

# Instructions to use DIKU style files

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**Abstract.** Each report must include an abstract that summarizes the results. Recommended length is at most 150 words. The abstract should not contain any references or displayed equations.  $\LaTeX$ -environment is `abstract`.

**CR Classification.** A report can provide the CR Classification (see the appropriate issue of *Computing Reviews*), but this is not obligatory.  $\LaTeX$ -environment is `subject`.

**Keywords.** List of keywords (4–6) can be useful but not obligatory.  $\LaTeX$ -environment is `keywords`.

## 1. Introduction

We encourage the students to use  $\LaTeX$  when preparing their manuscripts. For this purpose we have provided the  $\LaTeX$  style file `DIKU-article.cls`, and the  $\BibTeX$  style files `DIKU.bst` and `DIKU-alternative.bst`. This document describes how these style files are to be used. The figures can be either in the  $\LaTeX$  `picture` environment or in Encapsulated Postscript.

## 2. General

The  $\LaTeX$  style file `DIKU-article.cls` does not accept any options. In `\documentstyle`-command all options given in brackets are simply omitted. The layout of page should not be changed.

Redundant spaces ought to be minimized by careful arrangement of tables and figures. Read your `.log` file carefully. There should be no `Overfull \hbox` (as here) and certainly no visible one (more than `1pt`). If necessary, reword the text. The preamble command `\draft` can be used to produce a visible `overfullrulebox` in the margin.

The style file provides macros to create running heads. The `\authorhead` contains the authors' names as "Firstname Surname", "F. Surname1, F.

Surname2”, and “F. Surname1, F. Surname2, F. Surname3” for up to three authors, and “Surname1 et al.” for four or more authors. The titlehead should contain a short form of the title, not more than 30 characters.

The argument of `\title`-command must be written in lower case. When the paper has more than one author, the authors in the argument of `\author`-command are separated by usual `\and`-command or by `\AND`-command that inserts vertical glue between the blocks of authors’ names. Affiliations should be given using `\institute`-command. Also here `\and`-command can be used as in `\author`-command. In a multiauthor paper, to link the authors and their affiliations `\inst`-command can be used, e.g. `\inst{1}` produces the superscript <sup>1</sup>.

Neither footnotes nor appendices should be used. However, if appendices are really necessary, their place is after **Acknowledgements** and before **References**.

### 3. Sectioning, numbering, etc.

#### 3.1 Sectioning

The following three L<sup>A</sup>T<sub>E</sub>X-sectioning commands are available: `\section`, `\subsection`, and `\subsubsection`.

#### 3.2 Numbering

The numbering of displayed equations, theorems, figures, tables, and other “numbered” environments follows one of two styles: either consecutive in each section, or consecutive through the whole paper (default). If you prefer the first style, the style file provides `\twolevelnumbering`-command. The argument of the command is a list of environments that are numbered consecutively in each section, e.g.

```
\twolevelnumbering{figure,equation,theorem}
```

Tables should be referred to “Table I”. Equations and figures should be referred to in abbreviated forms: “Eq. (1)” and “Figure 1”. Use macros `\eqnref{eqn-label}`, `\figref{fig-label}`, and `\tableref{tab-label}` to generate the references.

#### 3.3 Lists of items

The depths of L<sup>A</sup>T<sub>E</sub>X-environments `itemize` and `enumerate` are restricted to two.

#### 3.4 Spacing before and after environments

Extra space is added at the top of list if the input file has a blank line before any list-making environment. The vertical space after the environment is the same as the one preceding it. The list-making environments are: `quote`,

quotation, verse, itemize, enumerate, description, center, flushleft, and flushright, as well as the theorem-like environments.

### 3.5 *Tabbing environment*

The style file defines `\tabbingstretch` to specify the strut to be used in the `tabbing` environment. The functionality of `\tabbingstretch` is the same as that of `\arraystretch` in `array` and `tabular` environments.

## 4. Theorem-like environments

The style file defines the following theorem-like environments:

<code>theorem</code>	<code>proposition</code>	<code>claim</code>	<code>fact</code>
<code>lemma</code>	<code>definition</code>	<code>problem</code>	<code>remark</code>
<code>corollary</code>	<code>conjecture</code>	<code>example</code>	<code>observation</code>

These are “numbered” environments. The style file also defines the corresponding “unnumbered” environments: `theorem*`, ..., `observation*`. The proofs can be typed within the environment `proof`.

