LaTeX Handout 5

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The idea of this session is to give you some pointers about creating a poster using LaTeX. I will also briefly mention setting up *PowerPoint* if you would prefer to use that.

I will not go into great detail about what your poster should look like, since that is personal choice, and I don't want all the posters to look the same!

Rather, I will explain the mechanics of putting a poster together, and the various LaTeX commands you will find most useful.

1 The a0poster class

To create an A0 poster the dimensions of the page, and font sizes, need to be altered. Someone has already made a LaTeX class which will do this for you, and it is part of the University LaTeX installation.

The first line of your LaTeX poster file should be

```
\documentclass[portrait,a0,final]{a0poster}
```

There are other options which the `a0poster` class can take, as explained in the documentation which you can get from `http://www.tex.ac.uk/tex-archive/macros/latex/contrib/a0poster/a0_eng.pdf`.

You should be careful with some of the options, however. Specifically, the `a0b` option sets an incorrect A0 page size, so you should not use it. Also, the `posterdraft` option can be temperamental. *Adobe Reader* copes just fine with an A0 page size, and will correctly scale down to A4 if you want to print your poster on A4 paper. Also, be aware that the defined A0 dimensions in the class are slightly inaccurate. The main consequence of this is that the right-hand margin is slightly too narrow. Centred (page-level) content, therefore, will be slightly offset to the right.

After the `\documentclass{}` line there is no (mandatory) extra special setup to be done (although there is some optional extra setup as explained later), and you can begin your document as normal with

```
\begin{document}
```

The first line after this should probably set the default font size for the entire poster. This is up to you, and you can use any of the sizes defined in the `a0poster` class (see the documentation

for a list). You can also turn on sans-serif text (rather than the serif default) if you think it looks better. So, you could for example have a single line

```
\large
```

or

```
\Large\sffamily
```

(Note that the font-changing commands are case-sensitive.)

2 Multiple columns

Usually, a poster will be split into several columns (it is up to you to decide how many looks best for what you want to present). To do this in LaTeX add `\usepackage{multicol}` to the preamble. Here, I will outline some of the features you are most likely to want to use; if you want to know more about this package, then there is extensive documentation at `http://www.tex.ac.uk/tex-archive/macros/latex/required/tools/multicol.pdf`.

2.1 Turning on multicolumn output

To begin a multicolumn area use

```
\begin{multicols}{n}
```

or

```
\begin{multicols*}{n}
```

where `n` is the number of columns. The non-starred form will balance the content across all columns, whereas the starred form will not balance the content.

When you have finished with multicolumn content, end the environment with `\end{multicols}` or `\end{multicols*}`.

You can switch on and switch off the `multicols` environment as you see fit, so you could (if you thought it were a good idea) have two-column output, then three, then back to two, and so on. Just make sure to end one environment before you start the next.

2.2 Float placement

Within the `multicols` environment floats, such as figures and tables, are not necessarily placed correctly. To overcome this add

```
\usepackage{float}
```

and

```
\floatplacement{figure}{H}
\floatplacement{table}{H}
```

to the preamble of the document. This forces LaTeX to place the float precisely where you tell it to.

2.3 Column separation

You can set the separation between columns with

```
\setlength{\columnsep}{sep}
```

where `sep` is a length. The safest measurement to use for the separation is the `em`, which is the width of an uppercase letter M in the currently selected font and font size. This ensures that scaling works correctly (as opposed to using an absolute measurement such as `pt` or `cm`).

You can also set a column rule to separate each of the columns. This can be achieved with

```
\setlength{\columnseprule}{width}
```

where `width` is the width of the rule.

Both of these commands should be placed in the preamble if you do decide to use them.

3 Minipages

If you want more flexibility in the layout of your poster, then you will need to make extensive use of LaTeX's `minipage` environment. As the name suggests, this allows you to create a smaller page within a page. You can set the width of the minipage (and if necessary the height) so that it contains just the content you want. Then, by careful use of LaTeX's spacing commands, you can place these minipages where you want them.

To create a minipage use the following command

```
\begin{minipage}[pos][height][inner-pos]{width}
```

The `width` is mandatory. You can specify widths such as `n\textwidth` or `n\columnwidth` where `n` is some fraction. For example, to get a minipage which is (approximately) half the width of the text area of the page, you could do

```
\begin{minipage}{0.5\textwidth}
```

Of course, any other widths can be used.

Warning: Due to the way LaTeX handles margins, the width you request may not be what you expect. For example, defining two minipages of widths `0.5\textwidth` does not give you two minipages of total width `\textwidth`. What you get is slightly larger, extending into the margin on the right.

Unfortunately, there is no foolproof way around this (that I know of), other than to define slightly smaller minipages, and make sure they are centred.

The optional arguments are as follows

- `pos` — how minipages should be aligned with each other. This can be either `b` for bottom, `c` for centre, or `t` for top. For `b` and `t` the alignment is with respect to the last and first line of content within the minipage, respectively. The default is `t`. (Some experimentation will be needed here.)
- `height` — the height of the minipage. The default is to set the height according to the content.
- `inner-pos` — how the text should be positioned within the minipage. This can be `b` for bottom alignment, `c` for centre alignment, `t` for top alignment, or `s` so that the content is stretched to fit the minipage. The default is `t`.

