

# Instructions for using the $\text{\LaTeX}$ template for an undergraduate thesis at the Department of Physical Geography, Stockholm University

Peter Jansson



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Department of Physical Geography

Any course

No number

Any program

Any term

Any supervisor

Any examiner

Any assessor

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Stockholms  
universitet



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# 1 Introduction

The thesis template has been developed to provide a simple but properly formatted thesis. The template consists of several files placed in a structured manner.

The main file for writing the thesis is `Uppsats.tex` which is located in the main project root. All other files required by the template are located in a folder called `template`. For your thesis you will of course need to add a reference bibliography file as well as figure files to the project. In order to keep your thesis organised I advise you to place your own additional files in separate folders. I have provided a sample figure in a folder called `figs` to indicate how you can use folders for files.

The `template` folder contains several files. The main template style file is `NGSU-thesis.sty` which is what this document describes in detail. This file contains all the formatting needed for the thesis including the cover. The file `SULogotyp-StaendeInvert800px.png` contains the Stockholm university logotype in white with transparent background for the cover. The file `LogoOrgSvenskRGB.pdf` contains the Stockholm university logotype in the university standard blue colour. The folder also contains two bibliography style files (`.bst`) for the Council of Scientific Editors (CSE) reference format. The files `CSE.bst` and `CSEsv.bst` contain English and Swedish versions, respectively.

The files in the `template` folder should not be altered. If you need to add own macros or packages you should add them in the document file `Uppsats.tex`. However, before adding your own packages you need to make sure the packages are not loaded by the template file or that your new packages do not interfere with the functionality set up by the template file.

When you upload your bibliography file (`.bib`) I recommend that you place it in the root with the `Uppsats.tex` file. This is, however, not critical and you may decide to place it elsewhere.

The template comes in a zipped package with the folder structure in place. Working with Overleaf all you need to do is to start a new project select **Upload project** to upload the zipped file and all will be ready for use. The recommended  $\text{\LaTeX}$  compiler is  $\text{Xe}\text{\LaTeX}$  so please change the compiler in the Overleaf project menu from  $\text{pdf}\text{\LaTeX}$  to  $\text{Xe}\text{\LaTeX}$ . Also, for your own convenience, make sure to set the spell checking language to the language of your thesis. Happy  $\text{\LaTeX}$ ing.

## 2 The `Uppsats.tex` file

The main file for the text of a thesis, `Uppsats.tex` is based on a plain article style  $\text{\LaTeX}$  document. The style uses vertical space as paragraph spacing as opposed to the standard indentation used by  $\text{\LaTeX}$ . The cover preceding pages to the thesis are managed by specific macros that are described in section 4.

## 2.1 The preamble

The preamble is very simple:

```
% Created by peter.jansson@2023-01-29
\documentclass[12pt]{article}
%-----
\usepackage{template/NGSU-thesis}
%-----
%-----
% Add any additional packages or code here:
```

The document class is article with a default font size of 12pt. The thesis is governed by the settings in the `NGSU-thesis.sty` file located in a folder named `template`. If you wish to add packages and additional settings this should be made at the end of the preamble.

If you add packages or make changes to any settings, you need to make sure you are not indirectly changing anything set within the style file. This document outlines the settings in the style file so carefully check what packages are already added and any arguments supplied to those packages to avoid overwriting settings made to the template file.

## 2.2 Language settings

The first settings you encounter in the document are language settings. The template uses babel to govern language specific settings such as date and default headings.

There are three choices for language settings: Swedish, UK English and US English. Swedish is the default while English must be explicitly chosen. The basic rule for choosing between UK and US English is what form of English is taught in your home country. For Europeans, UK English will be the obligatory choice. The bottom line is to choose wisely and make sure you are consistent in your writing.

The settings can be changed in the following section of the template

```
%-----
%- I M P O R T A N T -----
% Select by uncommenting from below
% if you write in English (Swedish is default)
\selectlanguage{UKenglish} % Mostly European students
%\selectlanguage{USenglish} % Mostly non-European students
```

where you un-comment the version of English you wish to use. Note that Swedish is the default setting and un-commenting any of the English settings will change the template from Swedish settings to English.

