

L^AT_EX

A graduate course for the Information Literacy Program

Semester 1, 2004

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This course consists of four 2 hour modules:

- Module 1: Introduction – running L^AT_EX, chapters, special commands
- Module 2: Layout – lists, tables, figures, mathematics
- Module 3: Cross-referencing – numbering, bibliographies
- Module 4: Customising – defining commands, L^AT_EX packages

On the following pages I have given a rather contrived article as an example of L^AT_EX's capabilities. The source code used to create the article is also included — you may wish to use these as a reference.

The web address above contains

- this document
- the article source code and the imported picture file
- course notes for each of the four modules (and some other courses)
- reference material information
- links to useful websites

Please try everything as we go along, and don't hesitate to email me with queries or suggestions. I hope you enjoy the course!

An example article

Pierre de Fermat* Chris Wetherell†

12 March 2003

Abstract

During this course we will cover everything you would need to know to typeset this article — and much, much more... (well, a *bit* more).

1 The first section

I am indebted to Prof. S. Argh who showed me how to deal with post-period spacing, like when ending a sentence with S. (Uses `_` and `\@.`)

A new paragraph.

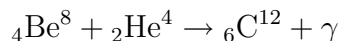
Theorem 1.1 (Young, 2001). *Theorem statements are often in italics*¹

Proof. See [You01, 3.3] (includes a detailed historical account of the problem). □

Conjecture A. *Theorem 1.1 is ridiculous.*

2 The second section

Example 2.1. I can use *my* chemical element command `\el` in text-mode or maths-mode because I used the `\ensuremath` command in its definition. Here are ${}_6\text{C}^{12}$ and ${}_6\text{C}^{13}$ in *my* `chemeq` environment (with optional argument):



That's it.

*1601–1665.

†Yours truly.

¹See footnote 2 on page iii, or [Mis83].

2.1 A red, purple and orange heading

You'll have to take my word for it on those colours, but *this* should hopefully look grey as claimed. Equation (1) below has NO APPLICATIONS WHATSOEVER (although the odd x and λ appear).

2.1.1 A comment on subsections

Alternative Proof of Theorem 1.1. Obvious! □

Mathematicians love making up new terminology² For example, subre-automatiser is not a word, but L^AT_EX knows how to hyphenate subreautomatiser because I used the `\hyphenation` command in the preamble. Subreautomatiser still breaks correctly with different capitalisation. “Hmmmmmmmmmmmmmmmmm,” you say, but I can also use `\-` to hyphenate on the fly.

$$\alpha_n(x) = \pm \frac{3e^{\theta+M_1} - 12}{\sqrt{1 + \det \alpha_{n-1}(x)}} \left(\sum_{i=1}^{\infty} \int_{\partial\Omega} f_i^2(t) dt \right) \times \begin{bmatrix} -1 & \lambda^x \\ 0 & 1 \end{bmatrix}. \quad (1)$$

A bad picture...

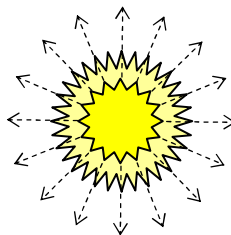


Figure 1: A supernova, apparently

A worse table...

ITEM		PRICE
Maths	question	\$19,999.00
	degree	£1.75
IT	support	free
		© 2003

Table 1: A spurious table

²Guilty as charged.

I don't usually use marginal notes, but **Fermat** swears by them.

Fun with minipages (an unnumbered section)

- A bullet.
 - Now the following:
 1. First item — find í on the right.
 2. Secondly we make these definitions:

verb a doing word.

noun a lazy word that does nothing.
 3. That's not all.
 - (a) This isn't either.
 - (b) i. Ignore this.
ii. And this.
 - (c) This might be the end. Check below.
 - No, another bullet. How violent.
- I do not approve.

A shortish setence.
A much longer sentence.

A shortish sentence.
A much longer sentence.
Now compare í on the left.

