# Oral Presentations and Intro to Technical Writing

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# Effective Presentations

**References used:**


Carlson, V. 1998. “Presentation Skills” from the TA Development Program Workbook, Cornell University.

Cook, M. 1997. Engineering 110 Lecture Notes, University of Massachusetts.

Reed, A. 1998. “Writing and Delivering Speeches” from Becoming a Master Student.

Winston, P. 1997. “How to Speak” Harvard University.

# Preparation

- **Organization** and **slide formatting** can dictate the attention span of your audience
- Typical Outline
  Title Slide

  Outline Slide (optional)

  Body

  Conclusions (or Summary, etc.)

# Preparation (cont.)

- Research subject thoroughly, but narrow focus to important points
- Tell a “story”
  - Self-contained slides
  - Each idea follows from the previous slide
  - Do not have to present results in “chronological order” (i.e., “First we did this. Then we did this. Then . . .”
- Pay attention to introduction, transitions, conclusions
- Prepare notes
- **Practice!!!**

# Practicing

- Practice in the room where talk will be delivered (at least visit the room ahead of time)
- Speak loudly - your voice will sound different
- Listen for repeated phrases (uh, umm, ah, like, you know)
- Practice in front of friends - particularly those that aren't familiar with the subject matter
- Avoid delivering talk word-for-word
- Dress appropriately
- **Practice increases confidence and reduces "nervous habits"**

# Presentation

- Focus on sharing information - natural tendencies will come through
- “Empower” the audience
  - Set goals/objectives for the talk
- Use appropriate **visual aids**

# Visual Aids

- **Plan one slide per minute**
- Use bullets, not paragraphs, to make your points
  - Formatting of bullets should be consistent (capitalization, periods, etc.)
- Don’t crowd slides
  - No more than 7 ideas per slide (2-3 is better)
- Use large enough font size so that the back of the room can read slides easily
  - Usually 16 point minimum
  - Test out “readability” beforehand

# Visual Aids

- Use color, but don't overdo it
  - Don't use lightly colored text and symbols (yellow, light green) except on dark backgrounds
- Add visual information – graphs, drawings
- Leave sufficient line spacing and "empty space"
- Use a *sans serif* font (Arial, Helvetica)
- If including a slide with experimental data, add bullets that describe the most important characteristics/conclusions
- Material should be cited properly
  - This includes pictures that you use from other sources, including the web – you MUST cite your source

# Communicating Technical Material

**Problem**: Not everyone in your audience will have the appropriate background

- Put all information in context
  - Mention potential applications and impact of work
- Avoid unnecessary details
- Clearly define acronyms and jargon, or avoid using them completely
- Use appropriate analogies, similes, and metaphors
- **Know your audience**

# Delivery Style

- Speak in a clear voice and project
  - Takes practice
  - Pause to take deep (belly-filling) breaths that help to push your voice out into the room
  - If this is a big problem for you, consider a theater or voice class
- Establish eye contact with your audience
- Be enthusiastic and share your excitement for your work
- Talk to the audience, not the screen
- Adopt a relaxed and comfortable position
  - Relax yourself physically before the talk
  - Don’t play with pointers
  - Don’t shuffle feet

# Delivery Style (cont.)

- Don’t obscure the audience’s view
- Stand close to the screen
- Don’t just “recite” slides - discuss them
- Point to items of particular importance
- Don’t cover-up material on overheads and then uncover

# Dealing with Nervousness

- Recognize that everyone gets nervous
- Use “physical” tools such as deep breathing exercises, stretching, meditation to relax
- Practice!  Take advantage of all public speaking opportunities
- Think positively and laugh with the audience
- Be confident
- Take control and ignore small mistakes

# Ending a Talk

- Respect the audience and **end on time**
- Remind audience of the goals of the talk
- Ask for questions
  - Always repeat the question that is asked
- Evaluate yourself and accept feedback

# Responsibility of the Audience

- Show up
- Listen attentively
  - Distractions are frustrating for the speaker
- Ask questions concisely and politely

# Technical Reports and Articles

- To learn to write good papers, read lots of good papers!
- Refer to current journal articles for guidelines for structure and style.
- Think about the sections of an article that YOU read first, and spend time to make these perfect. For most people, these are (roughly in order):
  - Abstract
  - Figures and captions
  - Conclusions
  - Experimental methods (maybe)

# Structure of Papers and Reports

- Abstract
- Introduction/Background/Literature Review
- Experimental Methods/Theory
  - Sometimes called Materials and Methods
  - For theoretical studies, this section may include key equations, derivations, and a description of methods
- Results
- Discussion
- Conclusions
  - Sometimes includes Recommendations for Future Work

# Abstract

- Arguably the most important part of a technical article
- A very concise summary of the entire study, written with sufficient clarity that it can be understood ***without reference*** to the body of the article
  - Should be short (depending on journal style, 0.5 page to 1 page)
  - For most journals, do not include citations
- Include a brief description of the objective of the study and the nature of the experiments (what was measured, how it was done)
- Summarize **quantitative** results which characterize the study (e.g., "For Reynolds numbers of ___-___, the heat-transfer coefficient for tube-side water was ___ W/m2·K")
- **Highlight your most important conclusions**
  - **What is your take-home message?**
- For abstracts of presentations at conferences, style is typically a little less formal, and often do not have conclusions when these are submitted

# Figures and Tables

- Figures and tables should be numbered consecutively
- Each figure and table should be numbered and should include a title or caption
- As much as possible, readers should be able to understand figures without extensively referring to the text
  - Always include a descriptive caption, not just a broad title
  - Avoid use of complex “codes” for different samples that may be difficult for readers to understand or keep track of
- Each figure and table should be specifically referred to in the text
- Figures should be easy to read
  - Usually, no colored backgrounds (figures for cover artwork an exception)
  - Symbols should be large enough to see and easy to distinguish for different data sets
  - Lines should be thick enough to reproduce well and distinguish from each other
  - Axes should be labeled and all text (e.g., legends, axis labels) should be large enough to read after the figure’s size is reduced

# General Guidelines

- The title should be descriptive and should reflect the objectives of the study (e.g., instead of “Fermentation” title your document “Evaluation of volumetric mass transfer coefficients in a stirred tank fermentor”).
- Refer to published sources whenever possible. It is generally not acceptable to cite web sources in peer-reviewed technical papers.
- The experimental section should be concise and provide an overview of the procedures employed. This section should be written in paragraph form; refer to any journal article for format. Sometimes, tables summarizing samples, process variables, and ranges are very useful.

# General Guidelines, cont.

- Watch your use of tenses. You have already completed the study, so sentences such as "…will be measured…" are not appropriate.
- Be quantitative whenever possible. Avoid the use of phrases such as "relatively small" or "slightly less."
- Be concise in your writing style and think carefully about word choice. Read over the document **several times** refining your writing to make sure it is clear and concise. This is a very important skill for you to learn and future employers or advisors will greatly appreciate your effort.
- Proofread, spell check, and grammar check your paper!!!! Double check to make sure that figures and tables are referred to correctly in the text (e.g., that the numbers "match.").