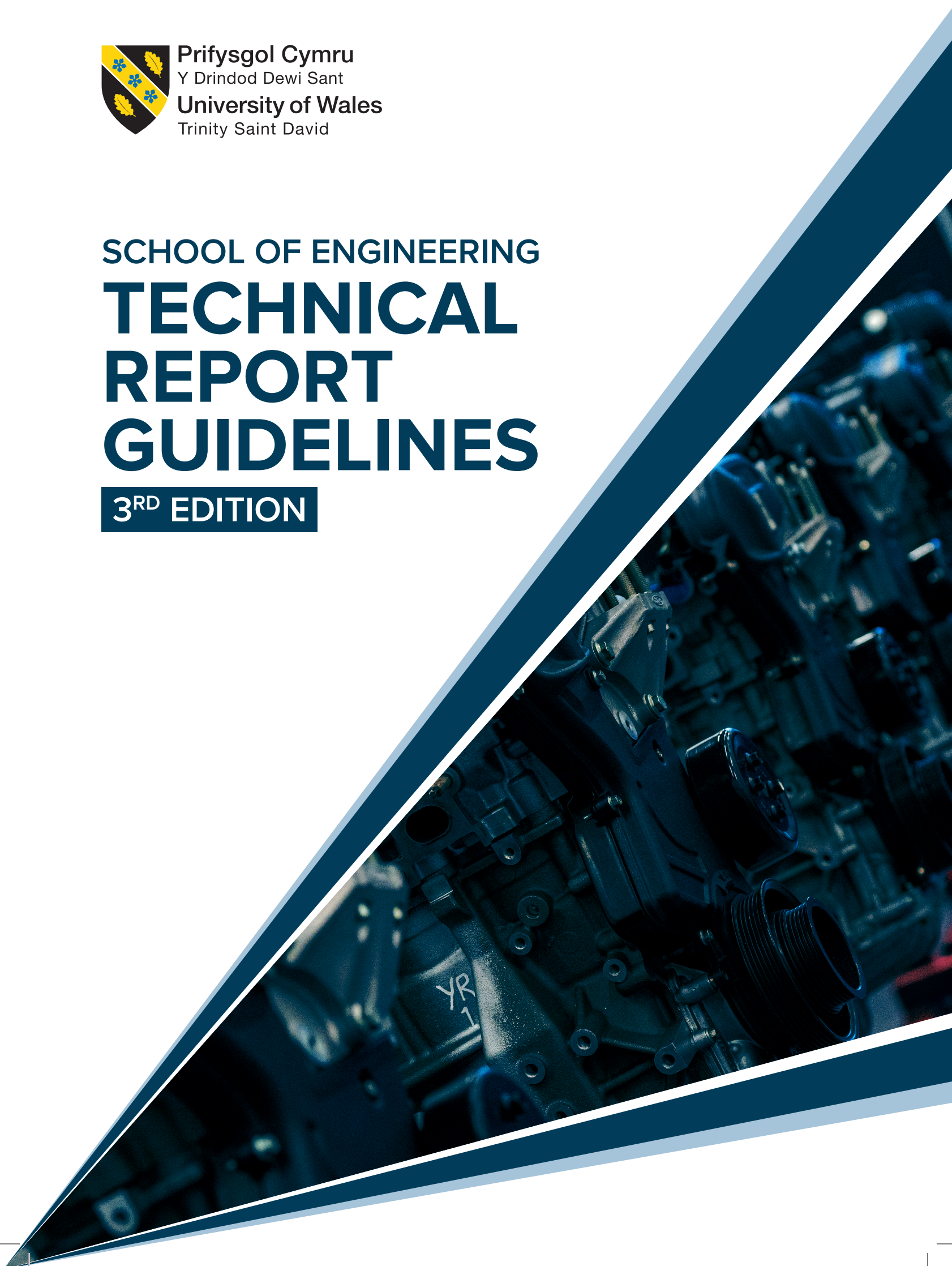




Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

SCHOOL OF ENGINEERING TECHNICAL REPORT GUIDELINES

3RD EDITION



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1 Technical Report Writing Guide

A well written Technical Report is a pleasure to read and helps to make the content easier to understand. Strong technical report skills are crucial for graduates in industry, as it enables them to facilitate the clear communication of information to colleagues and customers in an accessible format. It is essential that the writing in a technical report is concise, accurate and within the assigned word count regulations. A well formatted and presented report is often an indication of high-quality work.