From an encyclopædia:

This article lacks insight.

scaling

rotating

guitæfæ

raising and lowering

framing

co_ubin^ation

.....**The** _____ **end**

see over for
the source
code

References

- [Mis83] A. Miscreant. ‘On certain aspects of properties’, *J. Appl. Apps.* **66(2)** : 267–276, 1983.
- [You01] David S. Young. *Thin Lie algebras with long second chains*. PhD thesis, ANU, 2001.

```

\documentclass[12pt,a4paper,twoside]{article}

\pagestyle{myheadings}
\markboth{Fermat and Wetherell}{An example article}
\pagenumbering{roman}
\setcounter{page}{2}

\addtolength{\oddsidemargin}{1cm}
\addtolength{\evensidemargin}{-1cm}
\addtolength{\marginparwidth}{-1.5cm}

\hyphenation{sub-re-auto-mat-iser}

\usepackage{graphics}
\usepackage{color}
\definecolor{purple}{rgb}{0.5,0,1}
\definecolor{orange}{cmyk}{0,0.7,1,0}
\definecolor{midgrey}{gray}{0.5}

\usepackage{amsthm}
\newtheorem{thm}{Theorem}[section]
\newtheorem{conj}{Conjecture}
\renewcommand{\theconj}{\Alph{conj}}
\theoremstyle{definition}
\newtheorem{ex}[thm]{Example}

\newenvironment{chemeq}[1][\begin{displaymath}
  \parbox{0.5\textwidth}{\hspace{2cm}\#1\hspace*{\fill}}
  \parbox{0.5\textwidth}}
{\end{displaymath}}

\newcommand{\el}[3]{\ensuremath{\{ \}_{\#3}\mbox{\#1}^{\#2}}}

\begin{document}

\title{An example article}
\author{Pierre de Fermat\thanks{1601--1665.} \and
  Chris Wetherell\thanks{Yours truly.}}
\date{12 March 2003}
\maketitle

\begin{abstract}
\noindent During this course we will cover everything you would
need to know to typeset this article --- and much, much more\ldots
(well, a \emph{bit} more).
\end{abstract}

\section{The first section}

I am indebted to Prof.\ S. Argh who showed me how to deal with

```

post-period spacing, like when ending a sentence with S\@. (Uses `\verb+@\ +` and `\verb+@\+,\.`)

A new paragraph.

```
\begin{thm}[Young, 2001] \label{itthm}
Theorem statements are often in italics\footnote{See
footnote~\ref{subnote} on page~\pageref{subnote}, or
\cite{mis}.}\hspace{-1ex}.
\end{thm}
```

```
\begin{proof}
See \cite[3.3]{young:thesis} (includes a detailed historical
account of the problem).
\end{proof}
```

```
\begin{conj}
Theorem~\ref{itthm} is ridiculous.
\end{conj}
```

```
\section{The second section}
```

```
\begin{ex}\label{chemex}
I can use \emph{my} chemical element command \verb+\el+ in
text-mode or maths-mode because I used the \verb+\ensuremath+
command in its definition. Here are \el{C}{12}{6} and
\el{C}{13}{6} in \emph{my} \verb+chemeq+ environment (with
optional argument):
```

```
\begin{chemeq}
{\el{Be}{8}{4}+\el{He}{4}{2}\to\el{C}{12}{6}+\gamma}
\end{chemeq}
\begin{chemeq}[(part of CNO cycle)]
{\el{N}{13}{7}\to\el{C}{13}{6}+e^{+}+\nu_{e}}
\end{chemeq}
```

That's it.

```
\end{ex}
```

```
\subsection{\textcolor{red}{A red,} \textcolor{purple}{purple and}
\textcolor{orange}{orange heading}}
```

```
\begin{flushright}
{\sffamily You'll have to take my word for it on those colours,
\textcolor{midgrey}{but \emph{this} should hopefully look grey as
claimed.}} Equation~(\ref{niceqn}) below has \textsc{No
Applications Whatsoever} (although the odd  $x$  and  $\lambda$ 
appear).
```

```
\end{flushright}
```

```
\marginpar{\scriptsize\raggedright I don't usually use marginal
notes, but \textbf{Fermat} swears by them.}
```

```
\subsubsection{A comment on subsubsections}
```

```
\begin{proof}[Alternative Proof of Theorem~\ref{itthm}]
{\Large Obvious!} \textcolor{white}{Well spotted!}
\end{proof}
```

