School of Systems Engineering

Style guide for technical reports and academic papers

Dr. V. F. Ruiz

School of Systems Engineering
The University of Reading
Whiteknights
Reading
Berkshire, RG6 6AY.

Version 4.0, 2005

Preface

Technical writing is not easy - it is a skill, which has to be learnt, and which is improved by practise - however it is a skill in which all graduates should have some expertise. As part of the course accreditation process, various professional bodies, including the IEE, InstMC and BCS recommend that Undergraduates write both a Technical Report and an Academic Paper.

Technical writing is defined by two sets of rules. One set describes the way in which *semantic* information is conveyed, by the use of very precise text written exclusively in the third person. The other defines how this material is to be *structurally* set out and arranged on the page.

The best way to begin learning ‘academic semantics’ is to read material published in journal and monographs. This booklet simply describes the precise structural constraints, which must be followed to correctly typeset an academic document on the page. Do not lose this booklet, you will need it throughout your academic career and will be asked to pay for any replacement.

Replacement cost - **50p**

Check List

Before submitting a report for examination all students should check:

1. Is your name, Degree Course, e-mail on the report?
2. Is it clear which Module it is addressing?
3. Has the report been spell checked and corrected for grammar?
4. Does the reference list at the end of the report match the citations used in the text?
5. Has the style guide been properly followed?
6. Has a ‘statement of authorship’ form been filled in and submitted with the report?

General Guidance for Writing Manuscripts

1. Introduction

This document details the suggested format for any extended piece of research submitted as part of a degree in the School of Systems Engineering (BSc/BEng, MEng, MSc, and PhD transfer). The document specifies good practise for the layout and content of technical reports and academic papers. If followed correctly this will make the process of translating a piece of course work into a document suitable for external publication much easier.

However, there are different types of manuscripts and students must make the distinction between them. Thus depending on the types of manuscript students are requested to produce, students should use the appropriate style guide together with the general recommendation given in this chapter. This chapter is only concerned with general guidance. The style guide specific to academic technical reports is given in the second chapter. The third chapter details the style guide for industrial technical reports. The style guide specific to academic papers can be found in the fourth chapter. Lastly, additional guidance are given to produce MSc dissertation and PhD-transfer report.

2. Plagiarism

The following is an extract from *School of Systems Engineering, Handbook for Students 2005/6,* http://www.cyber.reading.ac.uk/current_students/handbooks/SchoolHandbook05.pdf, pp. 26-28.

> **Academic Misconduct**
>
> The University takes the most serious view of academic misconduct. This includes cheating in written examinations and plagiarism of others' work. Cases of alleged academic misconduct will be reported to the relevant Head of School or School Director of Teaching and Learning and, if necessary, to the appropriate Faculty Director of Teaching and Learning, and the Standing Committee on Academic Misconduct. A proven case of academic misconduct is treated as a disciplinary matter.
>
> The Standing Committee on Academic Misconduct has the power to impose disciplinary sanctions, including failure in all the assessments for a Year or Part of a course. It may also recommend that a student is expelled from the University.
>
> The University's definition of academic misconduct is stated in the Guide to Undergraduate Assessment/Guide to Assessment for Taught Postgraduate Students, and on the Examinations Office website.
>
> *Copying*
>
> It is clear to all that, if a student is asked to do a piece of work, then simply copying all or part of someone else's work is not acceptable: copying is cheating and regarded

seriously as academic misconduct. More importantly, perhaps, it is not sensible. If there is a purpose in asking a student to do a piece of work it will be to promote or assess the student's learning, and copying contributes nothing to that purpose. Equally, you should never employ anyone to write an essay for you: this is a variant of copying.

Falsifying Data

This is another form of academic misconduct.

Plagiarism

Plagiarism is the fraudulent representation of another's work as one's own. This applies whatever the source of the material (for example, a published source, the web, or the work of another student), whether the material is copied word for word or paraphrased, and whatever the extent of the material used.

How can you avoid plagiarism?

When preparing most pieces of work you will use sources of information, which may be from books, web pages, lecture notes or by consulting other people. What you should do ideally is take this information, analyse it so you can understand it, and then write your own work using your own words without looking at the original. Sometimes it is appropriate to quote directly from other sources, but this should be done as little as possible, and always you should cite the source, and put such phrases in quotes. You should not compile work by just cutting and pasting from sources, even if you do cite the source – if you do so it is often very apparent to the reader. When writing software, again the code should be yours, you should not copy directly someone else's work. Note, it is very sensible for you to ask for help if you need it, from staff or other students; and in group work you should discuss with others. However, once given help you should then write your work in your own words, and not copy what given; you should also acknowledge any help.

Sometimes work involves the use of standard techniques or algorithms. Something as well know as Ohm's law can be treated as 'common knowledge' and need not be cited. Similarly you do not need to cite a simple well known algorithm, such as 'Bubblesort', but were you to be asked to implement the algorithm, you should write the code not copy it. If you use a computer package to produce results, it is best to state that you have done so. Including computer output that has been produced by others is an example of plagiarism, if not acknowledged, though it is of course appropriate to compare your results with those from others.

If you are in any doubt as to what is acceptable, seek guidance from a lecturer.

There now follow two different examples designed to clarify plagiarism. In each case the correct way to do things is given first, then a barely acceptable way (where you will get fewer marks), and then an unacceptable method.

Programming Example

First for programming (adapted from http://www.jiscpas.ac.uk/images/bin//avoiding_collusion.doc), where student B is having problems and consults student A (though similar situations arise when student B consults a book or the internet).

Correct Method

> Student A explains some of the programming principles that student B is having trouble with, possibly giving bits of code that would work in general situations. On the basis of this student B writes code, acknowledging the help from student A. This is fine and useful for both students.

Just Acceptable Method:

> Student A shows Student B that part of his code which student B does not understand. Student B copies that part, so the whole program works, but

acknowledges the source. This is ok, but student B will not get marks for the part the student has copied, only those parts of the program the student has written.

Unacceptable Method:

Student B sees Student A's code (with or without the knowledge of Student A) and copies this. This is plagiarism and student B would get no marks. Student A may also get no marks if the lecturer is unable to tell which student has copied the work from the other.

Text Example

The second example is on how to use a piece of written work, possibly from a book or the internet. The original text is as follows

'Systems Engineering is about developing successful integrated systems using methods from various disciplines, although it has also been defined as the branch of engineering that uses computer technology.' Lex.E.Cograffa, 'Engineering Definitions', PU Blisher, 2002

Correct Method – the text is paraphrased, written in the author's own words, clearly showing an understanding of the text.

'There are numerous definitions of systems engineering, some narrower than others. One of the narrower definitions suggests that it concerns systems which only use computers, whereas, as Cograffa (2002) comments, it concerns systems designed using an interdisciplinary approach.'

Just Acceptable Method – here some phrases are copied from the source, but they are fully cited.

Systems Engineering has been defined (Cograffa, 2002) as 'developing successful integrated systems using methods from various disciplines', though he also notes a narrower definition as 'engineering that uses computer technology'.

Unacceptable Method – here the text is basically copied, with some changes to words and their order, but no citations.

'Systems Engineering is defined as the development of integrated systems using interdisciplinary techniques, or that it is the sort of engineering that uses computers'.