For every technical report assignment set within the Engineering Academic Discipline, a portion of the marks are allocated to 'Transferable skills for life and professional practice'. A well-presented report can significantly boost the marks received in this section.

Each report will vary depending on the assignment brief, but the aim of this guide is to equip the author with the information and skills needed to produce the best possible report.

When writing a technical report, the author should consider the final reader and their expectations. Key questions to ask when preparing a technical report for an assignment include;

- What are the aims of the report as outlined in assignment brief and do your conclusions address these aims?
- What areas should the report cover?
- Is personal knowledge and understanding clearly demonstrated?
- Is all included research correctly referenced and is it supporting the discussions and analysis presented?

A well-formatted report layout helps the writer feel confident in meeting the requirements of the assignment brief.

This guide assumes that Microsoft Word is being used as the word processing software.

2 Report Format

As mentioned in the introduction, a well-formatted and organised report is crucial for producing a successful piece of work. Every report may require a slightly different layout depending on its content. report. The key aspect of all reports is that they should flow seamlessly from the introduction to the conclusion.

The different sections/chapters that can be included in a technical report are;

- Title Page
- Abstract
- Acknowledgements
- Contents Page
- Introduction
- Literature Review/Background/Research
- Methodology
- Results
- Analysis
- Discussion & Conclusions
- References
- Appendices

Remember that you can rename the chapters, so they are in context for the report being written. As a general rule, every chapter should start on a new page and should be numbered, see Section 3.1 for more information.

Make sure the report is organised in a way that will be suitable for the reader

2.1 Title Page

The title page needs to include the following information

University of Wales Trinity Saint David

Engineering Academic Discipline

Title of Report

Student Name

Student Number

Degree being studied

Date

Module Name and Code

Word Count of submitted work

Information on the title of the report, module name and code can be found on the first page of the assignment brief.

2.1.1 Word Count

Different assessments have varying specified word lengths, which must be adhered to in order to promote succinct and clear writing, as well as to ensure fairness among all submissions. The UWTSD Academic Quality Handbook provides clear guidelines on how assessments exceeding the word limit will be addressed (Section 7.7).

The word count includes the main body of the text, beginning with the introduction and ending with the conclusion. To calculate this value, highlight all text from the start of the introduction to the end of the conclusion in Microsoft Word. This word count should be noted on the title page. Tables, captions, section headings etc, are not included in the word count. However, lecturer discretion is applied in cases where students may try to circumvent the rules by using tables or similar to hide word count.

2.2 Abstract

If an abstract is required, it will be stated on the assignment brief. An abstract will clearly define to the reader what information is contained within the report and the main findings. Normally it is advised that the abstract should be the last section of a report to be written.

An abstract should be approximately 250 words in length, though do check assignment brief for exact word count.

Abstracts give a brief overview of the whole report

2.3 Contents Page

A contents page should list all the sections and subsections of the report, along with their corresponding page numbers. It typically includes the main headings such as the introduction, main and sub-headings sections, conclusions, references and any appendices. This helps the reader easily navigate through the document and locate specific information quickly.

It is relatively easy to create a table of contents in Microsoft Word. Ensure all headings and subheadings in your document use the built-in heading styles (e.g Heading 1, Heading 2, etc). These styles can be found in the “Home” tab on the ribbon. Via the “References” tab on the ribbon, the “Table of Contents” can be selected and a built-in automative table of contents from the drop-down menu. Following these steps will create a dynamics table of contents which can be updated as the document is edited. It is important to ensure that the contents list is updated as one of the final acts before submitting the document.

