknowledgements}
      \addcontentsline{toc}{chapter}{Acknowledgements}
    }
    \label{ch:acknowledgements}
    \thispagestyle{plain}
    \theacknowledgements

    \newpage

    \iftoggle{fr}{
```

```
      \chapter*{Résumé}
      \addcontentsline{toc}{chapter}{Résumé}
      \label{ch:abstractFR}
      \thispagestyle{plain}
      \theabstractFR

      \newpage

      \chapter*{Abstract}
      \addcontentsline{toc}{chapter}{Abstract}
      \label{ch:abstractEN}
      \thispagestyle{plain}
      \theabstractEN
    }{
      \chapter*{Abstract}
      \addcontentsline{toc}{chapter}{Abstract}
      \label{ch:abstractEN}
      \thispagestyle{plain}
      \theabstractEN

      \newpage

      \chapter*{Résumé}
      \addcontentsline{toc}{chapter}{Résumé}
      \label{ch:abstractFR}
      \thispagestyle{plain}
      \theabstractFR
    }
  }

  \tableofcontents

  \iftoggle{draft}{~}{
    \cleardoublepage

    \thispagestyle{plain}

    \vspace*{4cm}
    {\em
    \raggedleft\thededication\par
    }

    \newpage
  }

  \mainmatter
}%
```

3.10 Introduction and conclusion starter

`\startintroduction` The front matter pages are created with the following code

```
\newcommand{\startintroduction}{%
\chapter*{Introduction}
\addcontentsline{toc}{chapter}{Introduction}
\label{ch:introduction}
\markboth{}{Introduction}
}
```

`\startconclusion` The front matter pages are created with the following code

```
\newcommand{\startconclusion}{%
\chapter*{Conclusion}
\addcontentsline{toc}{chapter}{Conclusion}
\label{ch:conclusion}
\markboth{}{Conclusion}
}
```

3.11 Miscellaneous

`itemize*` A narrowed version of the `itemize` environment. implementation here.

```
\newenvironment{itemize*}%
  {\vspace{-2mm}\begin{itemize}%
    \setlength{\itemsep}{0pt}%
    \setlength{\parskip}{0pt}%
  }%
  {\end{itemize}\vspace{-2mm}%
  }
```

4 Minimal working example

Forthcoming