Consequences of Plagiarism

The most serious view will be taken within the University of plagiarism and other forms of cheating. Any such case will be treated as a disciplinary matter and will be referred to the Head of School who may then refer the matter to the Faculty Director of Teaching and Learning. Minor cases may be dealt with at School or Faculty level, but if the case is serious it will be referred to the Senate Standing Committee on Academic Misconduct which may impose such penalties as are deemed appropriate. The Senate Standing Committee on Academic Misconduct has the power to impose disciplinary sanctions, including a failure in all the assessments for a Year or Part of a programme. In sufficiently serious cases the Senate Standing Committee on Academic Misconduct may refer the case to the Standing Disciplinary Committee which has the power to remove the student from membership of the University. (See the provisions of the Regulations for Conduct (31) to (41) for the procedures.)

3. Types of academic manuscripts

3.1. Technical Reports

This must provide a clear, continuous and readable account of research, and be written in the third person. It should include background information to place the work in its proper context,

and some thoughts about the meaning and significance (if any) of the research. It should not ordinarily contain trivial detail of routine experimental techniques or design calculations, and repetition should be minimised. Technical Reports should be targeted at a scientifically literate person who, a priori, knows nothing about the research described. It should be clearly labelled with headers and footers as shown in the next two chapters. *Unless informed otherwise, students should submit assignments and project reports in the form of either an academic report following the 'Style Guide for Academic Technical Reports', or an industrial report following 'Style Guide for Industrial Technical Reports'. For project reports, students should also refer to their respective project handbook for additional guidance that may be given.*

3.3. A Conference Paper

This is normally much more concise than a technical report, and usually contains significantly fewer technical details. Thus, a technical report detailing a Universal Wheelchair Trainer may contain in-depth material on its construction and maintenance, whereas a Conference Paper on the subject would only describe the particularly novel features of the research.

Some students will have to write a 4 or 6-page conference paper describing their project. A conference paper would not normally have headers, footers or a contents section. *Unless informed otherwise, students should submit their conference paper in the format given in the fourth chapter 'Style guide for Academic Papers'.*

3.3. A Survey Paper

This is a specific type of academic paper that provides a summary of current knowledge on a specific research topic. Some students may have to write a survey paper as a component of the course. A survey paper would not normally have headers, footers or a contents section. *Unless informed otherwise, students should submit their survey paper in the format given in the fourth chapter 'Style guide Academic Papers'.*

3.4 MSc Dissertation and PhD Transfer Report

Due to the nature of the MScs and PhDs, each project is unique and hence work may differ quite significantly from that of another student in both its components and the breakdown between theory and practical. Supervisors will know what constitutes a good work in a particular field and will advise as appropriate on how to write up the work.

However, when writing MSc dissertation or PhD transfer report students must bear mind that the project is intended for them to develop and demonstrate their capability to: organise and carry out an extended study at **postgraduate** level; Show competence in independent work; Demonstrate an understanding of appropriate techniques; Develop the skills required to produce an academic written report and to communicate orally the results of the work undertaken; Demonstrate an ordered, critical and reasoned approach to the work they have achieved.

The length of a dissertation should not normally be greater than 20,000 words (from introduction to conclusion), and 15,000 words for transfer report. Both will normally have a

title page, an abstract page, an acknowledgement page, a content list, list of figures and/or table as appropriate, and should be divided in chapters.

Note that PhD-transfer report will normally be submitted towards the end of the first year of studies (for full time students) and should therefore include the student's research plan (with Gantt chart) of the remaining 2 years of PhD studies, as well as a section describing further work, milestones and tasks laid out in the Gantt chart.

Unless informed otherwise, postgraduate students should submit dissertations or transfer reports in the form of an academic report following the 'Style Guide for Academic Technical Reports' using the recommended typographic style and layout given at the end of this handbook. Postgraduate students should also refer to their respective programme handbook for additional guidance that may be given.

4. Essential sections of a report or paper

Most reports and papers must contain the following sections.

4.1. Abstract

Academic reports and papers always require an abstract. This should be a short précis of your research aimed at enticing a potential reader. It should cover, as far as possible, the same ground as the main body of the report or paper, and should highlight the most important findings. In other words, the abstract should clearly state what was done, how it was done, major results and their significance. An abstract should not list the contents of the report or paper.

Although the abstract appears at the front of the report or paper, by its very nature, it must be written last.

Note that industrial technical report will normally have a summary instead of an abstract.

4.2. Introduction

This summarises the background to, and outlines the purpose of, the research described. This often is an extended version of the abstract that clearly state the background of the research including references, a clear identification of the problem, the proposed solution with a brief outline the methodology proposed to solve the problem, as well as a short comment on the results obtained. It is also possible to give an outline of the content of the report or paper.

For instance, one may write in a similar manner: ... in addition to the essential sections of a report or paper, section 5 emphasises the need of a structured manuscript. In section 6, ...

4.3. Conclusion

This should bring together the separate themes of the narrative, and not just repeat previous sections. It may refer back if necessary: "*The measurements in section X strongly suggest that Dr. Whitfield's model of a transistor is a gross over simplification...*" is fine, but "*A method*

has been described for..." is not. You may also want to include recommendations for further work.

4.4. References

Do not ordinarily copy out standard theory or other people's work. Refer to it either by number in the text or author name and date of publication, see section on plagiarism. Give the source in a section at the end of the report or paper. *Never give references to which you do not refer in the main body of a report or paper*.

5. Structure your manuscript

The content (other than abstract/summary, introduction, conclusion, references) of the main body of a manuscript depends on whether it is an Academic or Industrial Technical Report, Conference Paper or a Survey Paper. Nevertheless the main body has to be structured. It necessary begins with some serious thinking about what message should be put across. This should result in bullet-point outlines of the essential points. Once this is done, the manuscript can be structured and written around these points. Here some ideas that may help students structuring reports and papers.

- *Design Philosophy:* How the job might be done, with a critical discussion of the various possibilities, leading up to the one chosen.
- *Results:* Whatever they are.
- *Discussion:* What do the results mean? Are they self-consistent, and consistent with theory? Very often results and discussion form one single section.

6. Illustrations, figures, tables and equations

These can appear in the main body of a technical report or paper. They should, of course, clearly show what you intend them to show. They should be numbered and titled, and sufficiently well labelled to be understood without having to refer back to the text. Be particularly careful to give all necessary units. Avoid pointless repetition; it is usually unnecessary to give tables and graphs of the same data. Details on how to format figures, tables and equations are given in the next chapters.

7. Equipment and typing style

7.1. Laser or Ink Jet Printers, Desk-Top Publishing Equipment

The recommended font type is Times New Roman (otherwise Bookman or New Century Schoolbook). Use Time New Roman as default type and keep italics and/or bold for special text parts. The font size will depend on the type of academic manuscript.

7.2. Matrix Printers

The usage of matrix printers is permitted in *Near Letter Quality* mode and with a fresh ribbon. Otherwise, these usually do not produce a print of sufficiently high contrast. Do not print in condensed mode.

8. Conclusions

This chapter has given some general guidance so as to write an academic manuscript. Any manuscript must have an abstract, an introduction, a conclusion and the list of references. Any other sections, the body of a report or paper may contain, depend on the particular piece of work presented. However, the body of a report or paper has to be written in a structured manner. Once the main body has been written go back to the title page and add the abstract and the contents list, list of figures/table as appropriate. Then check that your layout and numbering is consistent throughout, and that spelling and grammar are correct and also possibly get a colleague to ‘proof read’ the report to ensure that your points are made clearly and succinctly.

Finally, remember it takes longer to write a report or a paper than expected and even longer to revise it to make a good report and longer than you expect to print it out.

