PRESENTATION SUGGESTIONS

I. INTRODUCTION

Effective presentations are not the product of chance. They are the product of hard work and preparation. As a graduate student, you will be expected to deliver presentations for your department, in the classroom, at conferences, for job interviews, and as part of whatever jobs you may hold in the future. Thus, giving presentations is not an option - it is a requirement, both here and beyond.

Despite this fact, few individuals are trained in how to develop and deliver effective presentations. Evaluate presentations at any engineering conference and you will find this to be the case. This document is intended to help you learn to become an effective presenter.

This document is organized into two main sections. The first deals with presentation preparation and the second with presentation delivery. Additional subsections are included to provide suggestions through each step of the preparation and delivery process.

II. PRESENTATION DEVELOPMENT

This section contains two subsections - content development and slide development, or what information to include and how to organize it.

A. Content Development

Shoot an arrow, not a shotgun
An arrow focuses in one direction, while a shotgun disperses in all directions. When most people give presentations, they try to tell the audience everything they did rather than only the small portion that is relevant to the current topic. To avoid this problem, it is helpful to develop one brief sentence to describe the purpose or objective of the presentation, and to make an "Objective" slide with this sentence on it. Then, ask yourself how each slide in the presentation relates to this objective. If a slide is not directly related to the objective, remove it, even if the slide presents work that took you months to complete. As one professor put it, "Do less! Do it very well! Leave the audience with one gem of wisdom, wanting for more."

Use pictures instead of words wherever possible
Pictures (i.e., graphs, tables, and figures) are much more descriptive than words and allow you to express more ideas with a single slide. Pictures are also easier to understand than lots of words on a slide. Consequently, when developing your presentation, first develop the pictures that tell the story you want to tell. Then write the text of the presentation based on these pictures. This approach will help you to develop a presentation that flows well and is highly visual rather than word-based.

When you must use words, use as few words as possible
Whenever you put lots of words on a slide, the audience will read the words rather than listen to what you are saying. Consequently, if you want the audience to listen to you, don't put lots of words on your slides. However, if you are going to read the words to your audience (e.g., an "Objective" slide), then the audience will read with you, which is desirable in this situation.

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Give enough background

Most presenters do not give enough background to the audience so that their work can be appreciated in context. In general the audience will be interested to know why the problem you tackled deserves attention, what else has been done in the field, and how your work fits into the larger context. As a rule of thumb, at least 20% of your presentation time should be spent on background.

Put the cookies on the bottom shelf

If you had to present your research to a group of children and then to a group of engineering professors, you would not use the same presentation for both audiences. Consequently, always assess the knowledge level of your audience prior to developing your presentation. Then make it your goal to put the cookies on the bottom shelf, that is, to make the information accessible to the least knowledgeable segment of your audience. If you are addressing a diverse audience, such as at a departmental seminar or job interview, then you will need to spend more time on general background, concepts, and terminology. In fact, you may want to spend as much as fifty percent of your time providing an overview of the field before discussing your contribution. In contrast, if you are addressing specialists in your field, such as at a technical conference, then you can spend more time on your specific contribution as well as worry less about using unfamiliar technical concepts or jargon.

Know your material

In most technical presentations, the material presented is based on certain assumptions along with work developed by others. The audience will be left with a bad impression if you show that you do not fully understand the material you present. Statements like "Everybody makes these assumptions" or "This was done by a previous student and I don't know much about it" can undo the good impression made by the best of presentations.

Plan an opportunity to engage your audience

People of all ages learn best when they are active rather than passive participants in the learning process. For longer presentations, consider using audience involvement to capture their interest and maintain their attention. For example, ask members of the audience to raise their hands in response to a general question at the start of your presentation. This can be an effective tool for engaging their minds on the topic you plan to discuss. Be creative with this idea, but also be careful not to open up the opportunity for extended audience comments, since this can cut into your allowable presentation time.

B. Slide Development

Presentation format

Try to use the following format when organizing your presentation:
1) One "Title" slide containing the title of the presentation and the names of the co-investigators.
2) One "Background" slide explaining the problem you are going to address.
3) One "Objective" slide giving the objective of your presentation in one brief sentence.
4) For longer presentations (e.g., 45 minutes), one "Overview" slide giving the outline or overview of your presentation. Try to customize this slide to your presentation rather than use generic headings (like Introduction, Analysis, Results, and Conclusions)
5) As many "Body" slides as necessary (approximately 1 per minute) giving the main body of the presentation.
6) For longer presentations with several sections (e.g., your Ph.D. dissertation defense), add a "Section" slide (similar to the "Overview" slide) at the start of each section to remind the audience where you

are in the outline. This slide can be a duplicate of your Overview slide with the upcoming section highlighted or in bold.

7) One "Conclusion" slide explaining your primary conclusions, either at the end of the presentation for short presentations (e.g., 10 to 15 minutes) or at the end of each section for long presentations (along with a general conclusion at the end).

8) One "Acknowledgments" slide to acknowledge your funding sources and any individuals who provided significant assistance (e.g., a researcher who provided data to use for your project).

Orient all slides in the same direction (i.e., wide or tall)
It is more professional looking and aesthetically pleasing to have all slides oriented the same way.

Leave plenty of empty space around the borders of each slide
This also makes the slide more professional-looking and aesthetically pleasing.

Use approximately 1 slide per minute
Thus, if you have to give a 10 minute presentation (typical of many conferences), try to limit yourself to approximately 10 slides. This is extremely hard to do for short presentations, where the tendency is to use many slides and talk quickly. However, if you limit yourself to 1 slide per minute, your presentation will be much clearer and easier to follow.

