

ECE 745 - Advanced Communication Theory, Spring 2007

Project Guidelines (Proposal due 3/30/07)

The project portion of ECE 745 is intended to reinforce concepts from class by allowing each student an in-depth look at an area of communication theory. I encourage you to interact with me often in the next month to help define your project area.

Guidelines for the Project

- All projects will be done individually unless you can present **compelling** evidence to me why you should team up with somebody else on this project.
- Your final report should be typed one-and-a-half spaced with no less than 11 point pitch, and it should be **no more than** ten pages in length. Each report should follow the format of general professional papers: abstract, introduction, main section or sections, and conclusions. References to related work should be included at the end of the report. Although technical work on the level of a conference paper is certainly not expected, the report should have the same look and feel as a **well-written** conference paper.
- You will be expected to give an oral presentation. As in a typical professional conferences, the presentations will be time-limited to 15 or 20 minutes. Spend time carefully explaining your problem, your solution or exploration of the problem, and presenting *graphical* results which can be intuitively explained to the audience. A simple example goes a long way toward audience understanding.

Selecting a Topic

I encourage each student to choose something related to their graduate research. If this does not seem feasible, there are almost unlimited possibilities that can be discovered by browsing through just a few technical journals. I will aid in topic selection as much as possible, but the burden of finding a good topic lies with the student.

There are generally two types of class projects which are successful:

- Paper Extension. Application of ideas from class to extend a paper in the literature. This consists of finding a (journal) paper where they have left open some problem in communications. For example, one might look at information theoretic comparison of two receivers based on the induced system capacity rather than a probability of error comparison as has been considered previously.
- Paper(s) Review. Find an important paper in the literature and review the paper. Are the assumptions made in the paper good and how could they be improved? What is the significant contribution of the paper? What open problems, either stated or unstated, does the paper leave? What would be the next logical step in generalizing, extending, or validating the results developed?

The last option should **not** be viewed as a lighter workload, but instead perhaps a simpler problem definition.

Project Proposals

Project proposals are due to me March 30. The format of the proposal is left open to you; however, you should attempt to outline in as much detail as possible the proposed project. Why is the project important? How does the project relate to the course? How will you approach the project? What results do you expect to be able to obtain in the short time period of this academic semester?