3.1 Alignment quirks

LaTeX chooses to align minipages based on the content within the minipage. More often than not you will want to align based on the minipage itself. To achieve top alignment, add the line `\vspace{0pt}` just after you begin the minipage environment, e.g.

```
\begin{minipage}{0.5\textwidth}
  \vspace{0pt}
```

For bottom alignment, add the line `\par\vspace{0pt}` just before you end the minipage, e.g.

```
\par\vspace{0pt}
  \end{minipage}
```

The `\centering` command and `center` environment are also very useful for horizontally aligning content whether inside or outside a minipage.

4 Making things look nice

So far, the emphasis has been on layout. This section will cover some possible ways of making your poster look nicer, by adding colour and framing content.

4.1 Colour

(Note that, in what follows, all LaTeX colour commands should use the American spelling of colour, i.e. *color*.)

The `xcolor` package contains many commands to do with manipulating colour. You can get the manual at `http://mirror.ctan.org/macros/latex/contrib/xcolor/xcolor.pdf`.

The colour of text can be changed with the `\textcolor` command, e.g.

```
\textcolor{red}{Some very interesting words...}
```

There are a set of predefined colours, the most common of which can be specified by name, e.g. `red`, `green`, `blue`, `cyan`, `magenta`, `yellow`, etc.

You can also define your own colours with the `\definecolor` command (there are also other alternatives for colour definitions).

The following (in the preamble) will define a new colour named `darkblue`

```
\definecolor{darkblue}{RGB}{0, 10, 159}
```

RGB (red-green-blue) is the colour space, and the three comma-separated values specify the level of each colour component in the range 0 to 255. (The *colour picker* tool in most graphics programs will often tell you these values.)

4.2 PSTricks

Warning: You can only use *PSTricks* if you compile your poster to PostScript (this means using either the `LaTeX=>PS` or `LaTeX=>PS=>PDF` output profiles). You cannot compile directly to PDF. Therefore, if your graphs and figures are not in EPS format, then you will not be able to use *PSTricks*.

From the *PSTricks* manual:

> PSTricks is a collection of PostScript-based TEX macros that is compatible with most TEX macro packages, including Plain TEX, LATEX, AMSTEX, and AMSLATEX. PSTricks gives you color, graphics, rotation, trees and overlays. PSTricks puts the icing (PostScript) on your cake (TEX)!

Rather than repeat everything in the *PSTricks* manual, you can see it for yourself at `http://www.tex.uniyar.ac.ru/doc/pst_ug.pdf`.

The range of graphical tricks you can produce is extensive. Here, I will show some examples of *PSTricks* commands which you might find useful.

To use *PSTricks* add `\usepackage{pst-all}` to the preamble. As the manual explains, you can add only a subset of the package, for the functionality you want; the above will enable everything in one go. Also note that if you do add this package, then the `xcolor` package is automatically included, so you don't need to include it separately.

4.3 Framed boxes

PSTricks provides a set of commands for framing content. The boxes can be filled with colours and gradients, the border can be coloured, and corners can be rounded. Part VI of the manual is especially useful here.

The following is an example of a framed box

```
\psframebox[linewidth=0.1em, linecolor=darkblue, fillstyle=gradient,
  gradangle=0, gradbegin=yellow, gradend=white, gradmidpoint=1,
```

```
framearc=0.3, framesep=0.5em]{
  This will be in a framed box.
}
```

The specified options are as follows

- `linewidth` — sets the width of the box border.
- `linecolor` — the colour of the box border.
- `fillstyle` — how the box should be filled. See the manual for the alternatives.
- `gradangle`, `gradbegin`, `gradend`, `gradmidpoint` — the angle of the gradient, the begin and end colours of the gradient, and the midpoint of the gradient (between 0 and 1).
- `framearc` — A measure of the radius of curvature of the box corners, i.e. lets you choose rounded corners.
- `framesep` — The distance between the border and any content within the box. Note that this might change the size of the box.

You can put anything within the `\psframebox`, including a minipage, so you could frame your minipages and add colour to them if you wish.

See the manual for other box styles.

5 PowerPoint

If you decide that the LaTeX option requires too much effort to get exactly right, or that you need to compile directly to PDF, so cannot use *PSTricks*, or for any other reason, then you might want to go down the WYSIWYG route, and use *PowerPoint*.

I will not say much about it here, other than to mention how to set the correct page size.

- In *PowerPoint 2007* click the *Design* tab, then click on *Page Setup*. Change *Slides sized for:* to *Custom* and set the width to 84.1 cm and the height to 118.9 cm (standard DIN A0 size).
- In *PowerPoint 2003* click on *File* then on *Page Setup...*. Then as above.

ISS provide A0 *PowerPoint* templates, which you can get from `http://www.ncl.ac.uk/library/services/general/printing/large/A0/templates.php`.

6 Alternatives

In truth, neither LaTeX nor *PowerPoint* are the best tools for the job when it comes to making posters, although you can make some very professional looking posters with a bit (a lot?!) of effort.

Making posters is a desktop publishing (DTP) problem, and there is specialist software precisely for this purpose (most of which is commercial). See a list of possible software on the Wikipedia DTP page. Two reasonable alternatives which you might like to consider are *Microsoft Publisher*, which is part of *Microsoft Office*, and *Scribus*, which is an Open Source DTP program (also available for Linux).

7 Inspiration

If you need ideas for what your poster should look like, take a look at the posters on each of the three floors of the School — almost all of them were done using LaTeX.

8 Conclusions

Hopefully, you should now have a reasonable idea of how to go about putting together a LaTeX poster. Getting things to look exactly as you want might take a bit of effort, but the final result usually looks good.