## 2.3 The cover page

The document starts with a command for generating the cover page of the thesis.

```
%-----  
%-----  
% C O V E R (fill in the following):  
%-----  
% Cover image file and scaling  
\Cover{\includegraphics[width=28cm]{figs/CoverExample.jpg}}  
{-3mm}% image location x-shift  
{-100mm}% image location y-shift  
{Some title of unknown length\\ and content}% Title  
{Author name}% Author  
%---- choose:  
{Examensarbete i ämne}% Svenska  
%{Degree Project in subject}% English  
%---- choose:  
{Kandidatnivå xx hp, vårterminen \the\year}% Svenska  
%{Degree Project xx HE credits spring/fall term}% English  
%-----  
\newpage
```

The command allows you to enter required information on the cover page using seven arguments.

- 1 The first argument of the cover command is for adding a cover image. To accomplish this you need to first upload your image file to the figs folder and then add the file name in the argument.
- 2–3 The second and third arguments of the cover command are for adjusting the position of your image. The second argument allows you to change the position in the horizontal direction by add a number indicating movement in mm as is indicated above. Positive numbers moves the image to the right, negative to the left. The third argument moves the image up or down using the same principles.
- 4 The fourth argument is for adding your thesis title. Note that you will need to manually add line breaks (\\) in your title.
- 5 The fifth argument is for entering your own name as you wish to see it on the cover.
- 6 The sixth argument is for entering the subject area for your thesis. This will be visible in the upper blue field on the cover.
- 7 The seventh argument is for showing the details of your degree project and consists of listing it as a Candidate (Kandidatuppsats) or Master's project (Mastersuppsats). You then provide the number of credits for your thesis work; one of 15, 30, 45 or 60 HE (hp). You also specify the term (Fall or Spring term/Vår- eller Höstterminen) and the year of your thesis work. Note that te year is the year when you complete your work. This information will be visible in the lower blue field of the cover.

The section finishes with the `newpage` command which forces a new page to be started.

By filling in the seven arguments, your information will be compiled to make the appropriate thesis cover for a thesis at the Department of Physical Geography.

## 2.4 The title page

The title page of the thesis contains much key information of your thesis but has a very simple layout. The page is created by the `TitlePage` command that takes two arguments and the `ThesisMatter` command that takes eight arguments.

```
%-----  
%-----  
% FRONT MATTER (fill in the following):  
%-----  
  
\TitlePage%  
{Some title of unknown length and content}% Title  
{Author name}% Author  
  
\vfill  
%---- choose:  
%----  
  
\ThesisMatter% English  
{Course name xx HE credits (GExxxx)}%  
{Series xxxx}% supplied by course admin  
{Program name (xxx HE credits)}%  
{Term year}%  
{Supervisor: name}%  
{Examiner: name}%  
{Assessor: name}%  
{Cover: info incl. originator/source}%  
%----  
  
%\FrontMatter% Swedish  
%{Kursnamn xx hp (GExxxx)}%  
%{Serie xxxx}% ges av kursadmin  
%{Programnamn (xxx hp)}%  
%{Termin år}%  
%{Handledare: namn}%  
%{Examinator: namn}%  
%{Bedömmare: namn}%  
%{Omslag: info inkl. upphovsperson/källa}%  
%----  
  
\newpage
```

The `TitlePage` command takes two arguments, the title of your thesis and your name. This must be exactly the same information that you entered for the cover. One difference is that the title is entered as one sentence without forced line breaks. This text appears at the top of the page

The `FrontMatter` command generates a list at the bottom of the page with mandatory information about your thesis. The first argument is the course name of your thesis course with its course code within parenthesis. The different courses

are given in Table 1. Note that you should supply the course name corresponding to the language of the thesis.

Table 1. The different courses for thesis work at both candidate and masters level at the Department of Physical Geography including course name, course code and number of credits. Note that most course names exist in both Swedish and English whereas only the language corresponding to the thesis content should be used on the title page, never both.

Course code	Credits	Course name (Swedish/English)
GE6008	15	Biogeovetenskap, examensarbete
GE6016	15	Geografi, examensarbete
GE6017	15	Geografi, självständigt arbete inom ämneslärarprogrammet/ Geography, Degree Project for Teachers
GE6018	15	Vetenskaplighet och självständigt arbete i geovetenskap/ Scientific Method and Degree Project in Earth Sciences
GE6019	15	Naturgeografi, examensarbete/ Physical Geography, Degree Project
GE6020	30	Naturgeografi, examensarbete/ Physical Geography, Degree Project
GE9009	30	Examensarbete i naturgeografi och kvartärgeologi/ Degree Project in Physical Geography and Quaternary Geology
GE9010	45	Examensarbete i naturgeografi och kvartärgeologi/ Degree Project in Physical Geography and Quaternary Geology
GE9011	60	Examensarbete i naturgeografi och kvartärgeologi/ Degree Project in Physical Geography and Quaternary Geology
GE9020	30	Geografi, examensarbete/ Geography, Degree Project
GE9021	45	Geografi, examensarbete/ Geography, Degree Project
GE9022	60	Geografi, examensarbete/ Geography, Degree Project
GE9024	15	Geografi, självständigt arbete inom ämneslärarprogrammet/ Geography, Degree Project for Teachers
GE9025	15	Geografi III inom ämneslärarprogrammet, årskurs 7–9 med självständigt arbete/ Geography III for Teachers, Secondary School, with Degree Project
GE9026	30	Miljövård och fysisk planering, examensarbete/ Environmental Management and Physical Planning, Degree Project
GE9029	45	Miljövård och fysisk planering, examensarbete/ Environmental Management and Physical Planning, Degree Project
GE9030	60	Miljövård och fysisk planering, examensarbete/ Environmental Management and Physical Planning, Degree Project

The second argument of the `Frontmatter` command is a unique series number for your thesis. This number will be supplied by [exjobb@natgeo.su.se](mailto:exjobb@natgeo.su.se) when you send in the final version of your thesis as a pdf file.

The third argument is the name of the program in which you have written your thesis including the total number of credits of the program in parenthesis. Table 2 shows the different programs and the number of credits in each.

The fourth argument concerns the term and year of your thesis. Terms are either fall term (höstterminen) or spring term (vårterminen) followed by the year the thesis was completed. This information is thus concerning the end date of the thesis work, not the duration of the work.



Table 2. List of education programs at the Department of Physical Geography including total number of credits in each program.

Program name	Total credits
Kandidatprogram i biogeovetenskap/ Bachelor's Programme in Biology-Earth Sciences	180
Kandidatprogram i geografi/ Bachelor's Programme in Geography	180
Kandidatprogram i geovetenskap/ Bachelor's Programme in Earth Science	180
Kandidatprogram i geovetenskap, distansutbildning/ Bachelor's Programme in Earth Science, Distance Learning	180
Masterprogram i geomatik med fjärranalys och GIS/ Master's Programme in Geomatics with Remote Sensing and GIS	120
Masterprogram i landskapsekologi/ Master's Programme in Landscape Ecology	120
Masterprogram i miljövård och fysisk planering/ Master's Programme in Environmental Management and Physical Planning	120
Masterprogram i polara landskap och kvartära klimat/ Master's Programme in Polar Landscapes and Quaternary Climate	120

The fifth, sixth and seventh arguments should list the names of your (main) supervisor (Handledare), the examiner (Examinator) and the assessor (Bedömare). Here the terms given above should precede the respective name separated by a colon as in e.g. "Examiner: Peter Jansson"

The eighth argument is for adding information on your cover image. Add a short description such a location and motif and source (name of originator). Note that the thesis is copyrighted to you so if the cover image is yours, there is no need to add your name as originator.

Note that both Swedish and English content has been prepared. Please comment out or un-comment as you require to set the content in the language of your thesis.

## 2.5 The reference section

The reference section requires you to add the name of your bibliography file as an argument to the bibliography command.

```
%-----
%-----
% Replace the TestRefs.bib with your own
% bibliography file
\phantomsection\addcontentsline{toc}{section}{\bibname}
\label{sec:refs}
{\small \bibliography{TestRefs}}
%--- choose:
\bibliographystyle{template/CSE}%Standard Eng ref-format
%\bibliographystyle{template/CSEsv}%Standard Sve ref-format
```

The code includes several commands that are required to make sure the section name ends up in the table of contents and is also properly linked in the table of

contents. Please do not remove or alter this code except for adding the file name of your bibliography file.

### 3 Packages used in the template

The template uses several common packages (table 3) to enable proper formatting. Most will not concern the user of the template. There are, however, a few where a user may want to use specific arguments. In such cases, it will be important to make sure the new settings do not interfere with other settings. Therefore, please refer to the comments on the use of each package provided in this document.