Style guide for Academic Technical Reports

Dr. V.F. Ruiz
Adapted from previous version
School of Systems Engineering, The University of Reading, UK

Abstract - This chapter gives explicit and detailed rules for preparing a manuscript of a academic technical report. After a general introduction, specific guidelines are given for all major elements (such as abstract, headings, figures, tables, references, etc.) in order to achieve optimal typographical quality. The utilisation of desktop publishing or other state-of-the art technical equipment is strongly recommended.

1. Introduction

These instructions are designed for both author and typist and should be read carefully - non-adherence will result in sub-optimal reproduction quality.

Unless informed otherwise, students should submit assignments and project reports in the form of either an academic or industrial technical report. Often for assignments, the lecturer(s) concerned will require that your report contain a specific set of sections that you will have to follow. For project reports, additional guidance that may be given in respective project handbook should also be followed.

Academic Technical reports, submitted for assessment, will have to follow format and layout given in this chapter together with general recommendations given in the previous chapter.

2. Typing area

For hard copy type on plain white A4 paper, making sure that the following page length and width are used:

Length: 247 mm, and width: 160 mm. On A4 paper, this size can be obtained by simply leaving a 2.5 cm margin all around. Print on one side of the sheet only. The left margin may be adjusted for binding purposes.

3. Typographical style and layout

3.1. Title

Type the title of your report approx. 2cm below the first line of the page in Times New Roman 18 or 20 points, boldface type. Centre the title (horizontally) on the page. Leave approx. 2 cm between title and the name and Degree Course and e-mail of yourself (and of your co-authors, if any). Type name(s) and details in 12 pts, and centre them (horizontally) on the page. This may use several lines.

3.2. Abstract

Type the abstract at a maximum width of 140 mm. Centre the abstract (horizontally) on the page. The abstract is an essential part of the report and should be type using 10pt font-size. Use short, direct, and complete sentences. It should be as brief as possible and concise. It should be complete, self-explanatory, and not require reference to the paper itself. For additional information refer to the first chapter '*General Guidance for Writing Academic Manuscripts*'.

3.3. Headers & Footers

These must be included as shown in this chapter when writing a technical report. The recommended font-size is 10 points.

3.4. Contents List

This must be provided to guide the reader through a long technical report in a form similar to that of the contents list at the beginning of this document. Font size and style is the choice of the author of the report.

3.5. Literature Survey

The introduction to all reports and papers must embed research within an academic context. However in a technical report, particularly if the area of study is very broad, a separate section may be included to provide a detailed description of current (i.e. up to date) research in the subject area.

3.6. Headings and sub-headings

Number section and subsection headings consecutively in Arabic numbers and type them in Bold and Italics respectively using a 12-point font-size, as demonstrated in this chapter. Avoid using too many capital letters. Keep headings and subheadings always flushed left. Do not include references to the literature, illustrations or tables in headings and subheadings. Keep two blank lines above a section heading and one above a subheading. Leave one blank line after headings and subheadings, as demonstrated in this chapter.

3.7. Main text

Type the main text on the full typing width of 160 mm, using the full length of 247 mm as much as possible. The text must be fully justified (left and right alignment). Type with 2 pts. extra line spacing, if possible. Otherwise, use single spacing and 12pt-size font. Do not use bold in the main text. Only if you want to emphasise specific parts of the main text, use italics. Otherwise, use Time New Roman. For other recommendation refer to the first chapter '*General Guidance for Writing Manuscripts*'.

The first paragraph in each section should not be indented, but all the following paragraphs within the section should be indented, as these paragraphs demonstrate. Space between paragraphs should be six points. The last paragraph of a section does not require additional spacing, just leave two blank lines before typing the next section heading (or one blank line if subheading).

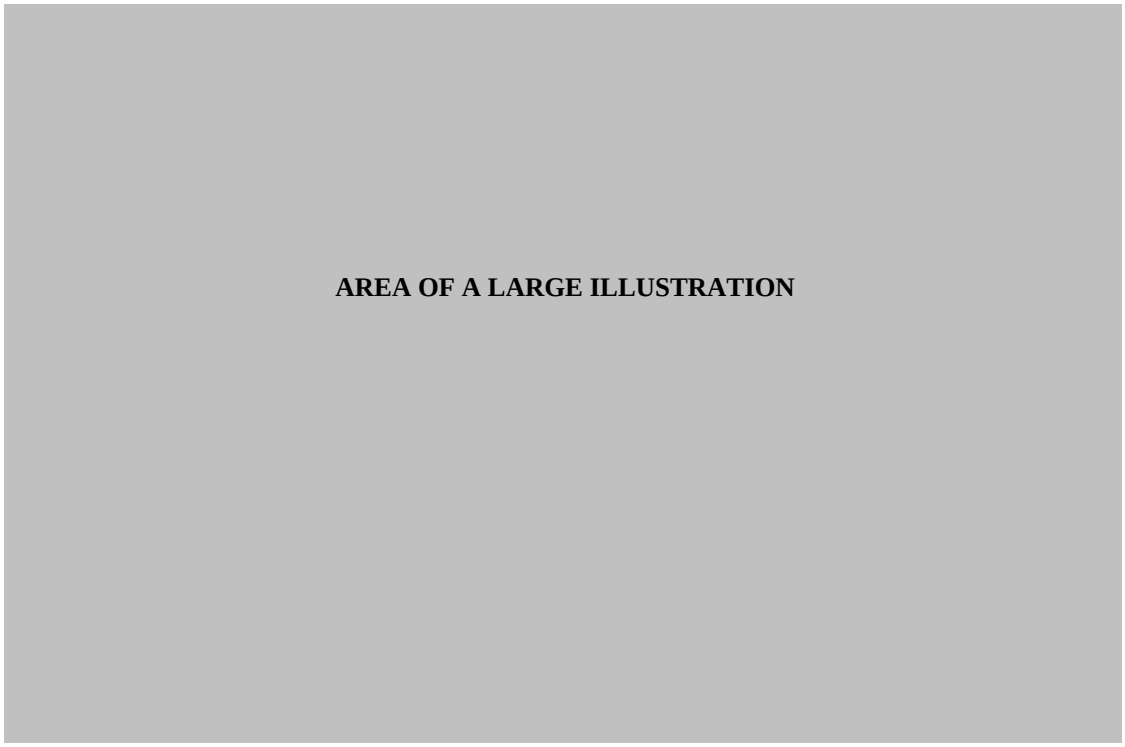


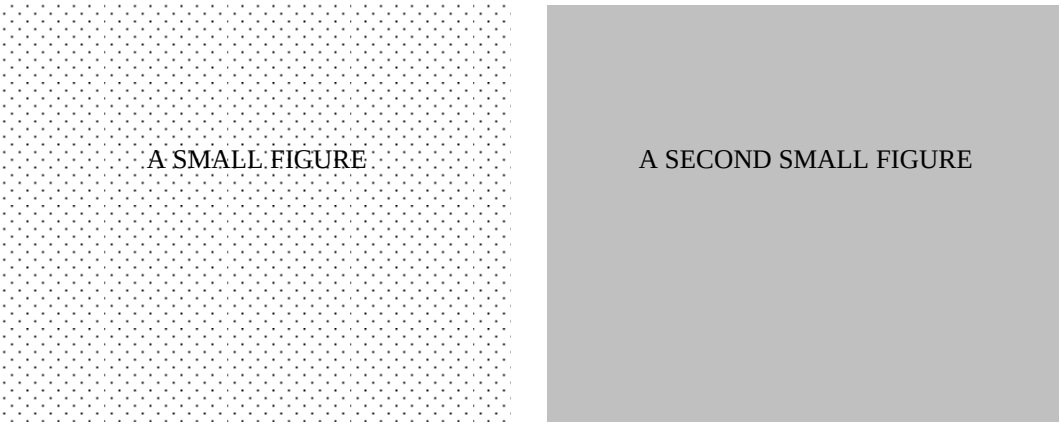
Figure 1. Example of a figure and its caption that span the page

3.8. Figures

All illustrations should be prepared using a CAD package or, if hand-drawn, be of draughtsman quality. *Non-original illustrations can be included if properly attributed.* All illustrations must be numbered consecutively (i.e., not section-wise), using Arabic numbers.

