National Science Foundation
Division of Undergraduate Education (DUE)

National Science Foundation Proposal Writing Workshop

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Workshop Outline

- Merit Review Criteria Review
  - Intellectual Merit
  - Broader Impacts
- Mock Review
- Report Out and Debrief
- Q&A

NSF has TWO Merit Review Criteria

- **Intellectual Merit**
  - What will we learn?
  - How will it advance knowledge?

- **Broader Impacts**
  - What will the impact be on society?
  - How will it make the nation a better place?

Educationally-focused projects often have a hard time disentangling these, but you need to separate them out in your proposal.

Elements of the Merit Review Criteria

1) What is the potential for the proposed activity to make a difference?
   - **IM:** By **advancing knowledge and understanding** within its own field or across different fields; and
   - **BI:** By **benefitting society** or advancing desired societal outcomes?
2) To what extent do the proposed activities suggest and explore **creative, original, or potentially transformative** concepts?
3) Is the **plan** for carrying out the proposed activities well-reasoned, well organized, and based on a sound rationale? Does the plan incorporate a **mechanism to assess success**?
4) How **qualified** is the individual, team, or institution to conduct the proposed activities?
5) Are there **adequate resources** available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

Typical Format of a Review

- General summary of project (2-3 sentences)
- Intellectual merit
  - Strengths
  - Weaknesses/concerns
- Broader impacts
  - Strengths
  - Weaknesses/concerns
- Summary statement (2-3 sentences)

Rating the Proposal

- Excellent
- Very Good
- Good

Fund, if possible

- Fair
- Poor

Do Not Fund

ATE Program Overview

1) ATE Focuses on the education of technicians to meet workforce demands in existing and emerging advanced technological fields.
2) Colleges that award two-year degrees and their faculty must play leadership role on all projects.
3) Requires partnerships between two-year colleges and business and industry, along with secondary schools, four-year colleges and universities, and government, as appropriate.
4) Must respond to the hiring needs of for highly-skills technical workforce in the service area of the proposing institution(s).
5) Must address sustainability.
6) Read the program solicitation for more detailed information.

Notes on Project Evaluation

- Evaluation monitors the progress of the project.
- It must be done by a *disinterested* third party.
- Characteristics of a good evaluation include:
  - Integrated with milestones
  - Done annually (formative evaluation)
  - Contains realistic milestones
  - Done at the end of the project (summative)
- Should consume 5-10% of the budget
- The evaluator should provide an annual report that is attached to the annual report the PI sends to the NSF.

Think, Pair, Share

- **Think** by yourself for 45 min
  - Read the proposal, write down *your individual* IM & BI strengths and weaknesses, give the proposal a rating.
- **Pair** with your panel for 30 min
  - Discuss the proposal, write down *your collective* IM & BI strengths and weaknesses, maybe modify your rating.
- **Share** with everyone for 30 min

Summary of a Review Structure

- General summary of project (2-3 sentences)
- Intellectual merit
  - Strengths
  - Weaknesses
- Broader impacts
  - Strengths
  - Weaknesses
- Summary statement
- Overall Rating

Intellectual Merit Debrief

- What will we learn?
- How will it advance knowledge?

➢ Strengths

➢ Weaknesses

Broader Impacts Debrief

- What will the impact be on society?
- How will it make the nation a better place?

➢ Strengths

➢ Weaknesses

What did the Panel say?

- ATE 1501735 E, 3V, G

Strengths:

- the plan to increase enrollment of students in a program that deals with some of the latest energy generation technologies (electrical, hybrid and fuel-cell based technologies) related to transportation. The content of the proposed workshop will build upon the work already done by the Weld-Ed Center.
- RHCC may be a leader in educating students in the technologies to service not only the cars but the refueling stations as well. Many industry and educational partners are apparent in this project.
- Partnering with Macomb Community College in Michigan, the only NSF funded hybrid/electric automotive technology program.
- The PI and the Co-PI are qualified and experienced.

What did the Panel say?

Weaknesses:

- Very ambitious plan, will the PI be able to complete the project in the time requested?
- Is it the intention of this project to create an entire technician degree program dealing with electrical, hybrid, and fuel cell technologies separate and apart from vehicular applications or expand on the existing one course they have in the general program? Unclear in proposal.
- The proposal is poorly written and disorganized, calling into question the PI's ability to keep the project on track.
- Veterans will be targeted, the proposed project does not have a recruitment or retention plan for other underserved populations.
- Not enough justifications are presented to back up the claim that the proposed plan is improving the current situation and there will be more trainees to enter the workforce.

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What did the Program Officer want to know?

- Provide information on the existing program. What are current enrollments in this program? Are you attempting to increase enrollment in this program or develop a new program?
- If a new program is developed, what is the timeline for approval?
- Are you intending to add STEM content to all of the existing and new courses?
- How will a DACUM process be used for curriculum development?
- It is recommended that you develop a plan to recruit women and underrepresented minorities as well as the traditional student.
- How do you propose to recruit and retain Veterans?
- What universities would be involved in the articulated pathways that you describe?
- What is your local dissemination plan?
- Suggest you increase the project time to 36 months.
- IRB and budget negotiations

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Writing a Proposal: Getting Started

- Start EARLY
- Get acquainted with FASTLANE
- Read the Program Solicitation and follow the guidelines.
  Read the Grant Proposal Guide (GPG)
  - Learn about the recent DUE awards using the NSF Award Search tool
  - Become an NSF reviewer
  - Contact (e-mail is best) a program officer to discuss your idea. This may cause you to refine your idea and may prevent you from applying to the wrong program
  - Program Officers in DUE: Check the solicitations for names and contact information

Key Questions for the Prospective PI

- Why is the work important (need)? AND What has already been done?
- What do you intend to do?
- How are you going to do the work?
  - Do you have a qualified team?
  - Do you have the necessary infrastructure?
- How will you know if you are successful?
- How will you tell others about the project outcomes?

Compliance Check

- Hurdle #1:
  - Do you specifically address intellectual merit and broader impacts in the project summary? (now have boxes to fill out)
  - Number of pages, formatting, font size
  - Completeness
    - READ the Program Solicitation and Grant Proposal Guide (new guidelines!)
    - Data management plan, enforcement of submission deadline
    - Automated compliance checks in effect including time of submission (5:01pm gets RWR).

Merit Review

- Hurdle #2 (Mail and Panel Reviews)
  - Convince a panel of your peers that there is a need and it's a good idea, you and your team are the appropriate people to do it, you have the necessary infrastructure, and your goals and objectives are tied to evaluative activities

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In Conclusion

Read the solicitation!

Read the *GPG!*

Read the solicitation!

Read the *PAPPG!*

THANKS FOR COMING!