Additional Capstone Requirements for Engineering Physics Majors!

Introduction: ABET (Accreditation Board for Engineering and Technology) requires that the capstone project for an engineering major incorporates "realistic constraints that include most of the following 8 considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political."

In recent years, nearly every Engineering Physics capstone project has been experimental research performed in a faculty member's research laboratory. These projects have usually focused on issues that are less immediately applicable to commercial application than issues usually addressed by traditional engineers. This is why the presence of the 8 considerations might not be obvious to ABET reviewers. Therefore, it becomes our responsibility to document the presence of many (at least 4) of these considerations in each capstone project.

Requirements: (1) Your capstone report must include an Appendix (see attached form) that addresses the 8 considerations. If you decide that a particular consideration is not relevant, an explanation must be included. (2) At least one viewgraph in your talk must explicitly address a relevant subset of the 8 considerations. **Meeting these two requirements is necessary for satisfactory completion of the capstone course.**

Helpful Hints: Here are some hints that you might find useful. Please talk to your capstone advisor or me (Dr. Johnson) if you want more advice.

- Safety issues are very important in any laboratory experiment. Many capstone projects involve the use of high-power lasers, high-voltage power supplies, liquid cryogens, x-rays, or hazardous chemicals. Students demonstrate the ability to use these resources, after some initial training in their safe use. Consider discussing the safety considerations that may be an integral part of your project.

- Ethical considerations are also important for laboratory experiments. You have studied the application of ethics in a research environment during junior lab and during the capstone class. Consider discussing your application of these ethical standards in the treatment of your data.

- Since almost all projects are motivated by potential technological applications, some of the remaining considerations (economic, environmental, sustainability, and manufacturability especially) are relevant in most projects. Consider discussing how some of these considerations would apply to the commercialization of that potential application.

- Less often, a project may involve social or political considerations. If you can think something, consider including it in your report.

Appendix: The Eight Considerations

Please summarize the relevance of the following considerations to your capstone project. If you decide that a particular consideration is not relevant, an explanation must be included. Use additional space if needed.

Economic:
Environmental:
Sustainability:

Manufacturability:
Ethical:
Health and Safety:

Social:
Political: