# Example and Guidelines for ACTA OULU LaTeX Template

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# Abstract

This is your one page abstract including keywords for the main language.

*Keywords:* LaTeX, hints

## Tiivistelmä

Your one page abstract including keywords is here for the second language.

*Keywords:* LaTeX, hints *Asiasanat:* LaTeX, hints

*Dedication text here.*

# Preface

Preface text here.

# Acknowledgements

Acknowledgements text here.

# List of abbreviations

A       *Scientiae Rerum Naturalium*

B       *Humaniora*

C       *Technica*

D       *Medica*

E       *Scientiae Rerum Socialium*

F       *Scripta Academica*

G       *Oeconomica*

# List of original publications

An example list of original publications, which are referred to in the text by their Roman numerals (I–II). This works always.

I    Nurkkala K & Varjonen V (2007) Instructions for authors. Instructions for authors of manuscripts intended for publication in the series Acta Universitatis Ouluensis. URI: http://www.kirjasto.oulu.fi/assets/files/julkaisutoiminta/templates/ActaOulu2009_en.pdf.

II   Nurkkala K & Varjonen V (2007) Instructions for authors. Instructions for authors of manuscripts intended for publication in the series Acta Universitatis Ouluensis. URI: http://www.kirjasto.oulu.fi/assets/files/julkaisutoiminta/templates/ActaOulu2009_en.pdf.

An alternative way using bibentry package, I and II and your bib-files. This is working just with IEEEtran bibliography style since the APA style is not compatible with bibentry. This can be used also at the end, in the Original Publications part.

I    A. Y. Wang and Sodini (2006)

II   Z. Wang, Stupia, and Vandendorpe (2015)

16

# Contents

# 1 Introduction

This file serves as an example file for LaTeX users and provides some guidelines, e.g., about using figures and tables. It explains how to use the ActaOulu LaTeX template *ActaOulu.cls*. It also explains the referencing system with LaTeX.

After latexing this example file produces empty pages here and there since new chapters start at certain (odd) pages and since the template includes empty pages needed by the ACTA editors once they produce the final versions. However, this way the page numbering works properly as well as forms the table of contents correctly.

It is highly recommend to follow these instructions and not to invent own modifications.

## 1.1 General

Use it as a usual LaTeX cls-file. Use the required packages shown in this example file and add your owns if needed. Note that *encaptionnames.sty* or *ficaptionnames.sty* is also required depending on your language choice.

## 1.2 Structure

The template uses predefined environments for different matters. Use them. They all are used in this set of example files. Ignore them if you do not need them but don't invent your own to replace them.

The title and environments abstract, tiivistelmä (Finnish abstract), dedications, preface, acknowledgements, abbreviations and list of original publications (loa) that belong to the beginning are defined and used in *frontmatters.tex* example file.

The chapters could be in separate tex-files as explained in the next section. Herein, *textpart.tex* is used for all chapters.

At the end of the example file *ActaOuluExample.tex* you can find a place for your bibliography file, appendix environment for appendices (naturally) and origpub environment for original articles.

### *1.2.1 Headings*

The thesis could include numbered headings at three levels, and all are already used in this document. In addition, there is one unnumbered one, shown next, that does not appear in the contents.

#### *Unnumbered heading*

As a summary, headings are, from the highest level down, *chapter, section, subsection, subsubsection*.

## 1.3    Write in small pieces

Long documents are much easier to handle and edit if they are in small pieces whereas journal and conference articles are so short that they could be in one document. Consequently, write text into smaller tex-files, e.g., such that each chapter is a separate file, and call them in the main LaTeX main file (mythesis.tex or similar based on the example *ActaOuluExample.tex*). This guide file uses this procedure to show an example. However, due to shortness, only two parts are used. Also appendices should be in separate files.

   The significant command for this is

```
 \input{yourfileX.tex},
```

which is placed in the main part of the main document. Don't worry if chapter, figure etc numbering do change while using this process. At the end, once everything is finished and all files included, they will be OK. If you want to work with only one file while editing it, comment the rest (using %).

   This way the main file (that you run with your LaTeX system) remains short and simple as the example file *ActaOuluExample.tex* shows.

   You can comment the frontmatter part until you really need it. This way the extra pages at the beginning do not appear in pdf or dvi file when not really needed.

## 1.4    Languages

The cls-file supports both English and Finnish as the main language. The selection is at the beginning of *ActaOuluExample.tex*. The main language selection affects the caption headings like figure and table as well as abstract, contents, etc names.