For example, the L<sup>A</sup>T<sub>E</sub>X source

```
\begin{theorem}[Chebychev's Inequality]
If  $X$  is any random variable, then
\begin{equation}
\Pr[|X| \geq a] \leq \mathbb{E}(X^2)/a^2; .
\label{eqn:example}
\end{equation}
\end{theorem}
```

produces

**Theorem 1. (Chebychev's Inequality)** *If  $X$  is any random variable, then*

$$\Pr[|X| \geq a] \leq \mathbb{E}(X^2)/a^2 . \quad (1)$$

**Proof.** If  $F(x)$  denotes the distribution function of the random variable  $X$ , then

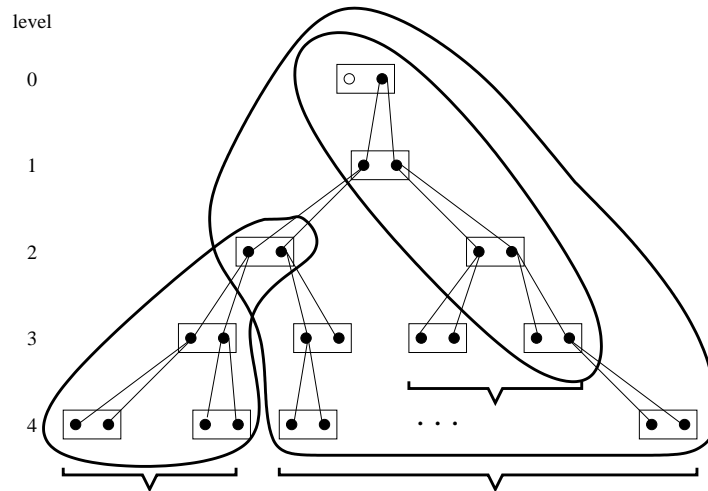
$$\Pr[|X| \geq a] = \int_{|x| \geq a} dF(x) .$$

Since in the region of integration  $|x|/a \geq 1$ , it follows that

$$\int_{|x| \geq a} dF(x) \leq \frac{1}{a^2} \int_{|x| \geq a} x^2 dF(x) .$$

By extending the integration to all values of  $x$ , we merely strengthen the inequality:

$$\int_{|x| \geq a} dF(x) \leq \frac{1}{a^2} \int_{|x| \geq a} x^2 dF(x) \leq \frac{1}{a^2} \int x^2 dF(x) = \mathbb{E}(X^2)/a^2 . \quad \square$$



**Figure 1.** An example figure created with `xfig`, exported in Encapsulated PostScript, and included with scaling.

When a proof ends with a displayed equation as above, the box “ $\square$ ” should be at the right end of the formula rather than at the beginning of the next line. In this case, the box must be inserted through `\qed` at the end of the equation, and a blank line must be left between the closing of the equation and the `\end{proof}`. (See the source of these instructions.)

## 5. Figures and tables

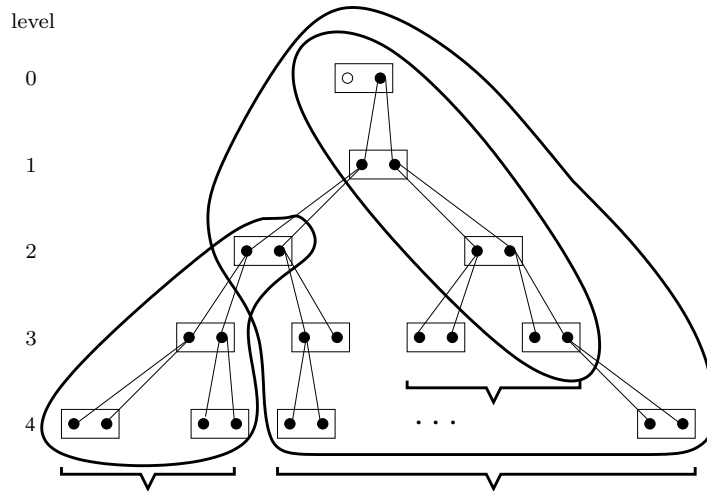
Figures and tables are to be inserted in the text nearest their first reference. They should be arranged so as not to cause an excessive amount of blank space on the remainder of the page.

The captions are centered below the figures and above the tables. If a table needs to extend over to a second page, the continuation of the table should have a caption: “Table II (*cont.*)”. Macro `\continued` generates this caption. Example:

```
\begin{table}
\continued % Instead of \caption
...
\end{table}
```

In Figure 1 the whole figure is included in Encapsulated Postscript. In Figure 2 the same figure is inserted as a  $\LaTeX$  file which contains the text and includes the drawings in Encapsulated PostScript. Note that in the latter figure the text is in the same font as that used in the body of the report. To achieve this, in `xfig` all text must be written using the special flag and the default  $\LaTeX$  fonts.