2.4 Introduction

The aims and objectives of a report should be included within the introduction chapter. The introduction may also comment on the topics and sections that will be discussed in the report. It needs to set the scene for the report and provide a foundation for the main body to follow.

2.4.1 Aims of a technical report

The aims of a technical report outline the overall goals and purpose of the document. They define what the report seeks to achieve and provide a clear understanding of the report’s direction.

2.4.2 Objectives of a technical report

The objectives of a technical report are specific, measurable actions that help achieve the aims. They break down the aims into concrete steps and provide a clear roadmap for the report's content.

2.5 Sections of the Main Body of the Work

The main body of the work will be structured into numbered and titled sections, with the use of sub-headings within each section. Employing sub-headings enhances readability and clarifies the distinct areas covered by the report.

References should be integrated throughout these sections to substantiate the research conducted on the subject. While the majority of references are typically found in the Literature Review/Background chapter, they are not limited to that section alone. In cases where specific methodologies are employed, references to sources detailing these methodologies should be included in the methodology chapter. Similarly, during analysis and evaluations, including references supports the validity of any observations or conclusions made. It is good practice to consider using comparative analysis, where data and trends from the author's work is compared to those found in published literature. This allows the author to compare the accuracy and validity of the findings against what other have found in similar studies.

2.5.1 Presenting results and data

In a technical report, it is standard practice to present raw data in the results section. This section serves to provide readers with primary data collected during experimentation or research. Some lecturers will prefer that raw results are not presented as a separate section, but produce a combined results and analysis section. If this is the case, the lecturer will make it clear, it is expected that the obtained results are presented and then analysed immediately.

The analysis chapter focuses on interpreting and drawing conclusions from the raw data presented in the results section. This typically includes detailed discussions, interpretations, and visual representations such as graphs or charts that highlight trends, relationships or significant findings derived from the raw data. By separating raw data and analysis, the report maintains clarity and facilitates a structured approach to presenting and interpreting research outcomes.

When presenting data within the report, using appropriate significant figures in data is important to maintain precision and accuracy in scientific and technical analysis.

It is crucial to highlight and discuss errors in results within a technical report. Firstly identifying errors ensure the integrity and accuracy of findings, which fosters trust in the reports conclusions. Addressing errors also demonstrates a commitment to rigorous analysis and discussing errors provides an opportunity to analyse their impact on results, giving insights to potential limitations or areas for further investigation.

2.6 Conclusions

A conclusion in a technical report should reflect on the aims and objectives outlined in the introduction to provide a cohesive narrative of the entire document. It should revisit these aims and objectives and assess to what extent they have been achieved through the findings presented in the main body of the report. This

reflection helps to demonstrate the alignment between a reports initial goals and the outcomes derived from the research or analysis conducted. Additionally, the conclusion may highlight any discrepancies or unexpected findings encountered during the study, offering insight into areas for further investigation or improvement.

2.7 References

All Technical Reports submitted to the Engineering Academic Discipline should adhere to the Harvard Reference Conventions as standard practice. For detailed guidance on this referencing system, please consult the [UWTSD Harvard Referencing Guide](#). It is essential to maintain a record of all sources used while writing the report, ensuring accurate citation and verification of information upon completion of the document.

All details of references included within a technical report should be correct.

The [UWTSD Harvard Referencing Guide](#) can be found on the UWTSD Library's website. In the same location you will also find the UWTSD IEEE Referencing Guide which you may be asked to use for specific assignment, for example a technical poster would use IEEE Reference Conventions.

