

The **uiotools** package

A collection of useful \LaTeX tools

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Abstract

The **uiotools** package contains lots of useful packages, symbols and other constructs often needed by students and staff at the University of Oslo, particularly in mathematics and natural science.

1 Letters and symbols

1.1 Blackboard bold letters

These letters are inspired by attempts to write bold letters by hand. They are available through the `\mathbb` command in the **amsfonts** package (see page 4) but some are used so frequently that we have defined names for them.

\mathbb{C}	<code>\CC</code>	Complex numbers	\mathbb{A}	<code>\AFF</code>	Affine space
\mathbb{N}	<code>\NN</code>	Natural numbers	\mathbb{P}	<code>\PRP</code>	Projective space
\mathbb{Q}	<code>\QQ</code>	Rational numbers			
\mathbb{R}	<code>\RR</code>	Real numbers			
\mathbb{Z}	<code>\ZZ</code>	Integers			

Table 1: Blackboard bold letters

A similar font is the one produced by the `\mathds` command in the **dsfont** package (see description on page 4): \mathbb{C} , \mathbb{N} , \mathbb{Q} etc.

1.2 Miscellaneous

A few other words and constructs require special attention to be typeset properly:

, i.e.,	<code>\ie</code>	<i>id est</i> : “which means”	Im	<code>\Im</code>	imaginary part
, e.g.,	<code>\eg</code>	<i>exempli gratia</i> : “for example”	Re	<code>\Re</code>	real part
—	<code>\dash</code>	a European dash or <i>tankestrek</i>	d	<code>\diff</code>	differential
MATLAB	<code>\matlab</code>	a software tool	TikZ	<code>\TikZ</code>	a graphics library

Table 2: Miscellaneous words

2 Delimiters

In Table 3 are shown commands for various delimiters defined using the **mathtools** package. Note that when used with a `*`, the delimiters will adjust the size depending on the contents.

3 Theorems

In Table 4 are shown various environments for theorems and similar definitions; these are defined using the **thmtools** package. (The descriptions are from Wikipedia (see <https://en.wikipedia.org/wiki/Theorem#Terminology>).)

$ x $	<code>\absdelim{x}</code>	$\left \sum_{k=0}^n \right $	<code>\absdelim*{\sum_{k=0}^n}</code>
$\lceil x \rceil$	<code>\ceildelim{x}</code>	$\left\lceil \sum_{k=0}^n \right\rceil$	<code>\ceildelim*{\sum_{k=0}^n}</code>
$\lfloor x \rfloor$	<code>\floordelim{x}</code>	$\left\lfloor \sum_{k=0}^n \right\rfloor$	<code>\floordelim*{\sum_{k=0}^n}</code>
$\langle x \rangle$	<code>\ipdelim{x}</code>	$\left\langle \sum_{k=0}^n \right\rangle$	<code>\ipdelim*{\sum_{k=0}^n}</code>
$\ x\ $	<code>\normdelim{x}</code>	$\left\ \sum_{k=0}^n \right\ $	<code>\normdelim*{\sum_{k=0}^n}</code>
(x)	<code>\pardelim{x}</code>	$\left(\sum_{k=0}^n \right)$	<code>\pardelim*{\sum_{k=0}^n}</code>
$\{x\}$	<code>\setdelim{x}</code>	$\left\{ \sum_{k=0}^n \right\}$	<code>\setdelim*{\sum_{k=0}^n}</code>
$[x]$	<code>\sqbdelim{x}</code>	$\left[\sum_{k=0}^n \right]$	<code>\sqbdelim*{\sum_{k=0}^n}</code>
$\llbracket x \rrbracket$	<code>\ssqbdelim{x}</code>	$\left\llbracket \sum_{k=0}^n \right\rrbracket$	<code>\ssqbdelim*{\sum_{k=0}^n}</code>

