



COMMUNICATION SKILLS

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Writing Technical Reports

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- ▶ It is an essential form of engineering communication.
- ▶ Presents your research, investigations, project design, proposal.
- ▶ Exhibits your mastery of the subjects.
- ▶ Your ability to apply your knowledge to a practical task.
- ▶ Ability to produce a clear, concise, and professionally presented report is a skill.

This skill guarantees success in academia as well as industry.

ABOUT TECHNICAL REPORTS



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Based on contents, major types of Technical Reports are:

- ▶ Original Research [Journal Paper]
- ▶ Results of an Investigative study [Internal Report]
- ▶ Solution of a design problem

Typically, a technical report includes research about technical concepts as well as graphical depictions of designs and data.

All these reports have similar structure.

TYPES OF TECHNICAL REPORTS



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- ▶ Transmittal letters often accompany reports and inform readers of a report's context. Typically, the letter includes information not found in the report.
- ▶ For example, the letter contains information about the particular project and/or due dates.
- ▶ A Transmittal Letter is a business letter and should be formatted accordingly; that is, you should include the recipient's address, your address, a salutation and closing.
- ▶ Depending on the project, you may also need to include contact information.

TRANSMITTAL LETTER (TL)

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A TYPICAL TL

Prof. Sameer Khandekar
SL-109, Department of Mechanical Engineering,
Indian Institute of Technology Kanpur
Kanpur 208016

September 05, 2017

Dear Prof. Khandekar,

Sub: Submission of project report (Assignment #2)

We are submitting to you the report, due September 08, 2017, that you have requested. The report is entitled 'Heat Transfer Characteristics of a Single-Phase Jet Impinging on a Heated Flat Plate'. The purpose of the report is to inform you of our design calculations and sizing of the jet for high heat flux electronics cooling system (up to 100 W/cm²). The focus of the study is the effect of jet Reynolds number and its distance from the hot spot on overall heat transfer coefficient.

In case you have further questions on the report, please feel free to contact us.

We look forward to hearing from you,

With best regards,

Jitendra Kumar
Project Student
Roll Number:
E-mail:

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Reports:

- ▶ are designed for quick and easy communication of information.
- ▶ are designed for selective reading.
- ▶ use sections with numbered headings and subheadings.
- ▶ use figures and diagrams to convey data.

POINTS TO REMEMBER



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A report usually has these components:

- ▶ **Title page**
- ▶ **Abstract/Summary**
- ▶ **Table of Contents**
- ▶ **Introduction**
- ▶ **Middle sections, numbered headings (i.e., the body of the report)**
- ▶ **Conclusions**
- ▶ **References**
- ▶ **Appendices**



BASIC STRUCTURE OF A REPORT

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It informs about :

- ▶ **the title of the report**
- ▶ **the authors' names and ID numbers**
- ▶ **the course name and number, the department, and university**
- ▶ **the date of submission.**

- ▶ **The title of the report indicates about the report precisely . i.e. general topic or aspect of topic contained in the report.**

TITLE PAGE

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- ▶ 1.0 Title of first main section (i.e. Introduction)
 - ▶ 1.1 First subheading
 - ▶ 1.2 Second subheading
- ▶ 2.0 Title of second main section
 - ▶ 2.1 First subheading
 - ▶ 2.2 Second subheading
 - ▶ 2.2.1 First division in the second subheading
 - ▶ 2.2.2 Second division in the second subheading
- ▶ 3.0 Title of third main section



TYPICAL DIVISION OF REPORT

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This page gives:

- ▶ the title of the report.
- ▶ the authors' names.
- ▶ Supervisor (sometimes).
- ▶ the affiliated department/ university.
- ▶ the date of submission.

TITLE PAGE



UNIVERSITY NAME

DOCTORAL THESIS

Thesis Title

Author:
John SMITH

Supervisor:
Dr. James SMITH

*A thesis submitted in fulfillment of the requirements
for the degree of Doctor of Philosophy
in the*

Research Group Name
Department or School Name

November 22, 2016

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The title of the report should indicate exactly what the report is about. The reader should know not only the general topic, but also the aspect of the topic contained in the report.

Compare the following pairs of titles:

- ▶ Bridge Analysis vs. Analysis of a Pre-stressed Concrete Bridge
- ▶ Dynamics-based SHM vs. An Evaluation of Dynamic Response based Structural Health Monitoring

Compare the following assignment examples:

- ▶ Assignment 1 vs. Assignment 1: Water Consumption Data Collection
- ▶ CLAWAR Project vs. CLAWAR Project: An Investigation of Crawling Robots

MORE ..

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The abstract/summary provides:

- ▶ a brief overview of the substance of the report;
- ▶ outline all the key features of your report.

The abstract/summary also:

- ▶ states the topic of the report
- ▶ outlines your approach to the task if applicable
- ▶ gives the most important findings of your research
- ▶ states the main outcomes or conclusions



THE ABSTRACT/SUMMARY

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- ▶ The contents page sets out the sections and subsections of the report
- ▶ Their corresponding page numbers.
- ▶ It should clearly show the structural relationship between the sections and subsections.
- ▶ A reader looking for specific information should be able to locate the appropriate section easily from the table of contents.