In the second abstract, you can tune Finnish hyphenation on in English written thesis and English hyphenation on in Finnish thesis. Remember to active the main language at the end! An example of all this is provided in *frontmatters.tex*.

## 1.5 LATEX systems

There are several LATEX systems available like MikTeX, Overleaf, TeXStudio and so on. Use your favorite and load required packages if they are not yet in it. Many of these support making of bib-files too.

## 1.6 Packages

CTAN.org (`https://ctan.org/`) has LATEX files and several useful packages that you may need, like *amsmath.sty* if you need severe mathematics. Ask friends what they have found useful. If packages cause problems to the template, do not use them.

The template (ActaOulu.cls) loads the following packages for its internal use. You don't need to load them. The packages are:

– ifthen
– calc
– mathptmx
– helvet
– tabularx
– geometry
– fancyhdr
– titlesec
– titletoc
– enumitem
– float
– caption
– tocvsec2
– remreset
– microtype

The language style files call the babel package.

# 2 References

The preferred citation style is APA, see ACTA pages. This template example uses the APA style as a default.

## 2.1 Bib-files

The template assumes that bib-files are used for handling references. They are much much handier than using *bibitem* based lists, especially if there are tens of references. Use your favorite bib-editor for creating them. Be careful since the beginning when filling the required information in your bib-files; it may be hard and boring work to find missing information later.

## 2.2 Series C

In series C, it is possible to use also the number based IEEE referencing style since APA may result in very long author names lists.

For this purpose, comment (%) the apacite package and bibliography style at the beginning of the example file and allow IEEEtran instead. If you like to use, with IEEE style, your bib-file for Original Publications uncomment also bibentry and nobibliography* and follow the example in *frontmatters.tex*.

The following gives an example of citations using the APA style. First with

```
{\citep}
```

(A. Y. Wang & Sodini, 2006; Z. Wang et al., 2015) and then with

```
{\cite}
```

A. Y. Wang and Sodini (2006); Z. Wang et al. (2015). Results are different. With the APA style the former (citep) must be used. With the IEEE style the latter (cite) must be used though this combination gives numeric results like [1-2] or [1], [2].

## 2.3 DOI

The APA style supports the DOI field in bib-files as the examples in the references shows. It is the latter DOI in (A. Y. Wang & Sodini, 2006) and the sole DOI in (Z. Wang et al., 2015). The former DOI becomes from the note field that should be emptied,

renamed or not used with the APA style. Why it is used in this example is because of the IEEE style possible in Series C and an example of that is also given.

Unfortunately IEEEtran.bst bib style does not directly support DOI field (at the moment). DOI number could be put in the note field like the *examplebib.bib* file shows, see A. Y. Wang and Sodini (2006).

# 3    Figures and tables

Figures and tables are floating objects in LaTeX. And should be treated accordingly. It is not recommended to put them in the middle of paragraph with [h!] placement. Instead, use the default order (i.e., nothing) or use [tb] or [bt]. This results a better looking document but also avoids indented text after the figure or table. The following examples hopefully clarify this thing.

This paragraph shows the *correct* way to include figures or tables. You have to make a reference to a figure (table) first, like this Fig. 1, such that it is at the same or previous page than the referenced figure. And finish the paragraph before adding the intended figure or table environment.

Now we start new paragraph and add some nonsense to fill the page in order to see how LaTeX wants to place the figure. mmmmmmmmmmmmm mmmmmmmm-mmmmmmmmmmm mmmmmmmmmmmm mmmmmmmmmmmmmm mmmmmmmm mm-mmmmmmmmmmmm mmmmmmmmmmmmmmmmmm mmmmmmmmmmmm mmmmmm-mmmmmmmm mmmmmmmm mmmmmmmmmmmmm mmmmmmmmmmmmmmmmmm mmmmmmmmmmmm mmmmmmmmmmmmm mmmmmmmm mmmmmmmmmmmmm mm-mmmmmmmmmmmmmmm mmmmmmmmmmmm mmmmmmmmmmmmmm mmmmmmmm mmmmmmmmmmmmm mmmmmmmmmmmmmmmmm mmmmmmmmmmmmm mmmmmm-mmmmmmmm mmmmmmmm mmmmmmmmmmmmm mmmmmmmmmmmmmmmmmm mmmmmmmmmmmm mmmmmmmmmmmmm mmmmmmmm mmmmmmmmmmmmm mm-mmmmmmmmmmmmmmm mmmmmmmmmmmm mmmmmmmmmmmmm mmmmmmmm mmmmmmmmmmmm



**Fig. 1. This is a figure caption.**

If you add the figure or table right where you reference to it in the middle of paraghraph (in the tex-file) like in Fig. 2 and then continue writing your paragraph, the



**Fig. 2. This is a figure caption.**

result may not be according the guidelines. Especially this may occur if you leave empty lines around the figure environment like in Fig. 3



**Fig. 3. This is a figure caption.**

here. You know, an empty line denotes a new paragraph in LaTeX. In addition, putting figures (tables) in the middle makes editing your paragraphs more difficult.