When including your own figures, you can use any of the graphics packages available in the  $\LaTeX$  bundle. For example, with the `epsfig` package



**Figure 2.** The same figure inserted as a  $\LaTeX$  file which includes the drawings in Encapsulated PostScript.

```
\usepackage{epsfig}
```

must be added to the preamble, after which a new figure can be inserted by using the command:

```
\epsfig{file = filename [, scaling]}
```

The optional argument *scaling* tells how the Encapsulated PostScript file is to be scaled. The possible values of the argument are:

`scale=<factor>` scaling factor = `<factor>/1000`

`width=<dimen>` scaling factor = `<dimen>/<natural_width>`

`height=<dimen>` scaling factor = `<dimen>/<natural_height>`

Remember that **previously published material must be accompanied by written permission from the author and publisher!**

## 6. References

The preferred style of referring to the bibliography is to use numbered references: “Raatikainen [4] proposed to use the Bonferroni inequality (see [1, pp. 41–43] or [3, § 9.4]).” This is obtained by using the standard  $\LaTeX$ -environment `thebibliography` or `BibTeX` with the style file `DIKU.bst` which generates the bibliography items in the preferred format.

Another possibility is to use the author-date citation style: “Raatikainen [1993] proposed to use the Bonferroni inequality (see [Kleijnen 1987, pp. 41–43] or [Law and Kelton 1991, § 9.4]).” Note that the years are in brackets in running text, but without brackets if the reference itself is in brackets. For three or more authors, use “et al.” Several papers in the same year are distinguished as “Raatikainen 1994a, Raatikainen 1994b”. When an article has more than two authors, the citation should be given in the form “[Kojo et al. 1996]”.

The style file provides the command `\alternativecitationstyle` to support the alternative citation style. The following macros are defined to simplify the use of the alternative style:

macro	produces
<code>\cite{bibreflabel}</code>	“[Author Year]”
<code>\cite[note]{bibreflabel}</code>	“[Author Year, note]”
<code>\citet{bibreflabel}</code>	“Author [Year]”
<code>\citet[note]{bibreflabel}</code>	“Author [Year, note]”
<code>\citealt{bibreflabel}</code>	“Author Year”
<code>\citealt[note]{bibreflabel}</code>	“Author Year, note”
<code>\citeauthor{bibreflabel}</code>	“Author”
<code>\citeyear{bibreflabel}</code>	“Year”

The macros above assume that your bibliography items are written as

```
\bibitem[{Author}{Year}]{bibreflabel}
\bibitem[{Author}{Year1}]{bibreflabel1}
\bibitem[{Author}{Year2}]{bibreflabel2}
```

The Bib<sub>T</sub>E<sub>X</sub> style file `DIKU-alternative.bst` generates the bibliography items in the format above.

## 7. Use of the style files

We provide the following files:

1. `DIKU-article.cls` contains the L<sup>A</sup>T<sub>E</sub>X code for producing camera-ready output of your report.
2. `DIKU.bst` contains the Bib<sub>T</sub>E<sub>X</sub> code which produces a reference list in the preferred form.
3. `DIKU-alternative.bst` contains the Bib<sub>T</sub>E<sub>X</sub> code which produces a reference list in the form suitable for the author-year citation style.
4. `example.tex` contains the L<sup>A</sup>T<sub>E</sub>X-source of these instructions.
5. `example.bib` contains the Bib<sub>T</sub>E<sub>X</sub>-source to produce the reference list.
6. `example.fig` contains the example figure in `xfig` format.
7. `makefile` is provided to make your life easier (for further details, see the instructions in the beginning of that file).
8. `example.dict` is created by `ispell`; it contains correctly spelled words that are not in the standard dictionary.
9. `example.www` contains data used by our crawler. When this file exists, the report will be made visible via our web pages.

To format the document, type:

```
shell> latex example.tex
shell> bibtex example
shell> latex example.tex
shell> latex example.tex
or
shell> make
```

## 8. Disclaimer

The macros are not guaranteed to be free of errors. Any bugs, inconsistencies, suggestions, and other comments should be reported by email to `jyrki@diku.dk`.

## Acknowledgements

This section comes before the References and is unnumbered.  $\text{\LaTeX}$ -environment is `acknowledgements`.

## References

- [1] J. P. C. Kleijnen, *Statistical Tools for Simulation Practitioners*, Marcel Dekker, Inc., New York (1987).
- [2] M. Kojo, K. Raatikainen, and T. Alanko, Connecting mobile workstations to the internet over a digital cellular telephone network, *Mobile Computing*, Kluwer, Boston (1996), 201–255.
- [3] A. M. Law and W. D. Kelton, *Simulation Modeling & Analysis*, 2nd Edition, McGraw-Hill, New York (1991).
- [4] K. E. E. Raatikainen, Sequential procedure for simultaneous estimation of several means, *ACM Transactions on Modeling and Computer Simulation* **3** (1993), 108–133.
- [5] K. E. E. Raatikainen, Database access in intelligent networks, *Proceedings of IFIP TC6 Workshop on Intelligent Networks*, Lappeenranta University of Technology, Lappeenranta (1994), 163–183.
- [6] K. E. E. Raatikainen, Information aspects of services and service features in intelligent network capability set 1, Report C-1994-45, Department of Computer Science, University of Helsinki, Helsinki (1994).