TABLE OF CONTENTS

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- ▶ Number all the preliminary pages in lower-case Roman numerals (i, ii, iii, iv, ...).
- ▶ You don't have to place the number i on the title page. Just count it and put ii on the second page of your report.
- ▶ Preliminary pages are any which come before the introduction, including the summary and, where applicable, acknowledgements.
- ▶ Number all the remaining pages of your report with Arabic numerals (1, 2, 3, 4, ...).
- ▶ Thus the report proper begins on page 1 with your introduction, which is usually Section 1.
- ▶ Provide a title in your table of contents to describe the contents of each appendix

(Note: one appendix, two or more appendices).

Don't just call them Appendix 1 or Appendix 2 – describe the contents.

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- ▶ The introduction provides the background information .
- ▶ It is usually half to three-quarters of a page in length. It varies!
- ▶ The purpose of the introduction is to set the context for the report
- ▶ It provides sufficient background information for the reader to be able to follow the information presented.
- ▶ It also inform sthe reader about how that information will be presented.

INTRODUCTION



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The introduction includes:

- ▶ the background to the topic of report
- ▶ a clear statement of the purpose of the report
- ▶ to present the results of research, investigation, or design
- ▶ a clear statement of the aims of the project
- ▶ technical background necessary to understand the report; e.g. theory or assumptions
- ▶ a brief outline of the structure of the report, if appropriate

INTRODUCTION



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Naming of headings should be informative in nature:

- ▶ As for the title, section headings should tell the reader exactly what type of information is contained therein.
- ▶ They should be specific and content-focused rather than just labels.
- ▶ Devising informative headings as opposed to label headings right from the planning stage will help you to clarify exactly what you want to achieve in each section and subsection.

NOMENCLATURE OF HEADINGS

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The body of the report:

- ▶ **presents the information from your research, both real world and theoretical, or your design**
- ▶ **organizes information logically under appropriate headings**
- ▶ **conveys information in the most effective way for communication:**
 - ▶ **uses figures and tables**
 - ▶ **can use bulleted or numbered lists**
 - ▶ **can use formatting to break up large slabs of text**

BODY OF THE REPORT



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- ▶ This is main part of the report, where you present your work. The introduction and conclusions act as a frame for the body only: therefore all the details of your work (including a summarised version of material in the appendices) must be included here in the appropriate section.
- ▶ You will need to put some thought into the ordering of the sections; the presentation of information should flow logically so that the reader can follow the development of your project.
- ▶ It is also essential that you choose concise but informative headings and subheadings so that the reader knows exactly what type of information to expect in each section.

BODY OF THE REPORT

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The conclusions section provides an effective ending to report.

The content should relate directly to the aims of the project as stated in the introduction, and sum up its essential features.

This section:

- ▶ **states whether you have achieved your aims**
- ▶ **gives a brief summary of the key findings or information in your report**
- ▶ **highlights major outcomes of your investigation and their significance.**
- ▶ **The conclusions should relate to the aims of the work of text.**

CONCLUSIONS

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You need to use in-text citations and provide details in the references section when:

- ▶ you incorporate information from other sources; e.g.:
 - ▶ factual material
 - ▶ graphs and tables of data
 - ▶ pictures and diagrams
- ▶ you quote word-for-word from another work (when you do this the **page number** must be given in the in-text citation)

REFERENCING

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References

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SAMPLE REFERENCE LISTS

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These contain material that is too detailed to include in the main report, such as raw data or detailed drawings.

The conventions for appendices are as follows:

- ▶ **each appendix must be given a number (or letter) and title;**
- ▶ **each appendix must be referred to by number (or letter) at the relevant point in the text.**

APPENDICES



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Proofread carefully

- ▶ Avoid 'Run-on' sentences
- ▶ Avoid (L1/L2) factor: Your regional/mother tongue affecting your English expressions
- ▶ Avoid repetition of words: try to use synonyms
- ▶ Look for missing words, extra words, and wrong (but correctly spelled) words like:
 - ▶ due/do; form/from; their/there; an/and; where/were

SOME MORE TIPS

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► **Avoid sentence fragments.** Every sentence must have a subject and verb. *“Also to measure things about the tube.”*

► **Avoid choppy sentences**, especially if they repeat words and phrases. Example:

“This report is about permeation tubes. Permeation tubes are devices that ...”

Instead

“This report is about permeation tubes, devices that...”

SOME MORE TIPS



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A good report:

- addresses intended audience
- provides introductions and conclusions for internal sections as well as the whole paper
- provides transitions between sections
- looks professional in style and appearance
- recognizes that the document should be persuasive

REMEMBER...



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- ▶ **First-write a rough draft:** Just write - don't proofread, edit, revise, correct, look back at all. Then
- ▶ **Revise:** Organize, check for introduction and conclusion for all sections, build in transitions, get rid of excess verbiage, spell-check and grammar-check.
- ▶ **Revise again: Very important, revisit the contents and structure**
- ▶ **Read it out loud:** This can help you detect awkward phrases, missing commas, etc.

HOW TO WRITE ANYTHING...
IT IS AN ART!

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THANK YOU

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