All illustrations should be centred as in Fig. 1, except for small figures, which may be placed side by side as demonstrated with Fig. 2. Centre figure captions (10 point-size font) beneath the figure as show in Fig 1-2. Place figures as close as possible to where they are mentioned in the main text. Whenever possible, position illustrations at or near the top rather than at the end of a page. Note that no part of a figure should go beyond the typing area.

Keep in mind the distinction between figures and tables (the latter only contain alphanumerical characters and no graphical elements).



(a) (b)

Figure 2. An example of small figures side by side and caption; (a) Figure on the left; (b) Figure on the right.

3.9. Tables

All tables must be numbered consecutively (in Arabic numbers). Table headings should be placed above the table and typed using a font-size 10. Detailed explanations or entries should be typed directly beneath the table. Tables should be placed as close as possible to where they are mentioned in the main text as demonstrated with table 1.

Table 1. A example a table and its caption

3.10. Equations

Equations may be typed within the text or displayed as in eqn. (1) below. Displayed equations should be consecutively numbered throughout the report for reference purposes. The equation number must be typed in parenthesis, flush with the right the hand-side of the page. The equation itself should be centred across the page, as demonstrated with eqn. (1). If necessary, long mathematical expressions may be typed over several lines to fit within the page width.

$$e = mc^2 \tag{1}$$

The use of an equation editor is recommended when typing equations. In the equation editor, make sure that the font sizes are properly defined (e.g. full 12pt, subscript/superscipt 9pt, symbol 18pt, etc). It is in important to identify subscripts, superscripts, Greek letters, and other symbols. Whenever necessary, precisely state the meaning of the symbols and notations used in the manuscript.

Avoid ambiguities in equations and fractions in the text through careful use of parentheses, brackets, etc. Note that within a paragraph, the fractions are usually 'broken down' to fit on one line and confusion may result if terms are not properly labelled. The conventional order of brackets is $\{[(\,)]\}$.

3.11. Units

The Standard International system of Units (SI units) should be used except in specific subject areas where SI units are not commonly used. Unit symbols should be used with measured quantities, i.e. 3 mm, but not when unit names are used in the text without quantities, i.e. 'a few millimetres'.

Acronyms and abbreviations should be defined the first time they are used in the text.

3.12. Making References

The following format is recommended when making references. A numbered list of references must be provided at the end of the report. The references should be numbered in order of appearance in the text, not in alphabetic order. List only one reference per reference number.

Each reference number should be enclosed by square brackets. In the text, citations of references may simply given as 'in [1] ...', rather than 'in reference [1] ...'. Similarly, it is not necessary to mention the authors of a reference unless the mention is relevant to the text. It is almost never useful to give dates of reference in the text.

Footnotes or other words and phrases that are not part of the reference format do not belong on the reference list.

The sample formats for various types of references given bellow are based on the IEEE formats given in [1].

Books:

- Author(s), 'Title in an edited book', in *Book Title*, (edition), volume, editor, year, pp. 125-145. (example, see [2])
- Author(s), '*Book title'*, Editor, year. (see [3])
- Author(s) (year). *Book title*. (edition) [Type of medium]. *volume(issue)*. Available: http://site/path/file. (see [4])

Journals:

- Author(s), 'Title of article in a regular journal', *Journal*, volume, issue, pages, month year (see [5]-[7] for examples).
- Author(s). (year, month). Title of the article. *Journal* [Type of medium]. *volume(issue)*, pages. Available: http://site/path/file, see [8].

Papers from Conference Proceedings (*published*):

- Author(s), 'Title of article in conference', *Proc. Name of the Conference*, City, State or Country, year, volume, pages (see [9])

Papers presented at Conferences (*unpublished*):

- Author(s), 'Title of the presentation', presented at the name of the conference, City, State or Country, year, as shown with [10].
- Author(s). (year, month) Title of the presentation. Presented at name of the conference. [Type of medium]. Available: http://site/path/file, see [11].

Standards/Patents:

- Inventor(s), 'Title of patent', Country, Patent reference, date, (for example see [12]).

Technical Reports and Handbooks:

- Author(s), 'Title', Company/Institution, City, Country, Tech. Rep. reference, month, year. (see [13])
- Author(s). (year, month). Title. Company. City, Country. [Type of medium]. Available: http://site/path/file. (see [14])

Web addresses:

- All web addresses referred to in the report should be checked as being current before submitting the report. A note to this effect should be included in the reference section.

3.13. Bibliography

If necessary, add a bibliography of general back-up literature. A bibliography is a list of documents that may be useful to the reader but that are not referred to in the main text of a technical report.

3.14. Appendices

The main body of a manuscript should be continuous and readable. The body of the manuscript should contain the necessary information to the understanding of the reader. However in a technical report, details that would spoil the run of the report, or that is only needed by a few readers, is best relegated to appendices that appear at the end of the report after the list of reference section and bibliography if any.

Never, of course, add an appendix if its contents are not needed; a common pitfall is to give a mathematical analysis which is not used in the report.

3.15. Footnotes

Use footnotes sparingly (or not at all) and place them at the bottom of a column on the page on which they are referenced. Use Times New Roman 9-point type, single–spaced. To help your readers, avoid using footnotes altogether and include necessary peripheral observations in the text (within parenthesis, if you prefer, as in this sentence).

4. Conclusion

This chapter has given a detailed description of the format and layout of a technical report. Students should submit assignment and project reports in the form of a technical report

following this particular style guide in conjunction with the general recommendation given in the previous chapter.

The conclusion should appear at the end of the body of the report, just before the list of references. Whenever appropriate, acknowledgements, bibliography and appendices should also appear after the conclusion.

Acknowledgements: If other people have contributed to the work, an acknowledgement section should appear just after the conclusion and before the list of references as shown here.

5. References

[1] Information for authors. (2000, Feb.) IEEE Periodicals, Transactions/Journals/Letters. [Online]. Available: http://www.ieee.org

[2] G.O. Young, 'Synthetic structure of industrial plastics', in *Plastics*, 2nd ed., vol. 3, J. Peters, Ed. New York: McGraw-Hill, 1964, 15-64.

[3] W.-K. Chen, *Linear Networks and Systems*, Belmont, CA: Wadsworth, 1993, pp. 123-135.

[4] J. Jones. (1991, May 10). *Networks*. (2nd ed.) [Online]. Available: http://www.atm.com

[5] J.U. Duncombe, 'Infrared navigation-Part I: An assessment of feasibility', *IEEE Trans. Electron Devices*, vol. ED-11, pp. 34-39, Jan. 1959.

[6] E.P. Wigner, 'Theory of traveling-wave optical laser', *Phys. Rev.*, vol. 134, pp. A635-A646, Dec. 1965.

[7] E.H. Miller, 'A note on reflector arrays', *IEEE Trans. Antennas Propagat.*, to be published.

[8] R.J. Vidmar. (1992, Aug.). On the atmospheric plasmas as electomagnetic reflectors. *IEEE Trans. Plasma Sci.*. [Online]. *21(3),* pp. 876-880. Available: http://www.halcyon.com/pub/journals/21ps03-vidmar

[9] D.B. Payne and J.R. Stern, 'Wavelength-switched passively coupled single-mode optical network', *Proc. IOOC-ECOC*, 1985, pp. 585-590.

