Introduction
to Scientific Writing

These slides, which are used in graduate and undergraduate engineering courses at Virginia Tech, come from Chapters 1, 16, and 17 in *The Craft of Scientific Writing* (3rd ed., Springer-Verlag). If you are an instructor and wish to receive a Microsoft PowerPoint 97 version of these slides (with accompanying teaching notes), send an e-mail to Michael Alley at Virginia Tech (alley@vt.edu).
Scientific Writing: An Introduction

Writing Guidelines for Engineering and Science Students

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, models, and exercises.

- Introduction
- Assessing the Audience
- Selecting the Format
- Crafting the Style

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

Writing Guidelines for Students
http://www.me.vt.edu/writing/

The Craft of Scientific Writing
3rd edition (Springer-Verlag, 1996)
This presentation discusses the importance of scientific writing and introduces key principles.
How well you communicate affects your career

Survey (Richard M. Davis)
Successful engineers spent 25% of work week writing

Survey (Wisconsin)
Professional engineers found writing their most useful subject

Survey (Virginia Tech)
Recruiters claim that engineers need more work on their writing
How well you communicate affects the well-being of others

Explosion was caused by failure of O-rings in the solid rocket boosters

Engineers knew of O-ring problems well before fatal launch

Engineers failed to communicate seriousness of problem

Space Shuttle Challenger
(January 28, 1986)
Scientists and engineers are called upon to communicate in many different situations:

- Reports
- Articles
- Proposals
- Web Pages

Conferences
- Lectures
- Meetings
- Posters

- specific technical audiences
- general technical audiences
- non-technical audiences
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Importance of Scientific Writing

Key Principles

- audience
- purpose
- occasion
Scientific writing differs from other kinds of writing

Subject Matter

Writing Constraints
- audience
- occasion
- purpose

Purpose of Writing
- To inform
- To persuade

Writing Style
You should begin the writing process by analyzing your constraints

**Audience**
- Who they are
- What they know
- Why they will read
- How they will read

**Occasion**
- Format
- Formality
- Politics and ethics
- Process and deadline

**Purpose**
- To inform
- To persuade
Three aspects of writing affect the way that readers assess your documents:

- Content
- Style
- Form
Style is the way you communicate the content to the audience.
Form embodies the format and mechanics of the writing

- format
  - typography
  - layout

- mechanics
  - grammar
  - usage
  - punctuation
  - spelling
We can split the writing process into stages

- Getting in the Mood
- Writing the First Draft
- Revising, Revising, Revising
- Finishing
An excellent way to improve your writing is to choose good models

Maria Goeppert Mayer

Linus Pauling