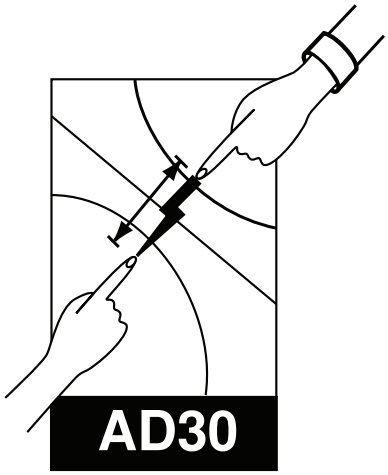
Typography



NTC September 2010

1 Some basic guidelines

The objective is to make the document easy to read and comprehend. If this is done well you should not be aware of the typography. There are no hard and fast rules for laying out text but there are some rules-of-thumb which, over many years, have been proved to assist readability. We list a number of these below and suggest you follow them. (Jargon is explained overleaf.)

The reasoning behind some of these guidelines can be found in *Graphical design for the electronic age*[3]. This is an excellent reference book. A copy is kept on the computing course.

- Fonts. No more than four, better still only two. Use sans serif for titles, serif for text. Course scripts use Helvetica and Palatino. Sans serif is better if your print quality is poor. The Times, Symbol and Helvetica fonts are widely available. Check the availability of Symbol italic (or oblique) if you want to use Greek letters for variables.

- Line length. Aim for less than 12 to 14 average words per line because otherwise the eye tends to lose its place returning to the left-hand side. If you must fit in more words increase the leading (inter-line gap) — this is a 10pt font with 3pt leading (called 10/13) — or go to more columns.

- One or more columns of text? Two columns of text on an A4 sheet can be much easier to read but in our experience with text which has lots of diagrams, it is much more time consuming to do. Thus we use longer lines than are normally recommended, with extra leading.

- Justified or ragged-right? Justification on short lines can easily result in ugly text but is usually satisfactory on long lines. Hyphenation will ease the problem. Ragged-left text is very tedious to read and should be used rarely. Likewise avoid ragged-centre.

- Capitals. Avoid long strings of capitals — they are harder to read. Bold or italic is preferred for emphasis. Where strings of capitals have to appear in text, use 'small caps' if available.

- Headings. Keep short and do not capitalise the first letter of each word (visual hiccuping). Leave twice as much space above the heading as below. Do not finish with a period — the heading is meant to lead you straight into the following text.

- Indents for paragraphs. The first paragraph after a heading should not be indented. Subsequent paragraphs should be indented by about the line to line spacing i.e. 13 pt in 10/13 text.

- Don't be afraid to leave white space. It costs a little more in paper but helps readability. Remember to leave enough space for the binding where necessary e.g. holes for ring binder.

- Underlines — avoid. Use bold/bigger/italic for emphasis but use italic sparingly because it is harder to read. Similarly avoid two spaces after a period.

Copyright © 2022 University of Oxford, except where indicated.

- Lists. Lines of text after the first should be indented to align with the first word of the first line for maximum readability. Some lists can be implemented as tables e.g. Jargon overleaf.
- Variables should be in italic, vectors in bold italic. Be aware that whilst the Symbol (Greek) font looks the same size as Times this may not be true with other fonts.
- Tables. May be difficult. May be possible to create them with a data analysis program and paste into your text. Place in text at point of main reference.
- Equations. May be difficult. Try and line up the = (or relation) signs for readability.
- Diagrams should be placed in the text at point of main reference. Or, if too big, where you can easily see them while reading the text referring to them. Do not gather them all together at end. With some software it may be simpler to leave space, paste in the diagram and photocopy the page.

In the physics communities (astrophysics, particle, high-energy and theoretical, in particular) papers are usually typeset with LaTeX a dialect of Donald E. Knuth's very powerful TeX typesetting language that is also used to produce many books. All of the Practical Course documentation has been produced with LaTeX.

TeX and LaTeX are in the public domain, so you can install them on your computer free of charge; refer to section 6.2 of the Parts A & B handbook for more details. LaTeX will help you elegantly address many of the typographical issues outlined above.