[10] D. Ebehard and E. Voges, 'Digital single sideband detection for interferometric sensors', presented at the 2nd Int. Conf. Optical Fiber Sensors, Stuttgart, Germany, 1984.

[11] PROCESS Corp., MA. Intranets: Internet technologies deployed behind the firewall for corporate productivity. Presented at INET96 Annu. Meeting. [Online]. Available: http://home.process.com/Intranets/wp2.htp

[12] G. Brandli and M. Dick, 'Alternative current fed power supply', U.S. Patent 4084217, Nov. 4, 1978.

[13] E.E. Reber, R.L. Mitchell and C.J. Carter, 'Oxygen absorption in the Earth's atmosphere', Aerospace Corp., Los Angeles, CA, Tech. Rep. TR-0200 (4230-46)-3, Nov. 1968.

[14] S.L.Talleen. (1996, Apr.). The Intranet Architecture: Managing information in the new paradigm. Amdahl Corp., CA. [Online]. Available: http://www.amdahl.com /doc/products/bsg/intra.html

All web addresses referred to in this paper were verified on 10 September 2002.

6. Bibliography

Bishop, J.M., (1998), 'The Preparation of an Academic Document', in Bishop, J.M. (Ed), *The Department of Cybernetics - style guide for technical reports and academic papers*, University of Reading, UK.

Emden, J.V., (1990), 'A handbook of writing for engineers', *Macmillan*, UK.

Style guide for Industrial Technical Reports

R. Simon Sherratt
r.s.sherratt@reading.ac.uk

Module title

Degree course name

Date of completion

Subject Group name
School of Systems Engineering,
The University of Reading,
RG6 6AY
UK

These instructions are designed for both author and typist and should be read carefully. Your project write-up should be taken very seriously. Prospective employers may like to see your copy of your report, particularly your final year project report.

Unless informed otherwise, students should submit assignments and project reports in the form of either an academic biased report or an industrial biased report. Often for assignments, the lecturer(s) concerned will require that your report contain a specific set of sections that you will have to follow. **For project reports, additional guidance that may be given in respective project handbook should also be followed**.

Industrial technical reports, submitted for assessment, will have to follow the format and layout given in this chapter together with general recommendations given in the previous chapters. An industrial report tends to be less concerned about typographical style than a paper or academic report; however, to maintain a standard you are required to follow the typographical details presented here.

1 Abstract

Unlike an academic report, an industrial report does not have an abstract! The reason for this is that in the past publications (called abstracting indexes) were made that contained all the abstracts from a set of publications. This allowed readers to purchase only the abstracting indexes, read the abstracts in the indexes and then obtain only the paper of interest thus reducing library costs. Abstracting indexes have almost disappeared due to on-line databases.

An industrial report may be made public or kept private, but rarely goes to a library, apart from a company library. So unlike the academic paper or report, the industrial report does not need an abstract.

2 Typographical style and layout

2.1 Typing area

Type on plain white A4 paper, making sure that the following page length and width are used:

Length: 247 mm, and width: 160 mm. On A4 paper, this size can be obtained by simply leaving a 2.5 cm margin all around. Print on one side of the sheet only. The left margin may be adjusted for binding purposes. Have only 1 column.

2.2 Typing style

The recommended font size is 12 points, 1.5 line spaced. Start a new major section on a new page. New paragraphs should not be numbered. An extra blank line should be inserted between sections.

3 Report format

3.1 Title page

An industrial report should have a front page (similar to the previous page presented here) with the following information:

1) Title (18 point Times New Roman, all other cover page text 14 point)
2) Name of author (and co-authors, if any)
3) e-mail of yourself (and of your co-authors, if any)
4) Title of the module the work has been completed for
5) Degree course name and year of study (in industry this could be the project title)
6) Date of completion of report
7) Subject Group, School address

Often the information on the title page is centred. Be aware that the Assessed Coursework Set Front Page will also be required (by the university, not in industry).

Please note that specific course modules may require a given format for the front cover and may also require you to submit the work unbound.

3.2 *Page numbering*

All pages should be numbered numerically. The exceptions are that the front page should be counted as a page 1 but you don't need to put the page number on it. Page numbers must be included as shown in this chapter when writing your technical report.

3.3 Contents page

As all pages will have a page number printed on them, you should include a contents page after the front cover. The contents page may be more than 1 page long. Assuming that the contents page is 1 page long and that it appears on page 2 of your document, your Contents page should be in the format of:

Contents

3.4 List of figures, List of Tables, etc

An industrial report may be very long, so it is helpful to include a list of figures and a list of tables on the contents page. Thus a reader can find a specific figure etc.

3.5 Acknowledgements

If you wish to acknowledge the help of others (in whatever fashion that may be) then start a new page and title the page Acknowledgements. You may decide that you don't need this page.

3.6. Glossary

The Glossary is a list of all the abbreviations you have used and their meaning, for example:

Glossary

SRAM	Static Random Access Memory
PC	Personal Computer

3.7 Summary

As an industrial report does not have an abstract, it has a Summary. The Summary should not be long and, as a guide, it should be in the order of half a page. The aim of the Summary is to allow people to understand the aim of the work and what was achieved. Thus company managers often read only the Summary as they will often not be interested in the fine detail. The Summary should be written last of all, even though it appears at the beginning of the report.

3.8 Headings and sub-headings

Number section and subsection headings consecutively as demonstrated in this chapter. Avoid using too many capital letters. Keep headings and subheadings flushed left. Do not include references to the literature, illustrations or tables in headings and subheadings. Keep a blank line above a section heading and one above a subheading unless the heading falls at the top of the page.

3.9 Introduction

This is the start of the main report and is the first section to be numbered. The introduction should give a short survey of the field and refer the reader to appropriate background material. Objectives of the project should be defined. The author may include an introduction to the work and an introduction to why the report was written.

3.10 Main contents

The main contents of the report constitute all the material after the Introduction and before the references. This will of course vary from report to report, but all reports will have/discuss:

Design Philosophy: this section should give a detailed justification of the method of solution that has been adopted. A description of the system at "block diagram" level is appropriate here.

Implementation: a detailed description of the design of the system should be given. Hardware and software functionality should be described fully.

Performance Analysis: methods of testing and results should be given (graphically where appropriate) of performance tests carried out to show that the system conforms to the design criteria.

Conclusions: the Conclusions should contain precise statements regarding the extent to which the objectives have been met. There may also be an overall assessment by the author of the work described above.

Recommendations: Recommendations may be made, if appropriate, about action to be taken as a result of the work described.

3.11 Figures

Figures should be labelled with the number of the section, then a period, then a sequential number, for example figures in section 3 should be numbered 3.1, 3.2, etc. Try to have your figures at the top or the bottom of a page with the figure number and caption just below the figure. The figures should always be introduced, then presented, and then discussed. Use computer drawing tools (OrCAD, Visio, Microsoft Draw, etc) to create professional quality figures. Figures copied from another publication should be referenced to avoid plagiarism issues.

All illustrations should be centred as in Fig. 3.1. Note that no part of a figure should go beyond the typing area. Small figures may be placed side by side only where a direct comparison is to be drawn between the figures as in Fig. 3.2. Keep in mind the distinction between figures and tables (the latter contain only alphanumerical characters and no graphical elements).

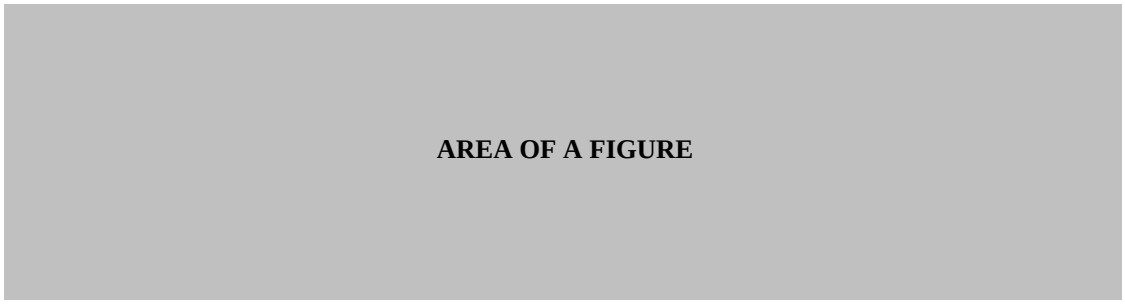


Figure 3.1 Example of a figure and its caption

(a) (b)

Figure 3.2 An example of small figures side by side and caption for comparison; (a) Figure on the left; (b) Figure on the right.

3.12 Tables

All tables must be numbered consecutively (in the same fashion as Figures, thus both Figure 3.1 and Table 3.1 may be present). Table headings should be placed immediately below the table. Detailed explanations or entries should be typed directly beneath the heading. Tables should be placed as close as possible to where they are mentioned in the main text, as demonstrated with Table 3.1.

Table 3.1 A example a table and its caption

3.13. Equations

Equations may be typed within the text or displayed as in eqn. (1) below. Displayed equations should be consecutively numbered throughout the report for reference purposes. The equation number must be typed in parenthesis, flush with the right the hand-side of the page. The equation itself should be centred across the page, as demonstrated with eqn. (1). If necessary, long mathematical expressions may be typed over several lines to fit within the page width.

$$e = mc^2 \tag{1}$$

The use of an equation editor is recommended when typing equations. In the equation editor, make sure that the font sizes are properly defined (e.g. full 12pt, subscript/superscript 9pt, symbol 18pt, etc). It is in important to identify subscripts, superscripts, Greek letters, and other symbols. Whenever necessary, precisely state the meaning of the symbols and notations used in the manuscript.

Avoid ambiguities in equations and fractions in the text through careful use of parentheses, brackets, etc. Note that within a paragraph, the fractions are usually ‘broken down’ to fit on one line and confusion may result if terms are not properly labelled. The conventional order of brackets is $\{[(\,)]\}$.

3.14. Units

The Standard International system of units (SI units) should be used except in specific subject areas where SI units are not commonly used. Unit symbols should be used with measured quantities, i.e. 3mm, but not when unit names are used in the text without quantities, i.e. ‘a few millimetres’.

Abbreviations should be defined the first time they are used in the text and added to the Glossary.

3.15 Making references and references section

The following format is recommended when making references. A numbered, or named, list of references must be provided at the end of the report. For a numbered list, references

should be numbered (e.g. [1], [2],..) in order of appearance in the text, not in author alphabetic order. If a named list is required (Harvard style, e.g. (Bloggs, 2002)) then use the surname of the lead author and the year as the reference pointer and have an alphabetical list of authors in the reference section.

In the text with a numbered list, citations of references may simply given as 'in [1] ...', rather than 'in reference [1] ...'. In this case, it is not necessary to mention the authors of a reference unless the mention is relevant to the text.

Footnotes or other words and phrases that are not part of the reference format do not belong on the reference list.

The sample formats for various types of references are given below:

Books:

- Author(s), '*Book title*', volume number if any, publisher, year, pp. 125-145

Journals:

- Author(s), 'Title of article in a regular journal', *Journal*, volume, issue, pages, month year

Papers from Conference Proceedings (*published*):

- Author(s), 'Title of article in conference', *Proc. Name of the Conference*, City, State or Country, year, volume, pages

Standards/Patents:

- Inventor(s), 'Title of patent', Country, Patent reference, date

Technical Reports and Handbooks:

- Author(s), 'Title', Company/Institution, City, Country, Tech. Rep. reference, month, year.

Web addresses:

- All web addresses referred to in the report should be checked as being current before the report is submitted. A note to this effect should be included in the reference section. The date of access should be typed next to the web reference, as web pages are often updated.

3.16 Bibliography

If necessary, add a bibliography of general back-up literature. A bibliography is a list of documents that may be useful to the reader but that are not referred to in the main text of a technical report.

3.17 Appendices

The main body of a manuscript should be clear and readable. The body of the manuscript should contain the information necessary to the understanding of the reader. However, in a technical report, details that would spoil the flow of the report, for example a full software listing, or a large circuit diagram, are best placed in the appendices that appear at the end of the report, after the list of reference section and bibliography if any. This should not deter you from presenting in the main text a small section of code or technical diagram which you want to discuss further as part of the technical nature of the work.

Never, of course, add an appendix if its contents are not needed; a common pitfall is to give a mathematical analysis which is not used in the report, or to include a data sheet of a very common and readily available device. All appendices should be referred to in the main body of the text.

3.18 Footnotes

Footnotes should not be used in an industrial report.

3.19 Finishing the document

Please proofread the document. Also, it is good practice in industry to have a blank page at the end of the report for a reader to make comments on.

In industry, you may be asked to keep version numbers for documents and version numbers are often printed on the front cover. Also, documents in industry are often under version control, so if you update the document, you state what the change is and increase the version number. Student document version control is difficult in the University as you tend to submit only one report and move on.

STYLE GUIDE FOR ACADEMIC PAPERS

Author Name

Degree Course, e-mail

ABSTRACT

This chapter gives strict rules for preparing an academic paper in camera-ready form. The abstract should appear at the top left-hand column of the text about 12mm below the title area. Leave a 12mm space between the end of the abstract and the beginning of the main text. The abstract should contain about 100 to 150 words.

1. INTRODUCTION

The guidelines include complete descriptions of the fonts, spacing, and related information for producing your proceedings manuscripts. Unless otherwise informed, students should submit their conference or survey paper following this style-guide in conjunction with general recommendations given in the first chapter '*General Guidance for Writing Manuscripts'*. The maximum length of a paper depends on whether it is a conference paper or a survey paper. In the following strict rules are given for 6-page conference papers. These rules are also valid for survey papers. Students should always check for the recommended length in their respective project handbook.

2. FORMATTING YOUR PAPER

All manuscripts must be in *English*. The paper must be *no longer than six pages*, in the proportion of 4 pages of text and two pages for references and figures. Papers with more than six pages will be guillotined down, prior to assessment and publication in the proceedings by projects co-ordinator(s).

To be included in the proceedings the paper must be in the following format, as shown in this chapter:

- Single-spaced.
- Two columns.
- Ten-point type font throughout the paper, including figure and table captions.

All printed material, including text, illustrations and charts must be kept within a print area of 170mm wide by 235mm high. The top margin must be 25mm and the left margin must be 20mm. Columns are to be 81mm wide, with 8mm space between them. The text must be fully justified.

Any text or other material outside the given margins *will not be printed*. Follow the style of these guidelines with regard to title, authors, addresses, abstract, heading and subheadings. Page numbers and conference identification will be inserted when the paper is included in the proceedings.

3. PAGE TITLE SECTION

The paper title (on the first page) should begin 35mm from the top edge of the page, centred, completely capitalised and in Times New Roman 14-point, boldface type. The author's name, degree course (or research group for non-student submission) and e-mail should appear below the title in lower case letters with capitalised initials in 12-point type font. Papers with multiple authors may require two or more lines for this information.

