ORAL PRESENTATION OF TERM RESEARCH PROJECTS

This memorandum provides both general and specific guidelines for the oral presentation of term research projects. These guidelines are applicable as well to essentially any form technical or scientific communication, ranging from very brief interactions through extensive presentations.

The reason for emphasis on this aspect of the course is the considerable importance in scientific and engineering careers of one's capability to make clear, concise, interesting, and in some cases inspiring presentations to a wide variety of audiences. These audiences are most often friendly in the sense that they are anxious to hear what you have to say (for example, when you present an invited paper at a scientific or technical conference), are sometimes neutral (for example, when you present a contributed paper at a scientific or technical conference), and are sometimes negative or even adversarial (for example, when you present research proposals to research review committees, or even to your own management when cost-cutting measures are being considered). As with most human endeavors, practice under realistic conditions is by far the most effective means to attain proficiency.

1. Time Limitations

Due to the number of students in the class, we must strictly adhere to certain temporal constraints. As discussed in class and stated in the Course Summary, you should design your presentations for approximately twenty minutes, with ten additional minutes reserved for questions from the audience. You will be prompted when eighteen minutes have elapsed, at which time you should complete your presentation expeditiously. At twenty two minutes, you will be asked to stop if you have not already done so.

In order to adhere to these time constraints, you will find it of great value to practice your presentation ahead of time. This practice should be accomplished under as realistic conditions as possible, including the use of the viewgraph projector and the involvement of an audience (even if it is only one other person). A second person that you trust can help tremendously by timing not only the length of your presentation, but also the intervals used by you to explain each slide. One often finds to their surprise that the average viewgraph takes a minute or so to explain, but that three viewgraphs, for example, took seven minutes each. This is an immediate clue that you had considerable difficulty explaining these particular viewgraphs, and may imply that you should either rehearse these individually to find a clear and concise way of explaining them, or redo the viewgraphs to make it easier for you to explain them, or eliminate them from the presentation as too complicated relative to the value they add to your talk. You will find that your first "version" will probably take about forty minutes, your second about twenty five, and your third will be just about
right. The only way you can develop some sense of timing while you are involved in making a presentation is to try it out first.

2. Format

The preferred format for your presentation will involve the use of viewgraphs or overhead transparencies. Of the available options, these are the optimum choice from the point of view of expense, ease of preparation, and maximum similarity to standards of presentation in industry and universities. (Digital projectors are now widely available, of course, but issues of compatibility with multiple types of laptops as well as different graphics applications, and long setup times with plug compatibility issues tend to make them inappropriate for a project of this type. If you wish to present digitally, and for example prefer to show a simulation as a video sequence that can’t be accommodated by viewgraphs, let me know and we’ll see what can be worked out.) These transparencies can be either formatted on word processors, typed, or hand written. Viewgraph materials are available both for hand writing and drawing with special pens, and for use with originals in standard copying machines.

You may use the blackboard if you wish, but I think you’ll find it difficult to fit in as much information as you’d like if you have to write it all out during the allotted twenty minutes. Another option is to make a series of posters that can be used as visual aids, but they should be easily visible from about the third row back if you choose to employ them.

As you prepare the materials you will use in your presentation, it is important to pay attention to legibility, size of font employed, clarity of labeling (particularly with diagrams and plots), and the particular choice of presentation format. With regard to the latter point, you will find it much easier to make a presentation if you design your visual aids to focus on the proper points and their sequence, deleting unnecessary and/or redundant material. In this way, your visual aids will act as prompts for you to say the right things at the right time, and in a logical order. In many ways, optimum visual aids are designed to be useful to the one making the presentation moreso than to the audience. If the former is true, the latter usually follows directly.

3. Content

For a presentation of this type, there are three absolutely essential sections that must be incorporated in the presentation if it is to be successful in conveying your message to the audience. These three sections include the introduction, the body, and the summary.