Table 3. The packages used in the NG-thesis.sty and their optional arguments

Package	Optional arguments and comments
adjustbox	[export]
appendix	[toc,title,header]
babel	[swedish,USenglish,UKenglish]
booktabs	
caption	[font=footnotesize]
fontspec	
geometry	[a4paper,top=25mm,left=37mm,bottom=30mm,right=37mm]
graphicx	
hyperref	[xetex]
inputenc	[utf8]
ifthen	
ifxetex	
lipsum	
mathptmx	
natbib	
parskip	
setspace	
siunitx	[separate-uncertainty=true,multi-part-units=single, product-units=single,list-units=single,range-units=single]
tgheros	
tgtermes	
threeparttable	
tikz	
titlesec	
xcolor	Implicitly called by hyperref and tikz

#### 3.1 adjustbox

The adjustbox package ([Scharrer, 2022](#)) provides means to adjust general L<sup>A</sup>T<sub>E</sub>X material using a key = value interface. The package also loads the trimclip package ([Scharrer, 2020](#)) which code was once included in the adjustbox package. The package extends the graphicx package ([Carlisle, 2021](#)) to become more flexible. The package uses collectbox package (to collect the content as a real box) and adjcalc (to allow for math expressions for lengths). The adjcalc package is part of the same adjustbox bundle and should have been installed together with trimclip.

```
\usepackage[export]{adjustbox}
```

## 3.2 appendix

The appendix package (Wilson and Press, 2020) is used to provide an environment for appendices in the thesis. the package is implemented using the following code:

```
% -----
% Appendix handling
% For appendix handling:
\usepackage[toc,title,header]{appendix}
% Adjusting float numbers in appendix of article
\newcommand{\AppendixNumbering}{%
\renewcommand{\thefigure}{\thesection\arabic{figure}}%
\setcounter{figure}{0}
\renewcommand{\thetable}{\thesection\arabic{table}}%
\setcounter{table}{0}
\renewcommand{\theequation}{\thesection\arabic{equation}}%
\setcounter{equation}{0}
}

\newcommand{\AppSection}[1]{\section{#1}\AppendixNumbering}
```

The call to the package ensures that the table of contents shows a heading for the appendix section and then provides specific appendix numbering using an alphabetical numbering schema for the main appendix level, A, B, C, etc. The numbering of figures and tables are also modified to the heading labelling so that figures and tables numbers are preceded by the appendix letter.

To handle the appendices correctly a new command called `\AppSection` is defined. This new command combines the traditional `\section` command with the renewed numbering scheme required for each appendix. Hence the `\AppSection` should be used to start each appendix. If sub-sections are needed the normal commands are used.

## 3.3 babel

The babel package (Bezoz and Brahms, 2022) provides support for multiple languages. Many built in aspects of a document are language dependent and requires adjustment depending on the authoring language. For example, the list of contents or the heading for references will depend directly on the authoring language. When using babel the target language will determine language specific details in a document. In the template, babel is implemented using the following code:

```
% -----
% babel to get appropriate headings for Swedish/English
% UKenglish and USenglish to be used depending on
```

```
% closest use of English in native country
\usepackage[swedish,USenglish,UKenglish]{babel}
\addto\captionsUKenglish{%
  \renewcommand{\bibname}%
    {References}%
}
\addto\captionsUSenglish{%
  \renewcommand{\bibname}%
    {References}%
}
\addto\captionsswedish{%
  \renewcommand{\bibname}%
    {Referenser}%
}
\renewcommand\dateUKenglish{\def\today{\number\day~%
  \ifcase \month \or January\or February\or March\or April\or
  May\or June\or July\or August\or September\or October\or
  November\or December\fi\space \number\year}}
\dateUKenglish
\renewcommand\dateUSenglish{\def\today{\day\month~%
  \ifcase \month \or January\or February\or March\or April\or
  May\or June\or July\or August\or September\or October\or
  November\or December\fi\space \number\year}}
\dateUSenglish
```

The code provides support for Swedish, UK and US English. The default will be Swedish but will allow the user to select UK or US English as an option. Note that UK English is expected from European citizens. The choice is otherwise determined by the standard determined by the country of origin of the author and in that case the responsibility of the author.