4. TYPE-STYLE AND FONTS

To achieve the best rendering in the proceedings, we encourage the use of Times New Roman type. In addition, this will give the proceedings a more uniform look. Use a font that is 10-point type, including figure captions and references. Use single-line spacing. Do not double-space your paper.

The first paragraph in each section should not be indented, but all the following paragraphs within the section should be indented by 5mm, as these paragraphs demonstrate. Space between paragraphs should be six-point. The last paragraph of a section does not require additional spacing; just leave a blank line before typing the next section heading.

Figure 1. Example of a figure and its caption that span the page

5. MAJOR HEADING

Major headings, for example, ‘1. Introduction’, should appear in capitalised letters, bold face, centred in the column with one blank line before, and one blank line after. Use a full stop (‘.’) after the heading number, not a colon.

5.1. Subheadings

Subheadings should appear in lower case (initial word capitalised) in boldface. They should start at the left margin on a separate line.

5.1.1. Sub-subheadings

Sub-subheadings, as in this paragraph, are discouraged. However, if you must use them, they should appear in lower case (initial word capitalised), and starting at the left margin after a blank line. They should be in Italics.

6. COLUMN BALANCING

If the last page of your paper is only partially filled, arrange the columns so that they are evenly balanced, if possible, rather than having one long column. In Word, to start a new column (but not a new page), you can use the command insert break then column break as demonstrated at the end of this chapter.

7. PAGE NUMBERING

Do not paginate your paper. Page numbers and conference identification will be inserted when the paper is included in the proceedings.

8. ILLUSTRATIONS, GRAPHS, TABLES AND EQUATIONS

8.1. Figures and tables

Illustrations, graphs and tables must appear within the designated margins. They may span the two columns as in Fig. 1 or be centred across a column as in Fig. 2.

If possible, position illustrations at or near the top of a column rather than in the middle or at the end of a column. They also should be positioned as close as possible to the first reference to them. Please do not use any colour in illustrations; all illustrations should be in clear black and white prints.

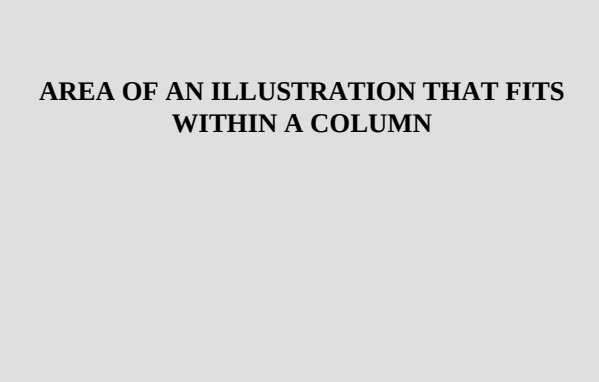


Figure 2. Example of a figure centred across one column

Caption and number every illustration and table in consecutive order by category. Captions for figures (or photographs) should appear just below the figure as shown in Fig. 1-2. Captions for tables should appear above the table, see Table 1 for example. Captions for both figures and tables should be in 10-point font size and centred across the column or page.

Table 1. Example of a table caption

8.2. Equations

Equations may be typed within the text or displayed as in eqn. (1) below. Displayed equations should be consecutively numbered throughout the paper. The equation number must be typed in parenthesis, flush with the right the hand-side of the column. The equation itself should be centred across the column, as demonstrated with eqn. (1). If necessary, long mathematical expressions may be typed over several lines to fit within the column width.

$$e = mc^2 \qquad (1)$$

The use of an equation editor is recommended when typing equations. It is in important to identify subscripts, superscripts, Greek letters, and other symbols. Whenever necessary, precisely state the meaning of the symbols and notations used in the manuscript.

Avoid ambiguities in equations and fractions in the text through careful use of parentheses, brackets, etc. Note that within a paragraph, the fractions are usually 'broken down' to fit on one line and confusion may result if terms are not properly labelled. The conventional order of brackets is $\{ [( )] \}$.

9. UNITS

The Standard International system of Units (SI units) should be used except in specific subject areas where SI units are not commonly used. Unit symbols should be used with measured quantities, i.e. 3 mm, but not when unit names are used in the text without quantities, i.e. 'a few millimetres'.

Acronyms and abbreviations should be defined the first time they are used in the text.

10. MAKING REFERENCES

A numbered list of references must be provided at the end of the paper. The references should be numbered in order of appearance in the text, not in alphabetic order. List only one reference per reference number.

Each reference number should be enclosed by square brackets. In the text, citations of references may simply given as 'in [1] ...', rather than 'in reference [1] ...'. Similarly, it is not necessary to mention the authors of a reference unless the mention is relevant to the text. It is almost never useful to give dates of reference in the text.

Footnotes or other words and phrases that are not part of the reference format do not belong on the reference list.

The sample formats for various types of references given bellow are based on the IEEE formats given in [1].

Books:

- Author(s), 'Title in an edited book', in *Book Title*, (edition), volume, editor, year, pp. 125-145. (example, see [2])
- Author(s), '*Book title'*, Editor, year. (see [3])
- Author(s) (year). *Book title*. (edition) [Type of medium]. *volume(issue)*. Available: http://site/path/file. (see [4])

Journals:

- Author(s), 'Title of article in a regular journal', *Journal*, volume, issue, pages, month year (see [5]-[7] for examples).
- Author(s). (year, month). Title of the article. *Journal* [Type of medium]. *volume(issue)*, pages. Available: http://site/path/file, see [8].

Papers from Conference Proceedings (*published*):

- Author(s), 'Title of article in conference', *Proc. Name of the Conference*, City, State or Country, year, volume, pages (see [9])

Papers presented at Conferences (*unpublished*):

- Author(s), 'Title of the presentation', presented at the name of the conference, City, State or Country, year, as shown with [10].
- Author(s). (year, month) Title of the presentation. Presented at name of the conference. [Type of medium]. Available: http://site/path/file, see [11].

Standards/Patents:

- Inventor(s), 'Title of patent', Country, Patent reference, date, (for example see [12]).

Technical Reports and Handbooks:

- Author(s), 'Title', Company/Institution, City, Country, Tech. Rep. reference, month, year. (see [13])
- Author(s). (year, month). Title. Company. City, Country. [Type of medium]. Available: http://site/path/file. (see [14])

Web addresses:

- All web addresses referred to in the report should be checked as being current before submitting the report. A note to this effect should be included in the reference section.

11. FOOTNOTES

Use footnotes sparingly (or not at all) and place them at the bottom of a column on the page on which they are referenced. Use Times New Roman 9-point type, single–spaced. To help your readers, avoid using footnotes altogether and include necessary peripheral observations in the text (within parenthesis, if you prefer, as in this sentence).

12. CONCLUSION

Instructions for publication in the proceedings of the Project Symposium have been given. Once your manuscript has been submitted, it will be impossible to make any corrections to it. Students submitting a conference paper or a survey paper must strictly adder to this particular style guide for academic papers. It is reminded that general guidance for writing academic manuscript can be found in the first chapter.

Acknowledgement: If other people have contributed to the work, an acknowledgement section should appear just after the conclusion and before the list of references as shown here.

13. REFERENCES

[1] Information for authors. (2000, Feb.) IEEE Periodicals, Transactions/Journals/Letters. [Online]. Available: http://www.ieee.org

[2] G.O. Young, 'Synthetic structure of industrial plastics', in *Plastics*, 2nd ed., vol. 3, J. Peters, Ed. New York: McGraw-Hill, 1964, 15-64.