2.8 Appendices

Any additional information that is deemed important beyond what a casual reader would require should be included in the appendices of the report. Multiple appendices are permissible, each numbered accordingly. It is crucial to reference these appendices within the main body of the technical report to direct readers to supplementary details and data provided in the appendices. Be aware that the information contained within an appendix does not have to be included when marking the submission. Try not to include additional information through an appendix to circumvent the word count. Should there be information key to the discussions, it should be included in the main body of text.

2.9 Use of AI technology

As the university embraces the future, it is important to understand the role of Generative Artificial Intelligence (Generative AI) in higher education. The level of use of Generative AI in assessments will be outlined in the assignment brief for each individual module. It is important that the briefs are read carefully to understand how and when you can use AI tools. This will help you adhere to the specific guidelines and ensure that your use of AI is appropriate and aligns to academic integrity standards.

3 Writing the Report

The reader is paramount in any report. The writing style should prioritise accuracy and conciseness. The writer bears responsibility for the report's precision, including research and data. Strive to keep the report as concise as possible while ensuring completeness.

3.1 Writing in third-person

. A technical report should maintain a formal, third-person tone, employing past tense and passive voice. For instance, "The engine was connected to the dynamometer..." is preferred over "We put the engine on the dyno..."

In third-person writing, avoid using personal pronouns like I or We throughout the report. A technical report is a conveyance of the work completed and the findings of that work, not a reflective discussion about the author's own performance.

3.2 Report Notation

As previously noted in this guide, technical reports are most effective when structured with numbered headings and sub-headings. The decimal notation system, as demonstrated in this guide, is recommended for its clear organisation and ease of navigation.

1. Main Heading

1.1 Lesser Heading

1.1.1 Small Heading

This should be maintained throughout the report.

8. Main Heading

8.1 Lesser Heading

8.1.1 Small Heading

By using the Heading options in the Styles box on the Home Tab of Microsoft Word, the software automatically assigns the correct numbering for each section. Also using these heading styles enables the automatic generation of a contents page with a simple click of a button.

It is important that each new chapter begins on a new page to maintain a clear and organised structure in the report. This practice enhances readability and provides a professional presentation, making it easier for readers to navigate through the document and identify the start of each section.

3.3 Originality and Plagiarism

When writing a technical report, it is essential to attribute information, facts and ideas sourced from other sources using in-text citations and a reference list. For comprehensive guidance on referencing, please refer to the [UWTSD Harvard Referencing Guide](#).

Any information that is not appropriately referenced is assumed to be the authors own knowledge or ideas. Failure to attribute borrowed information constitutes as plagiarism, a **serious academic offence** subject to

the University's Unfair Practice procedure and regulations. The Student Handbook, which can be found on Moodle and on TEAMS, includes a section titled 'About Academic Integrity', which provides details on how to avoid plagiarism and a link to the University's regulations.

4 Report Presentation

The presentation of the report holds equal importance to its layout. The Engineering Academic Discipline recommends several presentation guidelines detailed in Section 4.1

The appearance of a technical report should be visually appealing to the reader.

4.1 Main Body Report Presentation

Font – Try to use a clear roman or sans serif font (Times New Roman, Arial or Calibri)

Font size – 11 point text size unless otherwise stated

Line Spacing – 1.5 line spacing

Margins – All margins should be set to 2.54cm

Page numbers – Do not include page numbers on the title, abstract or contents pages. The first page of the introduction chapter should be numbered as page 1.

Justification – All text should be justified so that it is evenly distributed between the margins.

4.2 Illustrating the Report

As the saying goes, ‘A picture says a thousand words’, as it can convey information more clearly than paragraphs of text. Diagrams, tables, graphs, charts, images or photographs are all examples of non-verbal illustrative material that should be appropriately labelled in a technical report.