### 3.4 booktabs

The booktabs package (Fear, 2020) provides improvements to table formatting that turns the generic L<sup>A</sup>T<sub>E</sub>X tables into publication quality tables.

```
% -----
% booktabs for better tables
\usepackage{booktabs}
```

The new commands provided by the package include \toprule, \midrule and \bottomrule, which should be used when formatting tables.

### 3.5 caption

The captions package (Sommerfeldt, 2022) allows customisation of the caption commands. The changes made in the thesis are provided by the code below:

```
% -----
% Adjust figure and table captions
```



```

\usepackage[font=footnotesize]{caption}
\DeclareCaptionFont{md}{\mdseries}
\captionsetup[table]{
  format=plain,
  labelsep=period,
  justification=justified,
  labelfont=md,
  singlelinecheck=0,
}
\captionsetup[figure]{
  format=plain,
  labelsep=period,
  justification=justified,
  labelfont=md,
  singlelinecheck=0,
}

```

The basic formatting provided by the code is to make figure and table captions to be set with a smaller type size than the document and to separate the figure or table label from the caption text by a period, as opposed to the  $\text{\LaTeX}$  default colon.

## 3.6 fontspec

The `fontspec` package (Robertson, 2022) allows for expanded font selection when using  $\text{Xe}\text{\LaTeX}$  and  $\text{Lua}\text{\LaTeX}$ . Plain  $\text{\LaTeX}$  does not support OpenType which is used by current computer systems. There is thus a need to allow  $\text{\LaTeX}$  to access system fonts to produce documents. The package is implemented by the following code:

```

\usepackage{fontspec}

```

## 3.7 geometry

The `geometry` package (Umeki, 2020) provides a simple interface to set the format of the page geometry. The page geometry is set by the following code setting paper size and margin sizes.

```

% -----
% Set A4 page with specified margins
\usepackage[a4paper,top=25mm,left=37mm,bottom=30mm,
  right=37mm]{geometry}

```

## 3.8 graphicx

The `graphicx` package (Carlisle, 2021) provides basic support for including graphics into a document. The `graphicx` package can handle JPEG, PNG, and PDF

graphics. You will not be able to include TIFF images but it is possible to include TIFF images in a PDF and then use the PDF in the document. SVG is not supported although there are packages for including SVG graphics. However, SVG inclusion is not straight forward and is therefore not directly supported.

```
% -----  
% graphicx to enable graphics in documents  
\usepackage{graphicx}
```

## 3.9 hyperref

The hyperref package (Rahtz et al., 2022) is a key package for providing pdf links within and outside of a document. The package is implemented using

```
\usepackage{hyperref}
```

or

```
\usepackage[xetex]{hyperref}
```

Note that when using Xe<sub>La</sub>T<sub>E</sub>X the xetex option has to be provided. In the template this is accomplished using a conditional statement so that the proper version is loaded.

When using hyperref several additional settings can be used to distinguish between different types of links. In the following links colours are set to distinguish between internal links (black), citations (set to a light blue), file links (set to red) and URL links (set to a blue defined by the xcolor package; see section 3.23).

```
% -----  
% Setup HyperRef behaviour  
\hypersetup{  
  pdffitwindow=true, % window fit to page when opened  
  pdfstartview={FitH}, % fits the width of the page to  
                      % the window  
  pdfnewwindow=true, % links in new window  
  colorlinks=true, % false: boxed links; true: colored links  
  linkcolor=black, % color of internal links (change box  
                  % color with linkbordercolor)  
  citecolor=SUref, % color of links to bibliography  
  filecolor=red, % color of file links  
  urlcolor=SUBlue % color of external links  
}
```

## 3.10 inputenc

The inputenc package (Jeffrey and Mittelback, 2021) extends the generic character support for fonts beyond the ASCII character set. The package is only neces-

sary when using pdf $\LaTeX$  or generic  $\LaTeX$  and requiring input of accented letters from non-English languages. By using Xe $\LaTeX$  or Lua $\LaTeX$ , these limitations are omitted. If running pdf $\LaTeX$ , the following needs to be provided to enable accented letters to be properly represented in a document:

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

### 3.11 ifthen

The ifthen package (Carlisle, 2021) provides support for building logical decisions using an if–then format.

```
% -----
% ifthen allows for logical testing in macro building
\usepackage{ifthen}
```