Mathematicians love making up new terminology\footnote{Guilty as charged.\label{subnote}}\hspace{-1ex}. For example, subreautomatiser is not a word, but \LaTeX\ knows how to hyphenate subreautomatiser because I used the \verb+hyphenation+ command in the preamble. Subreautomatiser still breaks correctly with different capitalisation. ‘‘Hmmmmmmm\~mmmmmmmm,’’ you say, but I can also use \verb+\-+ to hyphenate on the fly.

```
\begin{equation}\label{niceqn}
\alpha_n(x)=\pm\frac{3\,e^{\theta+M_1}-12}{\sqrt{1+\det\alpha_{n-1}(x)}}
\,,\left(\sum_{i=1}^{\infty}\int_{\partial\Omega}
f_i^2(t)\,dt\right)\times
\left[\begin{array}{rc}
-1 & \lambda^x \\
0 & 1
\end{array}\right].
\end{equation}
```

```
A bad picture\ldots
\begin{figure}[ht]
\centering
\includegraphics[88mm,242mm][125mm,266mm]{supernova.eps}
% if you want to have a play around with these things, you can download
% the file supernova.eps from http://wwwmaths.anu.edu.au/~chrisw/LaTeX/
\caption{A supernova, apparently}
\end{figure}
```

```
A worse table$, \cdots$
\begin{table}[ht]
\centering
{
\renewcommand{\arraystretch}{1.5}
\begin{tabular}{|l|r|} \cline{3-3}
\multicolumn{2}{c|}{ITEM} &
\multicolumn{1}{c|}{PRICE}\\\hline\hline
Maths & question & \$19,999.00 \\ \cline{2-3}
& degree & \pounds 1.75\\
\hline IT & support & free \\
\multicolumn{2}{l|} & \multicolumn{1}{l|}{\small\copyright\
2003}\\\hline
\end{tabular}
}
\caption{A spurious table}
\end{table}
```

```

\section*{Fun with minipages (an unnumbered section)}

\begin{minipage}[t]{0.45\textwidth}
\begin{itemize}
\item A bullet.
\item Now the following:
\begin{enumerate}
\item First item --- find \'\{i} on the right. % see below
\item Secondly we make these definitions:
\begin{description}
\item[verb] a doing word.
\item[noun] a lazy word that does nothing.
\end{description}
\item That's not all.
\begin{enumerate}
\item This isn't either.
\item \begin{enumerate}
\item Ignore this.
\item And this.
\end{enumerate}
\item This might be the end. Check below.
\end{enumerate}
\end{enumerate}
\item No, another bullet. How violent.

I do not approve.
\end{itemize}
\end{minipage}
\hfill
\begin{minipage}[t]{0.4\textwidth}
\begin{tabbing}
A shortish \= setence.\!
A much longer \> sentence.\!
\!
A much longer \= sentence. \kill
A shortish \> sentence.\!
A much longer \> sentence.\!
Now compare \a'\{i} on the left.
% eg. \a' needed for accents in tabbing environment,
% instead of the usual \' above
\end{tabbing}

\bigskip

From an encyclop\ae dia:
\begin{quote}
This article lacks insight.
\end{quote}

```



```

\scalebox{3}[0.8]{scaling}\\
rota$!\$\rotatebox{30}{ting}\\
\reflectbox{reflecting}\\
\raisebox{4pt}{raising} and \raisebox{-4pt}{lowering}\\
\fbbox{framing}\\
\raisebox{-2pt}{co}\rotatebox{180}{m}\fbbox{\rotatebox{-20}{bi}n}%
\raisebox{3pt}{a}\reflectbox{t}\scalebox{0.75}[2]{io}n
\end{minipage}

```

```
\bigskip
```

```

{\bfseries\slshape\hfill\hfill\dotfill\Huge The \hrulefill \
end\hfill}
\parbox[b]{1.5cm}{\tiny\raggedleft see over for the source code}

```

```
\begin{thebibliography}{You01}
```

```

\bibitem[Mis83]{mis} A. Miscreant. ‘On certain aspects of
properties’, \emph{J. Appl. Apps.} \textbf{66(2)} : 267--276,
1983.

```

```

\bibitem[You01]{young:thesis} David S. Young. \emph{Thin Lie
algebras with long second chains}. PhD thesis, ANU, 2001.
\end{thebibliography}

```

```
\end{document}
```