

# The hagenberg-thesis Package

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2017/11/04

## Abstract

The `hagenberg-thesis` package is a collection of modern LaTeX templates for university theses (bachelor, master or diploma programs) and related documents. This manual describes the main features of this package. Pre-configured document templates for English and German manuscripts and a complete tutorial are available on the package's home repository.

## 1 Introduction

The complete source of this package and auxiliary materials are available on CTAN<sup>1</sup> and its development repository.<sup>2</sup> The package is made available under the terms of the Creative Commons Attribution 4.0 International Public License.<sup>3</sup>

## 2 Document classes

The `hgb` package provides the following document classes, which are based on the standard LaTeX classes `book`, `report` and `article`, respectively:

- `hgbthesis` (`book`): for Bachelor, Master and Diploma theses;
- `hgbreport` (`report`): for project and term reports;
- `hgbarticle` (`article`): for drafting journal articles.

### 2.1 Class options

The above document classes accept the following options:

- `hgbthesis`: `master`, `diploma`, `bachelor`, `praktikum`, `internship`, `english`, `german`;
- `hgbreport`: `notitlepage`, `english`, `german`;

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<sup>1</sup><https://ctan.org/pkg/hagenberg-thesis>

<sup>2</sup><https://github.com/Digital-Media/HagenbergThesis>

<sup>3</sup><https://creativecommons.org/licenses/by/4.0/legalcode>

- **hgbarticle:** twocolumn, english, german.

For example, to start a Master thesis in German one would simply simply place

```
\documentclass[master,german]{hgbthesis}
```

at the beginning of the document.

## 2.2 Thesis parameters (class hgbthesis)

**hgbthesis** supports several types of thesis documents. The following parameters must be specified for *all* types:

- `\title{...}`,
- `\author{...}`,
- `\programname{...}`,
- `\placeofstudy{...}`,
- `\dateofsubmission{yyyy}{mm}{dd}`.

A *Bachelor* thesis requires the following, additional items (not relevant for Diploma and Master theses):

- `\thesisnumber{...}`,
- `\coursetitle{...}`,
- `\semester{...}`,
- `\advisor{...}`.

## 3 Style files and user commands

The package comes with a set of style (`*.sty`) files that can be used independently of the document classes listed above: `hgb.sty`, `hgbabbrev.sty`, `hgbbib.sty`, `hgbheadings.sty`, `hgblistings.sty`, `hgbmath.sty`.

### 3.1 General user commands (`hgb.sty`)

- **\hgbDate:** Outputs the package version date, e.g., “2017/11/04”.
- **\calibrationbox:** Inserts a test box for checking the final print size.

### 3.2 Text commands (`hgbabbrev.sty`)

Special characters:

- **\bs:** Inserts a backslash character (short for `\textbackslash`).
- **\obnh:** Inserts an optional break with no hyphen (e.g., `PlugIn{\obnh}Filter`).

German abbreviations:

- **\bzgl:** bzgl.
- **\bzw:** bzw.
- **\ca:** ca.

- `\dah`: d. h.
- `\Dah`: D. h.
- `\ds`: d. sind
- `\etc`: etc.
- `\evtl`: evtl.
- `\ia`: i. Allg.
- `\sa`: s. auch
- `\so`: s. oben
- `\su`: s. unten
- `\ua`: u. a.
- `\Ua`: U. a.
- `\uae`: u. Ä.
- `\usw`: usw.
- `\uva`: u. v. a.
- `\uvm`: u. v. m.
- `\va`: vor allem
- `\vgl`: vgl.
- `\zB`: z. B.
- `\ZB`: Zum Beispiel

English abbreviations:

- `\ie`: i.e.
- `\eg`: e.g.
- `\etc`: etc.
- `\Eg`: E.g.
- `\wrt`: w.r.t.

### 3.3 Bibliography commands (`hgbbib.sty`)

- `\AddBibFile`: A wrapper to `biblatex`'s `\addbibresource` macro (for backward compatibility only).
- `\MakeBibliography[options]`: Inserts the reference section or chapter. By default, references are automatically split into category subsections.<sup>4</sup> Use the option `nosplit` to produce a traditional (i.e., contiguous) list of references.

### 3.4 Code environments (`hgblistings.sty`)

The following types of code environments are defined:

- `CCode`: for C (ANSI),
- `CppCode`: for C++ (ISO),
- `CsCode`: for C#,

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<sup>4</sup>Predefined reference categories are `literature`, `avmedia`, `online` and `software`.

- **CssCode**: for CSS,
- **GenericCode**: for generic code,
- **HtmlCode**: for HTML,
- **JavaCode**: for Java,
- **JsCode**: for JavaScript,
- **LaTeXCode**: for LaTeX,
- **ObjCCode**: for ObjectiveC,
- **PhpCode**: for PHP,
- **Swift**: for Swift,
- **XmlCode**: for XML.

`hgblistings` is based on the `listingsutf8`<sup>5</sup> package, thus any valid `listings`<sup>6</sup> option may be used; for example, the option `numbers=none` to suppress line numbers:

```
\begin{JavaCode}[numbers=none]
... // Java code comes here
\end{JavaCode}
```

### 3.5 Mathematical commands (`hgbmath.sty`)

`hgbmath` requires (and automatically loads) the `amsmath`<sup>7</sup> package, thus all commands and symbols of `amsmath` are available by default. The following *additional* commands can only be used in math mode:

- `\Cpx`:  $\mathbb{C}$  (complex numbers),
- `\N`:  $\mathbb{N}$  (natural numbers),
- `\R`:  $\mathbb{R}$  (real numbers),
- `\Q`:  $\mathbb{Q}$  (rational numbers),
- `\Z`:  $\mathbb{Z}$  (integer numbers).

## 4 Package dependencies

The `hagenberg-thesis` package builds on the following LaTeX packages:

`abstract`, `algorithm`, `algorithmicx`, `algpseudocode`, `amsbsy`, `amsfonts`, `amsmath`, `amssymb`, `babel`, `biblatex`, `breakurl`, `caption`, `cmap`, `csquotes`, `datetime`, `enumitem`, `epstopdf`, `eurosym`, `exscale`, `fancyhdr`, `float`, `fontenc`, `geometry`, `graphicx`, `hycap`, `hyperref`, `ifpdf`, `ifthen`, `inputenc`, `listingsutf8`, `lmodern`, `moreverb`, `overpic`, `pdfpages`, `pict2e`, `subdepth`, `titlesec`, `titling`, `tocloft`, `url`, `upquote`, `verbatim`, `xcolor`, `xifthen`, `xspace`.

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<sup>5</sup><https://ctan.org/pkg/listingsutf8>

<sup>6</sup><https://ctan.org/pkg/listings>

<sup>7</sup><https://ctan.org/pkg/amsmath>