### 3.12 ifxetex

The ifxetex (The L $\LaTeX$  Project Team, 2022) allows us to test if Xe $\LaTeX$  is running and then choose specific instructions for Xe $\LaTeX$  or some other compiler (commonly pdf $\LaTeX$ ). In the template this affects how hyperref is called as well as choices of fonts since pdf $\LaTeX$  and Xe $\LaTeX$  have different font capabilities.

```
% -----
% General setup
\usepackage{ifxetex}
\ifxetex
  \usepackage{fontspec}
  % \setmainfont{Times New Roman}
  % \setsansfont{Verdana}
  \usepackage{tgtermes}
  \setmainfont{TeX Gyre Termes}
  \setsansfont{Carlito}%
  \usepackage{tgtermes}
  \usepackage[xetex]{hyperref}
\else% pdfLaTeX
  \usepackage[utf8]{inputenc}
  \usepackage{tgtermes}
  \usepackage{tgheros}
  \usepackage{hyperref}
\fi
```

### 3.13 lipsum

The lipsum package (Happel, 2021) provides the Lorem Ipsum latin text for simple inclusion in a document. This text is used by typographers to quickly check text formatting parameters. It will not be of use for the thesis writing but is included for

testing purposes. The text is called by providing the command `\lipsum` in the document. By adding a square bracket with a number of range such as `\lipsum[1-5]` the number of paragraphs provided can be specified.

```
% -----
% lipsum for testing text
\usepackage{lipsum}
```

### 3.14 natbib

The `natbib` package (Daly, 2010) is a key package for enabling author-year (Harvard) style references in the text. Please study the package documentation to learn about the different citation commands that the package introduces.

In the template an additional code commonly referred to as `natbibspacing.sty` is included. this code provides proper vertical spacing in the reference list.

```
% -----
% Reference handling
\usepackage{natbib}
% for author-year references with a tweak below.
% natbibspacing.sty:
\newdimen\bibspacing
\makeatletter
\setlength\bibspacing\z@
\renewenvironment{thebibliography}[1]{%
  \bibfont\bibsection\parindent \z@\list
  {\@biblabel{\arabic{NAT@ctr}}}{\@bibsetup{#1}}%
  \setcounter{NAT@ctr}{0}}%
  \ifNAT@openbib
    \renewcommand\newblock{\par}
  \else
    \renewcommand\newblock{\hskip .11em \@plus.33em
      \@minus.07em}%
  \fi
  \sloppy\clubpenalty4000\widowpenalty4000
  \sfcode\.=1000\relax
  \let\citeN\cite \let\shortcite\cite
  \let\citeasnoun\cite
  \itemsep\bibspacing %
  \parsep\z@skip %
}{\def\@noitemerr{%
  \PackageWarning{natbib}
    {Empty `thebibliography' environment}}%
  \endlist\vskip-\lastskip}
\makeatother
% Do not allow vertical space between references.
\setlength\bibspacing{0pt}
```



### 3.15 parskip

The `parskip` package (Mittelbach, 2021) provides the possibility to change the default paragraph separation in  $\text{\LaTeX}$  to using vertical space.

```
% -----  
% Allow for larger spacing for manuscript review  
\usepackage{parskip}
```

### 3.16 setspace

The `setspace` package (Tobin and Fairbairns, 2022) provides means to quickly change line spacing in a document. When providing a draft for feedback it is often useful to make line spacing larger. The package commands allow you to make such changes in the document.

```
% -----  
% allow for double spacing of manuscripts  
\usepackage{setspace}
```

### 3.17 siunitx

The `siunitx` package (Wright, 2022) provides support for SI units in a document. The package is very extensive and also contain support for table column alignment. Despite its complexity it makes handling scientific unit notation very simple.

```
% -----  
% siunitx for better SI unit handling + define units yr and a  
\usepackage[separate-uncertainty=true,multi-part-units=single,  
            product-units=single,list-units=single,  
            range-units=single]{siunitx}  
\DeclareSIUnit{\yr}{yr}  
\DeclareSIUnit{\annum}{a}
```

### 3.18 tgheros

The `tgheros` package (Jackowski and Nowacki, 2009a) provides access to a font package which is a clone of the Helvetica font family. This is used as sans-serif font in the thesis template.

```
\usepackage{tgheros}
```

### 3.19 tgtermes

The `tgtheros` package (Jackowski and Nowacki, 2009b) provides access to a font package which is a Roman clone. This is used as the default serif font in the thesis template.

```
\usepackage{tgtermes}
```

