WRITTEN REPORTS
ADVANCED PROFESSIONAL WRITING

• Logistics: when and where
• Content: what to talk about
• Technique: Organization, presentation
Presentation Content

Beginning: tell about the proposal; identify the problem and why your resolution is effective- provide context

Middle: illustrate how you did have implemented your proposal in terms of the (re) write; indicate specific achievements & challenges and summarize the outcomes

End: summarize it all, tell what it means, did you meet goals, what are your recommendations for future work in this area?
Report Components

• Title
• Abstract
• Introduction
• Experimental and/or Theoretical Methods
• Results and Discussion
• Summary and Conclusions
• References
• Appendices
Structure of Report

Start with broad knowledge base

Narrow to focus of report

Broaden again, relate back to beginning

Abstract
Intro
Results
Discussion
Conclusions
Title

• Title should be concise, complete, comprehensible, correct, descriptive (and not the title of the lab procedures)

• Title should have the following: title, authors, affiliation, date
  • Does not have to be on a separate page, see sample journal articles
Examples

• Pulse, Echos, and Goo”
• “The Applicability of Ultrasound in Determining Mechanical Properties of Materials”
  – Which one is good or bad?

• “A Comparison of Extended Surfaces”
• “Enhancing Convective Heat Transfer using triangular and cylindrical Extended Surfaces”
  – Which one is good or bad?
Executive Summary

- Is a miniature version of the report.
- It should stand alone.
- Structure ~200 words (use “word count” in MS WORD to make sure that your abstract is not too long!)
  - What was done
  - How is was done
  - The principal results
  - The significance of the results
  - Summary of recommendations
Heat Transfer and Pressure Drop Characteristics of Laminar Flow in Rectangular and Square Plain Ducts and Ducts With Twisted-Tape Inserts

S.K. Saha and N. Mallick

The present paper reports the results of an experimental investigation of the heat transfer and pressure drop characteristics of laminar flow of viscous oil through horizontal rectangular and square plain ducts and ducts inserted with full-length twisted tapes, short-length twisted tapes, and regularly spaced twisted-tape elements. Isothermal pressure drop measurements were taken in acrylic ducts. Heat transfer measurements were taken in electrically heated stainless-steel ducts imposing uniform wall heat flux boundary conditions. The duct aspect ratios AR were 1, 0.5, and 0.333. The twist ratios of the twisted tapes were \( y = 2.692, 5.385, 2.597, 5.193, 2.308, \) and 4.615. Short-length tapes were 0.9, 0.7, and 0.5 times the duct length. The space ratios were \( s = 2.692, 5.385, 2.597, 5.193, 2.308, \) and 4.615. Both friction factor and Nusselt number increase by 30% (+ 5%) with decreasing \( y \) and AR for \( AR1 \) and increasing Re, Sw, and Pr. As the tape-length decreases by a factor of 2, both friction factor and Nusselt number decrease by a factor of 3. Friction factor increases by 80% (+ 12%) as \( s \) decreases by 50%, and Nusselt number increases by 75% (+ 30%) as \( s \) increases by 100%. Isothermal friction factor correlation and comprehensive Nusselt number correlation have been developed to predict data reasonably well in the entire range of parameters. Performance evaluation says that short-length twisted tapes are worse and regularly spaced twisted-tape elements are better than the full-length twisted tapes. This is about 200 words
Introduction

• Purpose - What you did and why you did it
  – Clearly state goals
  – May include a review of scientific literature to justify the what and why, and to define the
• Scope - Range, how much, limits of applicability of what you have done
• Background - What the reader needs to know to understand what comes
  – Fundamental ideas involved.
• Make sure you answer these questions:
  – What has been done on this problem before?
  – What’s the point of the report?
  – What was your contribution?
Body Content

- Be systematic (again Tables would be acceptable)

A five fold process (at least)
1. Identify the task/section to be (re)written
2. Provide what you have done (the copy)
3. Explain why you have done it this way (analysis/intended outcome)
4. Justify according to literature
5. Assess/evaluate
Summary and Conclusions

- Start with a restatement of objectives
- Again describe briefly the methods
- State the important results: be quantitative with uncertainty
- State the important conclusions
- Comment on what should be done in future experiments, what would you recommend doing next?
References

• When you use an idea from a book, or paper, or website, you need to “cite” that idea.
• Please use the “name and year “ system when citing in your text.
• Then in the list of references, provide details about the reference.
• You must have 3 references, only 1 from a website. The others can be from your textbooks, books at the library, journal paper (can download from web or get at library).
• No citations from Wikepedia
Example

Introduction

In the early 1990s, many epidemiologic studies suggested that air pollution, even at the lower ambient air concentrations that had been achieved with regulations and control technology, was still associated with cardiopulmonary disease and mortality (Samet et al., 2000); especially the fine combustion-source pollution most commonly found near heavy traffic areas (Pope, 2000).

References
