

SPhDThesis class documentation

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1 Introduction

I developed **SPhDThesis** document class while writing my PhD thesis in National University of Singapore (NUS). It adheres to the “NUS Guidelines on Format of Research Thesis Submitted For Examination” located at <http://www.nus.edu.sg/registrar/event/gd-thesisexam.html>¹. Section 2 (Getting started) describes how to quickly start using **SPhDThesis** with default options. The class options used to customize the formatting of the thesis are described in Section 3. Finally, some hints for tweaking the class file are given in Section 4.

An important point to consider before using this document class is that it only supports using **pdflatex**. It cannot be used with **latex** to create a dvi file. The implication of using **pdflatex** is that all your figures have to be in pdf, png or jpg. You cannot use eps figures. However, there are tools to convert eps files to pdf on all platforms.

2 Getting started

The easiest way to start using **SPhDThesis** document class is to make a copy of `example\example.tex` file and start modifying it. The following is the complete listing of `example.tex`:

```
1 \documentclass{SPhDThesis}
2
3 % Title page and PDF properties.
4 \SgSetTitle{A Robust Mesh-based Surface Integration Algorithm}
5 \SgSetAuthor{Saurabh Garg}
6 \SgSetAuthorDegrees{List your previous degrees here}
```

¹You need NUSNET username and password to access the document.

```

7 \SgSetYear{2013}
8 \SgSetDegree{Doctor of Philosophy}
9 \SgSetDepartment{Department of Computer Science}
10 \SgSetUniversity{National University of Singapore}
11 \SgSetDeclarationDate{June 2013}
12
13 % The document.
14 \begin{document}
15     \begin{frontmatter}
16         \SgAddTitle%
17         \SgAddDeclaration%
18         \input{acknowledgments}%
19         \input{abstract}%
20         \SgAddToc% Add table of contents.
21         \SgAddLof% Add list of figures.
22         \SgAddLot% Add list of tables.
23         \SgAddLoa% Add list of algorithms.
24     \end{frontmatter}
25
26     \input{chapter1}
27     \SgIncludeBib{biblio}
28 \end{document}

```

Line 1 simply defines the document class with default options.

Lines 4–11 define the variables for automatically creating the title page and setting the PDF document properties.

Lines 15–24 defines the front matter of the thesis. `\SgAddTitle` creates the title page using the values of variables defined above. `\SgAddDeclaration` adds the declaration page. Declaration page must be signed. You can either sign after printing or give the path to the signature image as an argument to `\SgAddDeclaration` like this `\SgAddDeclaration[sign-image]`. `\input{acknowledgments}` includes a file containing the acknowledgments. The acknowledgments must be enclosed in `\begin{acknowledgments} ... \end{acknowledgments}`. Similarly, `\input{abstract}` includes a file containing the abstract. The abstract must be enclosed in `\begin{abstract} ... \end{abstract}`. Note that it is not necessary to create separate files for acknowledgments and abstract and they can be inserted inline.

Lines 20–23 inserts the table of contents, list of figures, list of tables, and list of algorithms. The order of list of figures, list of tables, and list of algorithms can be changed and not all of the them are necessary.

After the front matter is specified, you are free to add main content of the thesis. You can either create one tex file per chapter and include them using `\input{}` or simply include everything in the main file. You can see `example\figure.tex`, `example\table.tex`, `example\algorithm.tex` for examples of how to include figures, tables, and algorithms, respectively.

Finally, the bibliography should be included using `\SgIncludeBib{}`. If your bibliography is divided in multiple files, than they can be separated by comma (,).

3 Class options

SPhdThesis document class uses key=value format for specifying options. Two options are separated by a comma (.). For example `\documentclass[media=print,title=upper]{SPhdThesis}`. The following options are provided:

Media type

`media = screen` or `print` (default value is `screen`). `media` internally defines the formatting settings for viewing document on screen or printing. When formatting for screen, colors are used for links, tables, and algorithms whereas only black color is used for them in the print mode.

Title page casing:

`titlecase = lower` or `upper` (default is `upper`). NUS requires the title page to be formatted in upper case but I don't like it. So, I used this option to format the title page in the lower case everywhere except the final submission.

Line spacing:

`linespacing = onehalf` or `double` (default is `onehalf`). Again, NUS requires the thesis to be formatted with double line spacing which I don't like. So, I used this option to format the thesis with one half line spacing everywhere except the final submission.

Font size:

`fontsize = 11pt` or `12pt` (default is `11pt`). NUS recommends font size to be 11 or 12 points. This option can be used to format the thesis in either 11 or 12 points.

Open type:

`open = right` or `any` (default value is `any`). This option defines which page a new chapter will start from: for `open=any` a new chapter will start from the next new page. However, for `open=right` a new chapter will only start from next right hand side (odd) page.

4 Tweaking the document class

The `SPhdThesis.cls` file is heavily commented and should be mostly easy to understand. It is divided into sections and the order of some sections are important. For example, captions section should come before packages and hyperref section. All these dependencies are documented in the `SPhdThesis.cls` file.

Here are some hints to customize the formatting of the thesis:

- Chapter and section title formatting: The appearance of chapter and section title in various places in the thesis is defined in the fonts section. The variables defined in the font section are used by TOC (for formatting table of contents), chapter heading (for formatting the chapter heading), and fancy header (for formatting the headers and footers) sections.
- Chapter heading: The chapter heading is formatted using Lenny style of the `fncychap` package. If you like to change to another style supported by `fncychap` package you can do so in chapter heading section.

- Page layout: The paper size and margins are defined in the page layout section. Some other important properties defined in the page layout section are: paragraph indenting, footnote spacing, forcing image to be on the top on blank pages, distance between a float and text, and distance between two floats.
- Fancy header: The appearance of header is changed using fancyhdr package in the fancy header section. There are three parts in the header: left, center, and right. In SPhDThesis class, Chapter #. Chapter_Name appears on the left part and page number appears on the right part.
- TOC. The appearance of the table of contents is changed using tocloft package in the TOC section. Dots separating chapter titles and page numbers are removed and the appearance of the chapter title and page number is defined.
- Table: The appearance of tables is defined in the table section. Apart from various distance used for format table you can change the color of horizontal rules.
- Algorithm: The appearance of algorithms is defined in the algorithm section.