### 3.20 threeparttable

The `threeparttable` (Arseneau, 2010) is a package that provides more sophisticated table formatting. The caption can be scaled to match the width of the table and it is also easy to implement table notes.

```
% -----  
% More sophisticated table setup with caption and footnotes  
\usepackage{threeparttable}
```

### 3.21 tikz

The `tikz/pgf` package (Tantau, 2021) is large (the current manual is 1321 pages) and complex package providing graphical capabilities to  $\text{\LaTeX}$ . Tikz is a recursive name for ‘TikZ ist kein Zeichenprogramm’. This package is used for creating the cover page.

```
% -----  
% The drawing package Tikz  
\usepackage{tikz}
```

### 3.22 titlesec

The `titlesec` package (Bezoz, 2021) provides simple means to change the formatting of headings. the package is used for formatting the thesis headings.

```
% -----  
% Changing format of headings (font type and size)  
\usepackage{titlesec}  
\makeatletter  
\@ifclassloaded{report}{%  
  {\titleformat{\chapter}[hang]  
    {\normalfont\sffamily\Huge\bfseries\color{SUBBlue}}  
    {\thechapter}{20pt}{\Huge}}%  
  {}  
}  
\makeatother  
\titleformat{\section}  
  {\normalfont\sffamily\LARGE\color{SUBBlue}}{\bfseries}
```

```

{\thesection}{1em}{\}
\titleformat{\subsection}
{\normalfont\sffamily\Large\color{SUBBlue}}{\bfseries}
{\thesubsection}{1em}{\}
\titleformat{\subsubsection}
{\normalfont\sffamily\color{SUBBlue}}{\itshape}
{\thesubsubsection}{1em}{\}

```

## 3.23 xcolor

The xcolor package (Kern, 2021) provides colours to L<sup>A</sup>T<sub>E</sub>X documents and is only implicitly included since both the hyperref and the tikz packages loads xcolor. In the template xcolor is used to define the Stockholm University colours and a link colour for references as follows

```

% Define SU colours (uses package xcolor from tikz)
\definecolor{SUBBlue}{cmyk}{1.00,0.70,0.00,0.60}
\definecolor{SUOlive}{cmyk}{0.25,0.10,0.60,0.20}
\definecolor{SUSky}{cmyk}{0.35,0.00,0.10,0.00}
\definecolor{SUWater}{cmyk}{0.40,0.15,0.00,0.05}
\definecolor{SUFire}{cmyk}{0.00,0.65,1.00,0.00}
\definecolor{SUSilver}{cmyk}{0.12,0.08,0.08,0.23}
\definecolor{SUGold}{cmyk}{0.30,0.40,0.80,0.15}
\definecolor{SUref}{cmyk}{0.40,0.15,0.00,0.25}

```

# 4 Major thesis commands

The cover and title page is typeset using a few commands that take several arguments. Behind these commands are more complex programming using, for example, TikZ.

## 4.1 Thesis cover command

The thesis cover command relies on TikZ to provide graphics and text in specific locations on the page. The command takes seven arguments which are used for text entries on the page. As can be seen in the code below the entire page is created as a so-called tikzpicture environment.

```

% -----
% C O V E R   M A C R O
% -----
\newcommand{\Cover}[7]{
\begin{tikzpicture}[remember picture,overlay]
\node (nw) at (current page.north west) {};
\node (sw) at (current page.south west) {};
\node [xshift=0.2\paperwidth] (ne) at (nw) {};
\node [xshift=0.2\paperwidth] (se) at (sw) {};