Try this example file by commenting [h!] in Figs. 2 and 3. The result is different since LaTeX prefers to put figures and tables to the top or bottom of the page, which is the way that most publishers recommend.

**Table 1. This is a table caption.**

| quantity | unit |
|---|---|
| distance | meter [m] |
| time | second [s] |

**Table 2. This is a table caption.**

| quantity | unit | abbreviation |
|---|---|---|
| distance | meter | m |
| time | second | s |

**Table 3. This is a table caption.**

| quantity | unit |
|---|---|
| distance | meter [m] |
| time | second [s] |

## 3.1     Tables

ACTA guidelines must be followed. Main ones are that 1) each column has to have a title, 2) lines are used above and below the table as well as below titles and 3) no vertical lines. In addition, in a portrait page table width is 122 mm and a landscape page 183 mm. Furthermore, the text in the leftmost column is left aligned, in other columns also other alignments can be used.

Tables are put in table environment whereas the figures are put in figure environment. The actual tables are done using tabular environment in the standard LaTeX (no extra packages). An example table using this is Table 1.

It is not easy to say what column widths have to be since there is column separation in LaTeX but target tables that fill the text area. Help can be found from: google *CTAN, array* and read package documentation therein (note that new features apply only if you have the newest version). A more complicated example is shown in Table 2. As can be seen, the width adjustment is not necessarily very exact and easy. Furthermore, this does not support alignments at the momemnt (may change in future).

The cls-file loads tabularx package that can be used to adjust fixed width for the table. This is done using tabularx enviroment and text alignment parameters L, C and R. An example is shown in Table 3 and more complicated one in Table 4. This is much more exact way to set the width than the tabular environment. In addition to table width, this allows adjustment of text alignment.

**Table 4. This is a table caption.**

| quantity | unit | abbreviation |
|----------|------|--------------|
| distance | meter | m |
| time | second | s |

The previous two tables have a width included into the starting command. The starting command for the former table is written as

```
\begin{tabularx}{122mm}{L C}\hline
```

where the width is put in the first parenthesis and the second one includes the column text alignments. In the thesis, the width could be 122 mm (portrait) or 183 mm (landscape). Also *columnwidth* works as width as Table 4 shows.

## 3.2 Figure files

LATEX systems using PDFLaTeX accept many kinds of figures: pdf, jpg, png and so on. Some LATEX system accept only eps format and you have to find suitable tools creating them; google and ask friends.

Anyway, create clear figures, use large enough fonts such that they are seen even if figure files has to be scaled smaller (to fit in the page) and so on.

The maximum width of figures is 122 mm in portrait pages and 183 mm in landscape pages. In LATEX you can adjust the width of the figure easily (using graphicx or graphics package) as can be seen from the figure examples.

## 3.3 Equations

Note that the above observation "no empty lines around" holds also for equations if you don't want them to be separate paragraphs. So, do like this. My nice equation

$$y = f(x) \tag{1}$$

is here as a part of my sentence, as it should. If the equation ends a sentence, use a dot after it. If you need a comma after it, use it like in this example

$$y = f(x), \tag{2}$$

where $f(x)$ is a function.

# References

Wang, A. Y., & Sodini, C. G. (2006). On the energy efficiency of wireless transceivers. *International Communications Conference*, *8*, 3783-3788. (doi: 10.1109/TSUSC.2017.2734110) doi: 10.1109/TSUSC.2017.2734110

Wang, Z., Stupia, I., & Vandendorpe, L. (2015). Energy efficient precoder design for MIMO-OFDM with rate-dependent circuit power. *International Communications Conference*, 1897-1902. doi: 10.1109/TSUSC.2017.2734110

# Appendix  1 Some stuff A

# Appendix  2 Some stuff B

# Original publications

I    Nurkkala K & Varjonen V (2007) Instructions for authors. Instructions for authors of manuscripts intended for publication in the series Acta Universitatis Ouluensis. URI: http://www.kirjasto.oulu.fi/assets/files/julkaisutoiminta/templates/ActaOulu2009_en.pdf.

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Original publications are not included in the electronic version of the dissertation.