Preparation of Your NSF CAREER Grant

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February 22, 2011
Project Summary

A Five Year Overview in One Page
Research (and Education) Summary

- Present your goals, objectives, and research questions.
- Present information about methods that will be used to conduct your research.
- Mention your targeted populations and partners by name or institution.
- Write about what makes your work different from anything that has ever been funded.
- Write in a way that experts outside of your area understand the scope and the potential impact of your work.
- Be concise.
Intellectual Merit

- Addresses...
  - how your work is innovative and adds value to current knowledge in your field and in other fields
  - how your work eliminates knowledge gaps related to the topic
  - how your work is potentially groundbreaking
- Confirms...
  - your credibility and your ability to conduct the proposed work
  - the feasibility of your work given identified resources
- Displays...
  - clarity about the scope of your work and the organization of your proposal
Contributing to the limited body of knowledge within graduate engineering education, research findings will engage engineers within academia and industry in conversations about skills that will be necessary for engineering Ph.D. graduates whose careers will span 40+ years. In addition, a valid and reliable assessment tool that identifies Ph.D. students’ embodiment of these attributes and skills will be created and may be implemented in institutions beyond the current sample. Within this study, data collected with this quantitative tool will be used to identify current professional development practices that are likely to enhance or impede engineering doctoral students’ abilities to embrace the norms, skills, and attributes of the engineering profession. Educational modules reflecting research findings and representing learning science and educational design principles will be implemented to make students cognizant of issues facing doctoral engineering education. Students will also engage in professional development reflections during module implementation.

From Monica Cox’s CAREER Proposal

This work was supported primarily by the National Science Foundation under grant #0747803.
Broader Impact

Addresses...

◦ how your work can impact positively multiple stakeholders (particularly women and minorities)
◦ how your technical research adds value to current educational innovations and initiatives
◦ how your work will enhance current facilities, instrumentation, networks, and partnerships
◦ how others will learn and benefit from your work inside and outside of academia
This research engages a variety of stakeholders, including underrepresented populations, in an empirical study of doctoral engineering education. It also provides a foundation for future national studies of graduate education involving a variety of institutions and diverse populations across multiple educational levels. Potential benefits to society as a result of this research may include a purposefully trained engineering workforce; future faculty who are knowledgeable of opportunities within academic and nonacademic jobs; STEM policies that are funded based upon the empirical findings of this research; and increased public understanding of the roles of engineers via dissemination of results in lay press publications.
Narrative:
A Compelling Story that Must Be Told *and* Funded
The Basics

- You must tell your story in 15 pages.
  - *Tip:* Use all of these pages to tell the story!

- Present your prior NSF results in the body of your proposal.
  - *Tip:* Reference your work and write how your prior work connects to the proposed work.
  - *Tip:* This proposal is not the place to downplay your work.

- Include the intellectual merit and broader impacts in the narrative and possibly expand what you wrote in the project summary.
  - *Tip:* Look at the NSF intellectual merit and broader impacts questions. Read each question, answer each question related to your work, and write your sections from here.

- Read other funded CAREER proposals even if they are not in your area.
  - *Tip:* As you read, you will identify styles of writing that appeal to you and will help you to tell your story. The more you read, the more ideas you obtain.
The Basics

- **Read, read, and read some more!**
  - *Tip:* Conduct cited reference searches to make sure that you have explored the most current references in your area to date. Review literature in complementary disciplines to obtain innovative ideas, to expand your ideas about methods and processes, and to identify how your work fills a critical gap across disciplines.

- **Identify what you can do reasonably within the five-year project.**

- **Connect with others who can help you to complete the work that you are proposing.**
  - *Tip:* Consider creating an Advisory Board representing expertise in the educational area in which you will engage, in your technical area, and in other areas in which you might need guidance to complete your work successfully.

- **Use appropriate education resources and references.**
  - *Tip:* Recall that educational references are needed for the activities that you want to conduct. Identify the correct resources and use them properly.

- **Contact your NSF program officer!**
My Process

Methodology

Connect to graduate education and faculty

Develop quantitative instruments

Include underrepresented populations at all levels

Inform multiple communities about the research

Make a real difference via both the research and the education components of the project

Broader Impact
Budget:

Money that is Well Spent
Key Points in Creating a Budget

- Include funds for educational resources and evaluation in your budget.
- Contact administration at your university to request university resources for student funding and other items.
- Do not propose more work than you have money to fund within your budget.
- Write a thorough, year by year budget justification. The more details the better!
- Contact your program officer if you have questions about what can and cannot be funded via CAREER.
Before You Submit...

- Does your proposal reflect the passion that you feel for your research?
- Can you conduct this research for 5 years?
- Did you integrate your research and education plans?
- Can a relative or nonexpert understand what you are proposing?
- Did you convince your reader why this research is important?
- Did you edit for typos and other editing errors?