```

```

% Figure
\node [anchor=north west,xshift=#2,yshift=#3]
  at (current page.north west) {#1};
% Upper blue plate with text and logo
\node (uplate) at (nw) [anchor=north west,fill=SUBBlue,
  minimum width=\paperwidth,minimum height=30mm] {};
% Lower blue plate with text
\node (lplate) at (nw) [anchor=north west,xshift=0mm,
  yshift=-285mm,fill=SUBBlue,minimum width=\paperwidth,
  minimum height=13mm] {};
% Title
\node (title)
  [anchor=north west,align=left,xshift=16mm,yshift=-50mm,
  text=black,
  font=\fontsize{28pt}{32pt}\selectfont\sffamily]
  at (current page.north west){#4};
% Author
\node (author)
  [anchor=north west,xshift=0cm,yshift=-5mm,
  font=\fontsize{20pt}{22pt}\selectfont\sffamily]
  at (title.south west) {#5};
% Dept info
\node (subj)
  [anchor=south west,xshift=16mm,yshift=-28mm,text=white,
  font=\fontsize{12pt}{12pt}\selectfont\sffamily] at
  (current page.north west){#6};
% Dept info
\node (type)
  [anchor=south west,xshift=16mm,yshift=-295mm,text=white,
  font=\fontsize{12pt}{12pt}\selectfont\sffamily] at
  (current page.north west){#7};
% SU Logo
\node [anchor=south west,xshift=170mm,yshift=-30mm]
  at (current page.north west) {%
    \includegraphics[width=3cm]%
    template/SULogotypStaendeInvert800px.png}
  };
\end{tikzpicture}
\thispagestyle{empty}\clearpage
}

```

## 4.2 Thesis title page

The thesis title page is quite simple. The first part of the page is set up using the command `TitlePage` which yields the thesis title and author name. A second command `ThesisMatter` provides a list of thesis specific information mandatory in a thesis. This command also adds the SU logo.

```

% -----
% F R O N T   M A T T E R   M A C R O S

\newcommand{\TitlePage}[2]{
%\section*{}

```



```

%\vskip30mm
\begin{flushleft}
{\begin{spacing}{1}\normalfont\sffamily\Huge\color{SUBBlue} #1\end{spacing}}
\end{flushleft}
\vskip20mm

\begin{flushleft}
{\normalfont\sffamily\Large\color{SUBBlue} #2}
\end{flushleft}
}

% Uses the ifthen package to look at babel \languagename
\newcommand{\ThesisMatter}[8]{%
\ifthenelse{\equal{\languagename}{\string swedish}}
{% Swedish case
{\normalfont\sffamily\color{SUBBlue}%
\begin{minipage}{.7\textwidth}\footnotesize
Institutionen för naturgeografi\\
#1\\% kursnamn
#2\\% serie
#3\\% programnamn
#4\\% termin
#5\\%
#6\\%
#7\\%
\copyright\ \the\year\ författaren\\%
#8% omslag
\end{minipage}
\begin{minipage}{.29\textwidth}\hfill
\includegraphics[width=30mm,valign=b]{%
{template/LogoOrgSvenskRGB.pdf}
\end{minipage}
}
\thispagestyle{empty}}% end Swedish case
{% English case
{\normalfont\sffamily\color{SUBBlue}%
\begin{minipage}[b]{.7\textwidth}\fontsize{10}{11}\selectfont
Department of Physical Geography\\
#1\\% course name
#2\\% series
#3\\% program name
#4\\% term
#5\\%
#6\\%
#7\\%
\copyright\ \the\year\ the author\\
#8% cover
\end{minipage}
\begin{minipage}[b]{.29\textwidth}\hfill
\includegraphics[width=30mm]{template/LogoOrgSvenskRGB.pdf}
\end{minipage}
}
\thispagestyle{empty}}% end English case
}

```

## 4.3 Abstract page command

The abstract page command `AbstractPage` is quite simple. It takes the abstract and key words as input and formats the page so that the key words appear at the bottom and the abstract at the top. Note that the abstract should not be longer than to allow the key words on the same page.

```
% -----
% A B S T R A C T   P A G E
% Macro for the Abstract page
\newcommand{\AbstractPage}[2]{%
\ifthenelse{\equal{\language name}{\string swedish}}{
{% Swedish case
\pagenumbering{gobble} \ \newpage
\subsection*{Sammanfattning}
#1

\vfill
\noindent\begin{minipage}{\textwidth}
\subsection*{Nyckelord}
#2
\end{minipage}
\newpage}% End Swedish case
{% English case
\pagenumbering{gobble} \ \newpage
\subsection*{Abstract}
#1
\vfill
\noindent\begin{minipage}{\textwidth}
\subsection*{Key words}
#2
\end{minipage}
\newpage}% End English case
}
```

## 5 Postscript

This template has been designed in parallel to a Word template to be used for presenting both Bachelor's and master's theses without major differences in layout and design. The templates can most likely be developed further but key to any development is feedback. As for the graphical aspects of the layout it is determined by an official layout provided for Stockholm University PhD theses. Where the development can be made is in the internal handling of information and formatting. Feedback is therefore encouraged to help improve the template

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