Introduction: In the introduction, you must give a clear and concise statement of your chosen topic, and of the particular problem(s) you proposed to investigate. Be as specific as possible in defining the formulation of the problem, its assumptions, and its limitations.
Body: First present an outline of your proposed approach or method of investigation. Then identify the key steps you made along the road to completing your inquiry or solving the problem. You must avoid the temptation to provide a line-by-line description of the derivation, or you will both run out of time and bore people to death. In particular, describe any changes in problem formulation that were necessitated or made desirable by the course of your investigation. Next provide a careful description of your principal results, which involves several choices regarding how you present this information (for example, as a final equation, as a sequence of graphs, as a set of photographs or drawings, as a formulation of theorems or corollaries, etc.). Finally, discuss the implications of your results. What is valuable, unusual, or significant about your results? Are the conclusions generally applicable, or confined to specific cases? Are the results physically realizable, or do you conclude that the statement of the problem yields unphysical answers?

Summary: Restate your key conclusions in clear terms, and describe future research directions that have occurred to you that are of considerable interest to you but perhaps beyond the scope of the problem you defined.

In all of the above, the overriding consideration is that the presentation tell a story. Stories have a beginning, a middle, and an end. No one ever appreciates hearing the punch line first in a joke, or finding out “who did it” in a suspense novel before the plot has been well-developed. So particular attention should always be paid to order, both overall throughout the presentation as well as within a given section of the talk.

4. Presentation Tips

Spend time on our presentation materials: good viewgraphs usually make for interesting and well received presentations.

When you place the viewgraphs on the viewgraph projector, do so carefully so that the viewgraphs are centered on the screen and aligned properly. The best technique is to align the first few by looking at the screen while moving the viewgraph with your hand, then noting the alignment on the projector that yields the optimum position and alignment on the screen.

After you place a viewgraph on the projector, step back to the screen and use a pointer to indicate those points that you are speaking about. In this way, you won’t block the audience’s view of the screen, particularly in small auditoriums or in small conference rooms.

When you practice, have someone listen to you the first few times, and have them record the elapsed time every time you change viewgraphs. If you are significantly over your time allotment, this will allow you to quickly assess where in the talk you are spending too much time. You may choose to eliminate several viewgraphs, rewrite several, or just be careful to address only certain points on each.
When you are finished practicing, try to have firmly in your mind the spatial flow particular to each viewgraph. By this I mean that you should be able to glance at any viewgraph in your presentation and immediately “see” the order in which you will point to each part, and know the type of remark you intend to make about each. The spatial flow of your talk is critical to the achievement of clarity within a tight time budget, and will also lead to considerable confidence when you have the flow committed to memory.

Try to use a viewgraph to start out your presentation in an interesting way, so you don’t get stuck standing there in front of the audience for two minutes introducing your talk. You’ll find that if you spend extra time practicing your entry into the presentation (i.e. the first minute or so), the rest of the talk will flow automatically and you won’t have time to be nervous.

Choose one comfortable place to stand and stay there. Try not to roam around the platform, as it’s very distracting to the audience.

If you normally use your hands or make gestures as you speak, go ahead and do so in presentations. They make the presentation more interesting, as well as more personal.

Optical pointers are wonderful, but they can be weapons when placed in careless hands! Use the optical pointer to do just that: point to a specific region of a viewgraph, usually at the center of a diagram or object you are referring to, or the beginning of a specific bullet or line of text. Try to resist the impulse to circle the region of interest with the beam, as biologically the audience’s visual systems will all track a moving object, and will be physically incapable of looking at exactly what you intend them to look at! And for heaven’s sakes don’t use the “blinking” feature available on some optical pointers, as this is sure to irritate everyone in the audience after about one minute of watching that little flashing light!

Be enthusiastic! You’ve spent a lot of time and effort on these projects, and you want everyone to appreciate the value of your results. If you believe they’re lousy, everyone else will believe you!

Good luck!