Table 3: Delimiters

<code>\begin{theorem}</code> A theorem ... <code>\end{theorem}</code>	Theorem 3.1. <i>A theorem is a statement that has been proven to be true based on axioms and other theorems.</i>
<code>\begin{corollary}</code> A corollary ... <code>\end{corollary}</code>	Corollary 3.2. <i>A corollary is a proposition that follows immediately from another theorem or axiom, with little or no required proof.</i>
<code>\begin{lemma}</code> A lemma ... <code>\end{lemma}</code>	Lemma 3.3. <i>A lemma is an “accessory proposition” — a proposition with little applicability outside its use in a particular proof.</i>
<code>\begin{proposition}</code> A proposition ... <code>\end{proposition}</code>	Proposition 3.4. <i>A proposition is a theorem of lesser importance, or one that is considered so elementary or immediately obvious, that it may be stated without proof.</i>
<code>\begin{observation}</code> An observation ... <code>\end{observation}</code>	Observation 3.5. <i>An observation is a comment on something noticed or perceived.</i>
<code>\begin{conjecture}</code> A conjecture ... <code>\end{conjecture}</code>	Conjecture 3.6. <i>A conjecture is an unproved statement that is believed to be true.</i>
<code>\begin{definition}</code> A definition ... <code>\end{definition}</code>	Definition 3.7. <i>A definition gives the meaning of a word or a phrase in terms of known concepts.</i>
<code>\begin{example}</code> An example ... <code>\end{example}</code>	Example 3.8. <i>An example is something that serves to illustrate or explain a rule.</i>
<code>\begin{notation}</code> A system of ... <code>\end{notation}</code>	Notation 3.9. <i>A system of characters, symbols, or abbreviated expressions used to express technical facts or quantities.</i>
<code>\begin{remark}</code> A remark ... <code>\end{remark}</code>	Remark 3.10. <i>A remark is a casual observation.</i>

Table 4: Theorems and similar constructs

4 Packages loaded

The following packages are very often useful, so they are automatically loaded when you use `uiotools`.

NOTE

If you are reading this documentation online,
you may click on the package name to find its documentation.

amfonts loads the various AMS fonts.

amsmath defines lots of useful constructs for typesetting mathematics.

amssymb makes all the AMS symbols available.

amsthm offers new possibilities for printing theorem definitions.

cancel contains the `\cancel` command to overstrike ~~words~~.

cleveref makes more advanced crossreferencing possible. In addition to the default categories, these are defined: **conjecture**, **notation** and **observation**.

comment introduces a **comment** environment for commenting out large sections of the document.

dsfont defines the command `\mathds` for doublestroked (also called “blackboard bold”) letters \mathbb{N} , \mathbb{Z} , \mathbb{R} etc. This font is an alternative to the one in the **amfont** package; see Section 1.1 on page 1.

enumitem makes it easy to customize the **description**, **enumerate** and **itemize** environments.

etoolbox provides useful tools for those who program new \LaTeX macros.

mathrsfs defines the `\mathscr` command for mathematical script letters \mathcal{A} , \mathcal{B} , \mathcal{C} etc.

mathtools extends the **amsmath** package with additional useful tools.

multirow allows you to add table entries spanning two rows or more.

pgffor introduces for-loops to \LaTeX . (It is part of the *TikZ* package.)

physics provides lots of mathematical symbols used in physics.

showkeys

showkeys will show labels and citations in the margin, as is demonstrated here.

stmaryrd contains lots of mathematical symbols.

tablefootnote is useful when you need footnotes to cells in a table.

textcomp provides additional symbols like $\text{\textcircled{0}}$ and $^{\circ}\text{C}$.

thmtools extends **amsthm** allowing more ways of printing theorem definitions.

tikz is an advanced drawing tool. The *TikZ* libraries **calc**, **intersections** and **decorations.markings** are also included.

todonotes introduces the command `\todo` for margin notes on things left to do.

xspace is useful when you define your own \LaTeX commands and would like to avoid unwanted spaces.

Check gram-
mar!