





Written Communication Skills

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Class 1

The following are the slides for the first day in the three-class module on written communication. The objective of the class is to introduce students to the nature, contents, and form of an Executive Summary.





Class 1 - Outline

- **Module objectives**
- **Justification for our focus on written communication**
- **Contents of a technical report**
 - instructional materials
 - student interaction to determine contents of executive summary
 - instructional materials on executive summaries
- **In-class/homework assignment**





Module Objectives




Objectives

- **After completing this module students should be able to:**
 - Distinguish between well-written and poorly-written executive summaries for technical papers
 - Identify the attributes of a well-written, one-page executive summary
 - Write an effective one-page executive summary on a topic related to the course in which the module is offered




Justification




Justification

- Good written communication skills are important. In fact, your ability to write well will likely be vital to your career.
- Employers expect you to have mastered the ability to produce short, well-written engineering summaries by the time you hit the job market
 - Boeing’s list of preferred skills (slide to follow)
 - Kimberly Clark’s list of preferred skills (slide to follow)
- Managers and colleagues will judge the quality of your ideas by the quality of their expression.
- ABET considers this to be an important skill for accreditation. (slide to follow)




Boeing’s List of Desired Skills for Engineering Graduates

- Good grasp of engineering science fundamentals.
- Good understanding of design and manufacturing.
- Basic understanding of context in which engineering is practiced -- economics, history, environment, customer and societal needs.
- *Good communication skills* -- *written*, verbal, graphic, and listening
- High ethical standards
- Ability to think critically and creatively as well as independently and cooperatively
- Flexibility -- an ability and self-confidence to adapt to rapid and major change
- Curiosity and a lifelong desire to learn
- Profound understanding to the importance of teamwork.




Kimberly Clark’s List of Preferred Skills for Engineering Graduates

- Technical excellence
- *Communication skills*
- Interpersonal skills
- Team Player
- Initiative
- Flexibility




Attributes Engineering Graduates Need: Benefield’s List

- Surveyed alumni and industry representatives
- Alumni and industry responses virtually identical
- Top five attributes:
 - Ability to learn on one’s own
 - Technical knowledge in discipline
 - *Written communication skills*
 - Oral communication skills
 - Experience/aptitude for existing software




ABET Criteria: Technical Knowledge and Skills

- Ability to apply knowledge of math, science, and engineering
- Ability to use the techniques, skills and tools of engineering practice
- Ability to design a system, component, or process
- Ability to design and conduct experiments, as well as analyze and interpret data
- Ability to identify, formulate and solve engineering problems



ABET Criteria: Processing Knowledge and Skills

- *Ability to communicate effectively*
- Ability to function on a multidisciplinary team
- Understanding of professional and ethical responsibility
- Broad education to understand the impact of engineering solutions in a global/societal context
- Knowledge of contemporary issues
- Recognition of the need and an ability to engage in life-long learning



What Will I Write?

- You will have the opportunity to write all kinds of things as an engineer:
 - Technical reports
 - Research reports
 - Design reports
 - Sale reports
 - New-product analysis
 - Proposals
 - etc.
- Here, we will focus on technical reports. Specifically, we will focus on the executive summary.



The Executive Summary

- Technical reports are very important. And, this is the document that your boss will most likely be interested in.
- The executive summary is the part of the technical report by which your boss' boss will likely know you!



Technical Reports

- The basic parts of a technical report:
 - Abstract OR Executive Summary (they are not the same) - this is an overview; it should tell my why I should read the report
 - Introduction - describes the background information I need to know
 - Procedures - what exactly was done
 - Results - what you found out
 - Discussions or Conclusions - what this all means; this is where we want to know what you THINK



In-Class Activity



Exercise

- Develop a list of 3-5 things that you feel should go in an executive summary
 - As individuals
 - prepare a list of things that you believe might go in an executive summary
 - list as many as you can
 - As 3-5 person teams
 - decide on 3-5 things you believe should go into an executive summary, and
 - state why you believe they should be included.



Results of Exercise

- Groups should publish their lists and possibly discuss in class.



Executive Summary Instruction

Abstract and/or Summary

- **Abstracts and Summaries are similar:**
 - Abstract: short statement of what you intended to do (your objective), what you found out (your results), and what the results mean (your conclusions and implications).
 - Summary: very much like the abstract. The procedure for a military briefing is to tell them what you will tell them (Abstract), tell them (report), then tell them what you told them (Summary)

Executive Summary

- **The Executive Summary is not an Abstract, nor is it a Summary; it is a little of both plus some:**
 - Executive Summary: actually summarizes the substance of your report, not just the structure. Provides a condensed discussion of the important points. Should tell the reader in a nutshell the topics you will cover and what you will say about them.

What Goes in an Executive Summary?

- **First, Executive Summaries need to summarize the substance of the report. Thus, you should never write an Executive Summary of a report you do not understand.**
- **Second, Executive Summaries are generally developed around the main topics of the report.**
- **Third, you need to be sure to include the following:**
 - your objective: what you intended to do
 - your results: what you did
 - your conclusions: what what you did means
 - In addition, you need to include the essence of each section of the report

Exercise

Exercise/Homework

- **Assignment:**
 - In the company for which you work, several instances of poorly written engineering reports, and specifically the executive summaries, have led to some missed opportunities and to several embarrassing and costly errors. The Vice-President for Research and the Vice-President for Sales have identified the “ability to write effective executive summaries” as a focus area for every employee in our branch of the company. You are to take the first drafts of the executive summaries you wrote last time and improve them based on our discussions today in class.