Discuss everything you put on a slide
It is tempting to flash slides with complicated equations past your audience without discussing the details. Another temptation is to "lace" your slides with complicated equations that again are not covered. While presenters often think that such slides will impress the audience, in reality they leave a bad impression. As a rule of thumb, if you choose to put something on a slide, make sure you discuss it!

Customize figures and tables from papers rather than use them as they are
Another temptation is to copy figures and tables from your papers directly to your slides. However, this is usually a mistake. The lettering on figures needs to be bigger in a slide, and you can use color instead of symbols to distinguish between curves on a graph. Entries in tables usually need fewer digits than you use in a paper, and you should avoid showing too many numbers. Try to have no more than 150 digits total in a table slide.

Put a brief title at the top of each slide
The title should use as few words as possible and give the general idea of the entire slide. Put the title in the same place on each slide to provide continuity. It is also helpful to have some way of setting the title apart from the rest of the slide (e.g., a bar under the title).

Capitalize all letters only in titles (if at all)
Words in all capitalized letters are harder to read than words with only the first letter capitalized (e.g., "THIS PHRASE" is harder to read than "This Phrase"). Also, all capitalized letters are less aesthetically pleasing in the text of a slide.

Always use large-sized letters
Small-sized letters (i.e., less than 18 point size) are hard to read, even with slides. For a slide title, try to use at least 30 point size. Other words on the slide should not be smaller than 24 point size (if possible). For plots and graphs, numbers and words should not be smaller than 18 point size (if possible). One

useful rule of thumb is that you should be able to read your transparencies standing up if you dropped them on the floor.

Use equations sparingly
It is difficult to explain complex equations in the one minute that you have per slide. Consequently, unless the main topic of your presentation is some clever way to manipulate equations, use equations sparingly. Instead, try to convey the main ideas behind the equations using figures or a combination of figures and very basic equations. For a presentation, the details of the equations are not that important.

Use color to highlight important items and make your slides more readable
Color can be an asset in a presentation. It can be used to call attention to important items on a slide, it can be used to enhance contrast between lines in a chart or rows in a table, and it can be used to make a slide more pleasing to the eye. However, color can seriously degrade the readability of text and pictures, especially when you find that the projector or computer used for the presentation distorts colors. Thus, color should be used as an accent rather than have everything in color. Also, color-blind individuals often cannot see laser pointers on slides with a white or light background, so a darker color background should be chosen if you intend to use a laser pointer.

Prepare extra slides to answer anticipated questions
Try to anticipate important questions someone might ask you about your presentation. Then prepare "Answer" slides that might be helpful to answer these questions. If the question is not directly related to your "Objective" sentence (see below), do not put the "Answer" slide in the main body of the presentation. Instead, put it after the "Conclusion" slide, where it will be ready in case you need it.

III. PRESENTATION DELIVERY

This section provides suggestions for the actual delivery of your presentation.

Eliminate audience distractions
Take all keys, change, and other noisy objects out of your pockets before you get up to give your presentation. If necessary, close doors and windows before beginning to minimize outside noise. Also make sure that your hands are not busy during the presentation (e.g., twiddling the pointer).

If you have an accent, train the audience to understand you well
If you know from experience that people sometimes have trouble understanding you because of your accent, do not immediately start with the content of your presentation. Instead, open with some general comments, like thanking the person who invited you, a joke, or an anecdote, to give the audience a chance to get used to your way of speaking. In addition, make sure that all the key words that are important to your presentation appear in your slides early so that the audience can hear how you pronounce them.

Do not assume familiarity with professional jargon
Professional jargon, acronyms, and symbols have probably become an integral part of your thinking, but individuals in the audience may not know them. Furthermore, defining these terms in an early slide does not mean that everybody will remember them 30 minutes later. Consequently, remind the audience of the definition of these terms, acronyms, or symbols periodically while explaining subsequent slides.

Speak to the audience, not to the screen
When using an overhead, place the viewgraph down, step back to the side of the projection screen, and speak to the audience while looking at them. Unless you are pointing to an item on the screen, you should always face the audience rather than the screen. Many presenters make the mistake of giving their presentation to the screen rather than the audience!

Beware of these minor delivery issues
- Locate a clock on the wall, or place a small wrist watch on the podium, so that you can keep track of time during your presentation.
- If you have a gap in your presentation with no slide or viewgraph, insert a black slide (just put black electrical tape over an old slide) or turn off the overhead projector. Never leave the screen illuminated when no slide or viewgraph is being shown.
- Project your voice in a loud and clear manner. Do not rush.
- When showing data, inform the audience what the plot represents (e.g., contact stress as a function of flexion angle). Then point out what is on the x-axis (e.g., flexion angle), what is on the y-axis (e.g., contact stress), and what each curve on the graph represents (e.g., the solid curve is the medial side, while the dashed curve is the lateral side). Also trace out the curves with a pointer while you are explaining what they are.
- Use the word "we" accurately. It is critically important to be clear about what work was your own and what work was that of you plus your co-investigators. This applies to written reports as well as oral presentations. In general, the "royal we" is overused and the more frank "I" is preferred when that is what you mean.

IV. CONCLUSION

Congratulations! Having read this entire document, you are now ready to begin practicing giving presentations and critiquing presentations given by others. This document presents a large number of ideas, and you will not remember all of them right from the start. It takes practice to learn how to develop and deliver effective presentations. So start putting these ideas into practice, and you will be surprised at how quickly your presentation skills improve.

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