

An Introduction to Engineering Writing and Speaking

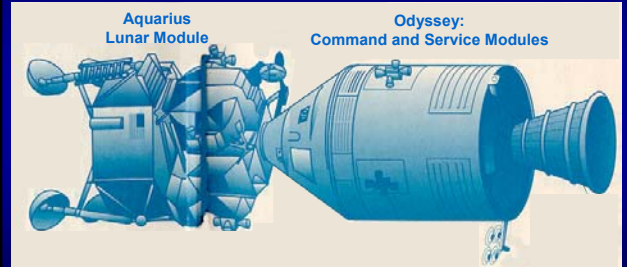


Michael Alley
Mechanical Engineering
Virginia Tech

<http://writing.eng.vt.edu/me2024/>



With Apollo 13, NASA engineers were called upon to speak and write in different situations



As an ME student, you will be called upon to speak and write in several different situations

Sophomore Year



Sophomore Design



Intro to Thermal Fluids

Junior Year



System Dynamics



Machine Design



Mechanical Engineering Lab I

Senior Year



Mechanical Engineering Lab II



Senior Capstone Design

To help you communicate, though, the Department has several resources

Writing Guidelines for Engineering and Science Students

Contributors:
Virginia Tech (How)
University of Texas
University of Texas
Georgia Tech

Site Links:
Writing Resources
Writing Courses
Teaching Resources

Related Links:
Word of the Month
Ethics in Science
Undergrad Exam Review

Supporting Videos:
Writing (Virginia Tech)
Speaking (Virginia Tech)
Illustrations (Georgia Tech)

Supporting Books:
Craft of Scientific Writing
Craft of Editing
Elements of Style

These guidelines are designed to help you, the engineering or science student, perform writing assignments in your laboratory, design, and technical communication classes. In these guidelines, you will find discussions of several common documents in engineering writing and scientific writing. For these types of documents, you will find formats, no-delta, and resources.

Introduction
Assess the Audience
Select the Format
Choose the Style

Correspondence
Memo Format
Sample Memo
Letter Format
Sample Letter
Job Letters and Resumes

Sample documents

Self-help exercises

Slide templates

Leading textbooks

<http://writing.eng.vt.edu/>

This lecture focuses on recognizing style issues that distinguish engineering writing



Structure



Language



Illustration



For engineers, structure includes not only organization, but emphasis, depth, and transitions

Conclusions
Appendices

Middle Sections

Title
Summary and
Introduction



The title is the single most important phrase of the report

New Power Amplifier
Coolant System
Redesign



Redesign of the
Coolant System for the
New Power Amplifier



One section of the middle contains the methods for performing the work

Purposes:

- (1) To establish credibility for the results
- (2) To allow others to repeat the work

Structure:

Organization: often chronological
Depth: enough that others can repeat work



With language, keep it as simple as possible, yet no simpler

Content:
Ideas

Style and Form:
Writing

Inherent complexity:
Reynolds number
turbulent eddies
 ρv^2

Needless complexity:
utilization
manufacturability
e.g., R&D in Fig. 1



Needlessly complex language buries ideas

This study will consider why current solar energy systems, such as Solar One, have not reached the commercial stage and will find out what steps we can take to make these systems commercial.



The goal of this study is to develop a **commercialization** strategy for solar energy systems by analyzing factors impeding early commercial projects (i.e., **SOLAR ONE**) and by identifying the potential actions that can **facilitate** the **viability** of the projects.



Also, ambiguities confuse audiences

We examined neat methanol and ethanol and methanol and ethanol with 10% water.



We examined four fuels: neat methanol, neat ethanol, methanol with 10% water, and ethanol with 10% water.



Illustrations can communicate information quickly and memorably to audiences

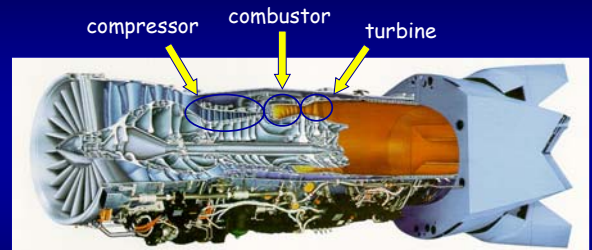


Figure 6. Cutaway of a gas turbine engine that shows the three main components: compressor, combustor, and turbine [Pratt & Whitney, 2002].



In summary, the way you write depends on your audience, purpose, and occasion

what do they know?
why are they reading?

what expectations do they have?
how will they read?

audience

purpose

to inform
to persuade



Questions?

occasion

format
formality
deadline
process