Other software may be easier to use, though it may not necessarily deliver as aesthetically pleasing results. You should check what is available on your college computers as well as on the course computers. **Choose whichever is most suitable for your needs and aims.**

2 Jargon

Some key typesetting concepts or jargon you may encounter:

Font, Font family or typeface or just face A complete set of characters in one family of a single size e.g. 10pt Palatino roman. The word font is often used interchangeably with typeface. The font family or typeface is the collection of all the sizes and variations (italic, bold etc.) of one consistent design. e.g. Palatino family.

Font size Originally the height of the piece of metal on which the letter was formed. The letter does not necessarily occupy the complete height i.e. font size $\geq k - p$ size. Thus not all fonts of the same size have letters the same size or even look the same size. e.g. 10 pt Helvetica looks bigger than 10 pt Palatino. The perceived size also depends on the ratio of x-height to capital height.

Fixed pitch Typeface in which all character cells are of same width e.g. `typewriter fonts`.

Italic (oblique) Type resembling handwriting with sloping letters. True italic is a separate design of the roman face with some letters having different shapes e.g. fvwy *fvwy*, whereas oblique is simply sheared (slanted) roman.

Kerning Adjusting the space between letters to improve the optical density. e.g. in Ty the y is under the top of the T.

Leading Extra space added between lines. (Originally a strip of lead.)

Pica Traditional printer's measure. Roughly 6 picas to the inch, 12 points to the pica.

Point Basic measurement unit. In DTP software a point is 1/72″ but the traditional point is 1/72.27″.

Proportional Typeface in which the width of the character cell depends on the character (contrast fixed pitch). Proportional type is easier to read and packs more in.

Roman Upright or type with vertical emphasis, in contrast to *italic*.

Small caps Capital letters corresponding to the x-height of the font. Strings of CAPITALS in text look too big unless done in SMALL CAPS. (Properly, a separate design rather than a scaled version.)

The figure below further illustrates some of the other typesetter's terms.

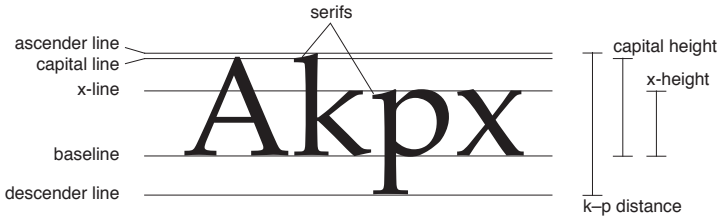


Figure 1: Typesetting terms.

3 Further reading

The Chicago Manual of Style[1] and Strunk & White[2] are classic texts on general writing style. Additionally you may find it useful to absorb the American Institute of Physics' style manual[4].

Providing more specific thoughts on technical report writing, the student may find Ebel[5], Young[6] and Friedman[7] convenient to refer to.

For some ideas on the best approaches to typesetting maths clearly one may find the papers by Beccari[8] and both by Vieth[9],[10] enlightening.

Finally, Tufte[11] has become something of a classic, providing food for thought on the clear presentation of data through graphics. It has consequently been referred to, by some, as the visual Strunk & White.

Bibliography

[1] Various, *The Chicago Manual of Style*, 16th edition, University Of Chicago Press, 2010.

[2] W. Strunk Jr., E. B. White, *The Elements of Style*, 4th edition, Pearson Education, 2003.

[3] J. V. White, *Graphic Design for the Electronic Age: Manual for Traditional and Desk Top Publishing*, Watson-Guptill, 1988.

[4] Various, *AIP Style Manual*, 4th edition, AIP, 1997.

[5] H. F. Ebel, C. Bliefert, W. E. Russey, *The Art of Scientific Writing: From Student Reports to Professional Publications in Chemistry and Related Fields*, 2nd edition, Wiley, 2004.

[6] M. Young, *The Technical Writer's Handbook*, University Science Books, 2003.

[7] K. Friedman, Writing a Better Scientific Article, `http://rmp.aps.org/files/rmpguapa.pdf`

[8] C. Beccari, *Typesetting mathematics for science and technology according to ISO 31/XI*, TUGboat, Volume 18, No. 1, 1997.

[9] U. Vieth, *Requirements for Typesetting Physics*, 1997.

[10] U. Vieth, *Experiences Typesetting Mathematical Physics*, MAPS 39, 2009.

[11] E. R. Tufte, *The Visual Display of Quantitative Information*, Graphics Press, 2001.