[3] W.-K. Chen, *Linear Networks and Systems*, Belmont, CA: Wadsworth, 1993, pp. 123-135.

[4] J. Jones. (1991, May 10). *Networks*. (2nd ed.) [Online]. Available: http://www.atm.com

[5] J.U. Duncombe, 'Infrared navigation-Part I: An assessment of feasibility', *IEEE Trans. Electron Devices*, vol. ED-11, pp. 34-39, Jan. 1959.

[6] E.P. Wigner, 'Theory of traveling-wave optical laser', *Phys. Rev.*, vol. 134, pp. A635-A646, Dec. 1965.

[7] E.H. Miller, 'A note on reflector arrays', *IEEE Trans. Antennas Propagat.*, to be published.

[8] R.J. Vidmar. (1992, Aug.). On the atmospheric plasmas as electomagnetic reflectors. *IEEE Trans. Plasma Sci.*. [Online]. *21(3)*, pp. 876-880. Available: http://www.halcyon.com/pub/journals/21ps03-vidmar

[9] D.B. Payne and J.R. Stern, 'Wavelength-switched passively coupled single-mode optical network', *Proc. IOOC-ECOC*, 1985, pp. 585-590.

[10] D. Ebehard and E. Voges, 'Digital single sideband detection for interferometric sensors', presented at the 2nd Int. Conf. Optical Fiber Sensors, Stuttgart, Germany, 1984.

[11] PROCESS Corp., MA. Intranets: Internet technologies deployed behind the firewall for corporate productivity. Presented at INET96 Annu. Meeting. [Online]. Available: http://home.process.com/Intranets/wp2.htp

[12] G. Brandli and M. Dick, 'Alternative current fed power supply', U.S. Patent 4084217, Nov. 4, 1978.

[13] E.E. Reber, R.L. Mitchell and C.J. Carter, 'Oxygen absorption in the Earth's atmosphere', Aerospace Corp., Los Angeles, CA, Tech. Rep. TR-0200 (4230-46)-3, Nov. 1968.

[14] S.L.Talleen. (1996, Apr.). The Intranet Architecture: Managing information in the new paradigm. Amdahl Corp., CA. [Online]. Available: http://www.amdahl.com/doc/products/bsg/intra.html

All web addresses referred to in this paper were verified on 10 September 2002.

TITLE PAGE FOR MSc DISSERTATION

AUTHOR NAME

Submitted in partial fulfillment of the requirements of
The University of Reading for the degree of
Master of Science in *name of the programme*

Supervisor(s):

Subject Group name
School of Systems Engineering

August 2005

TITLE PAGE FOR PhD TRANSFER REPORT

AUTHOR NAME

PhD Transfer Report

Supervisor(s):

Subject Group name
School of Systems Engineering
The University of Reading

August 2005

Abstract

The following instructions are designed for author and typist of MSc dissertation or PhD-transfer report. Unless informed otherwise, postgraduate students should submit their dissertation or transfer report in the form of an Academic Technical reports (possibly Industrial Technical Reports for few students) following the format and layout given in the subsequent chapter together with general recommendations given in the previous chapters. Postgraduate students should always check their respective Programme Handbook for additional guidance that may be given.

Chapter 1

Style guide for MSc dissertation and PhD-transfer report

MSc and PhD research project may be different in their contents depending on the nature of the work and students should therefore take advice from their supervisor(s) as to the best structure for their dissertation or PhD transfer report.

1.1 Typographical style and layout

1.1.1 Typing area

The left margin should be no more than 3.81 cm (1.5"), right margin 2.54cm (1"), top and bottom margins 2.54cm (1"). Dissertations and transfer reports must be printed single sided on A4 paper.

1.1.2 Typing style

Use 12pt Times New Roman (or similar) font for all text except chapter headings (26pt bold), section headings (16pt bold), subsection headings (14pt bold) as illustrated in this chapter, and footnotes (10pt).

Double spacing (or 1.5 spacing minimum as shown here) must be used throughout the dissertation/report, except in figure and table captions, where single spacing should be used.

The table of contents, list of figures, list of tables, acknowledgements, and references must each start on a new page.

The dissertation/transfer report must be divided in chapters, with the introduction as chapter 1. Each chapter must start on a new page as shown here. Chapters are normally divided in sections and subsections. Each section in a chapter must be numbered using the chapter number as main index and the section number as secondary index. For example, the sections of chapter 5 should be 5.1, 5.2, etc, while subsections of section 5.2 should be numbered as 5.2.1, 5.2.2, etc.

Figures, tables and equations must be numbered relative to the chapter in which they appear. For example, the figures in chapter 5 should be numbered as Figure 5.1, Figure 5.2, etc. The formatting of figures, tables, captions, equations and references must follow the style of an Academic Technical Report described in this School Style Guide.

Pages must be numbered consecutively, starting from the abstract, which should be page 2 as shown in the abstract page. Page numbers must be printed centered at the bottom of each page. Paragraphs should be right and left justified. The text must be carefully checked for spelling and grammar errors.

1.2 Dissertation and transfer report contents

1.2.1 Title page

The title page should contain the following information:

a) title of the work,

b) full name of author,

c) standard wording as shown in the specimen title page given for MSc dissertation or PhD transfer report.

d) month and year of submission.

A title page should occupy one whole side of A4 paper. Note that the title page should not show a page number, but it should be counted in the pagination, so that the abstract is page 2.

1.2.2 Abstract and Acknowledgment pages

The abstract and acknowledgement must take no more than one A4 page each and must be located on separate pages.

1.2.3 Contents list, list of figures and tables

Start the list of contents on a separate page just after the acknowledgement. In the contents list, abstract should appear as being page 2, acknowledgements page 3. As appropriate add after the contents list, starting on a separate page, the list of figure and then the list of tables.

1.2.4 Body of a dissertation/transfer report

As mentioned above projects differ in their contents depending on the nature of the work and postgraduate students should therefore take advice from their supervisor as to the best structure for a dissertation or transfer report. However, in general the following elements should be included in the body of a dissertation or transfer report.

Introduction (*probably 1 chapter*):
Background theory, why such project is undertaken (i.e. the problem to be solved and why it requires researching), aims and objectives of the project; outline of the rest of the dissertation/transfer report.

Literature Review (1 or 2 chapters):
More detailed state-of-the art review of relevant work. Postgraduate students should demonstrate a familiarity with the work that has already been done in the subject area, make reference to the important works in the subject area and identify those references which are particularly relevant to their own area of work.

Investigation (2-3 chapters):
Approach taken (including analysis, design, modelling, implementation and testing), data gathered and results/product of the project. Students should discuss/justify the chosen methods and put them in context with regard to previous work of relevance and link the literature review with the product/investigation.

Analysis of results/evaluation (1 or 2 chapters):
Analysis of the results obtained. A critical evaluation of what has been achieved and the approach taken should be given. How the results compare with those of previous studies and the novel aspects of the work should be made clear.

Conclusions and future work (1 chapter):
Conclusions in relation to the scope of the project and in the context of its general applicability/use for industrial, academic research, commercial or large scale applications. Summarise what was done, bring together the various aspects studied, the major findings of the research and how the work could be advanced should there be more time (or what you would suggest if someone else was going to continue your work).

Note that for PhD-transfer reports future work should take the form of a 2-year research plan that should also include a Gantt chart.

References & Bibliography (two separate lists):
Specific references cited and bibliography of material used for general background.

Appendices:
Any additional material, glossary, results, diagrams, data tables, etc. which add value to the main body of the dissertation.