A report lacking such visual aids may appear dry and fail to engage the reader effectively. When using

When using diagrams, it is best to keep them simple. If data is to be presented, think about the best way in which to present it. Sometimes a line graph, pie chart or bar chart is more appropriate than having a large table of data included within a report. Complicated or large tables of data are best placed in an appendix and referred to in the main body of the text. Sometimes equations and derivations are the most efficient way of conveying information. Make sure that any symbols, letters or Greek letters used within any mathematics included are clearly explained. Longer equations or derivations are best included within an appendix and again should be referred to in the body of the text.

When including figures or tables within a technical report it is important to think about where is the best place to insert the figure/table for the reader. Make sure that the figure / table also has a suitable label.

4.2.1 Figures

When using figures or diagrams, simplicity is key. Consider the best method to present data; sometimes a line graph, pie chart, or bar chart is more effective than a detailed table. It is essential to flatten and compress images in the report to optimise file size and ensure efficient document handling and sharing. Consider the resolutions of any images used to ensure clarity and quality in the report.

Labels for Figures (pictures, graphs and images) **should be placed below the item;**



Figure 4-1 – University of Wales Trinity Saint David Logo (UWTSD, 2017)

By using the Insert Caption option under the Reference Tab in Microsoft Word, it means you are able to cross reference to the figure, Figure 4-1, within the main body of the report and also produced a table of figures if required. For the label, it is acceptable to use either Figure 1 or Fig 1.

4.2.2 Tables

Complex or extensive tables should be relegated to appendices and referenced in the main text. When transferring tables from Microsoft Excel to Microsoft Word it is best to copy and paste the table across. If you do have to take a screenshot of a table, it is still a table and should be labelled as such.

Labels for Tables should be placed above the tables;

Table 4-1- Vehicle data for a selection of models (Bauer Consumer Media Limited, 2017)

Make of Vehicle	Model of Vehicle	Engine size (cc)	0-60 mph (secs)	Combined Fuel Use (mpg)	CO ₂ emissions (g/km)
Ford	Fiesta	1399	14.4	67	110
Peugeot	208	1398	13.1	74	98
Renault	Clio	1461	14.7	62	120
VW	Polo	1422	12.5	83	93

Again, it is wise to use the Insert caption option to enable cross referencing and the production of a table of tables. Any tables or graphs that are included within a report, must include units and appropriate scales were necessary.

4.2.3 Equations

Equations and derivations, if included, should be clearly explained, with longer ones also placed in the appendices.

Labels for Equations should be placed to the right of the equation;

$$A = \pi r^2 \quad (\text{Equation 4-1})$$

To insert an equation within a technical report, it is recommended that you use the Equations option on the Insert Tab in Microsoft Word. This built in tool supports writing and editing of equations, allowing the writer to include Greek letters and commonly used maths structures within the equations.

4.3 Finishing the Report

Before submitting a technical report, it should undergo thorough checks for technical errors, typing errors and inconsistencies.

Proofreading plays a crucial role in the report's production process, ensuring accuracy in technical content, grammar, and punctuation.

In the Introduction chapter, the aims and objectives are outlined; therefore, during proofreading, it is vital to verify that the report aligns with these objectives. Given the author's familiarity with the content, extensive coursework may hinder accurate self-proofreading, potentially overlooking mistakes.

5 Recommended reading

Below are a selection of books that may prove helpful when writing a technical book.

Cotterell, S. (2019). *The Study Skills Handbook*. 5th Edition. Palgrave Macmillan. London

Godfrey, J. (2018). *How to use your reading in your essays*. 3rd Edition. Palgrave Macmillan. London

Van Emden, J. (2017). *Writing for Engineers*. 4th Edition. Palgrave Macmillan. London

6 References

Bauer Consumer Media Limited, 2017. *Parkers*. [Online]
Available at: <http://www.parkers.co.uk/>
[Accessed 07 03 2017].

UWTSD, 2017. *University of Wales Trinity Saint David*. [Online]
Available at: www.uwtsd.ac.uk
[Accessed 22 02 2017].

7 Edition control

1st Edition published March 2017

2nd Edition published October 2018

3rd Edition published September 2024

