

Writing an Engineering Education Proposal for the National Science Foundation: An Interactive Workshop

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Abstract— The goals of this workshop are to increase the community’s knowledge of current funding opportunities at the National Science Foundation (NSF) and to support projects with potential significant impacts on engineering education. This workshop gives new and experienced principal investigators the opportunity to interact with program directors from the Division of Engineering Education & Centers (EEC) in the Directorate of Engineering and the Division of Undergraduate Education (DUE) in the Directorate of Education and Human Resources (EHR). Participants will learn about new and current funding opportunities in a highly interactive format (i.e., team-based activities and discussion).

Keywords— funding opportunities; engineering education; National Science Foundation

I. INTRODUCTION

This workshop is based on our popular 2017 workshop, and includes improvement suggested by past participants. While providing highlights of funding opportunities for both the Division of Engineering Education & Centers (EEC) in the Directorate of Engineering and the Division of Undergraduate Education (DUE) in the Directorate of Education and Human Resources (EHR), the session will focus primarily on proposal preparation for the EEC Division.

II. SESSION TOPICS

The intended audience for the session includes those eligible to submit proposals to NSF and other project stakeholders, such as:

- 2-year and 4-year college and university faculty members in STEM and STEM education
- 2-year and 4-year college and university administrators
- STEM industry representatives
- Institutional, educational, discipline-based educational, and social / behavioral science researchers.

III. AGENDA

The tentative session agenda consists of interactive individual and small group activities.

A. NSF Funding (30-45min)

We will facilitate small and large groups discussions using the prompt, “What does NSF funding mean to you?” and will use participants’ creative depictions of their perceptions about topics such as understanding program descriptions/solicitations, interacting with NSF program directors, proposal writing or submission, the review process, and being notified about the reviews for proposal to spark discussion.

B. Program Overviews (20 min)

EEC and EHR program directors will spend a total of 20 minutes giving program overviews of the following programs: Research in the Formation of Engineers (RFE), Broadening Participation in Engineering (BPE), Research Initiation in Engineering Formation (PFE:RIEF), Faculty Early Career Development Program (CAREER), Improving Undergraduate Stem Education (IUSE:EHR), Advanced Technological

Education Program (ATE), NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)

C. Proposal Writing (30 min)

Each small group will discuss one of the following topics, and will report out to the large group.

- a) Contacting and interacting with program officers
- b) Timeline for proposal development
- c) Pitfalls & mistakes in writing and submitting proposals to NSF
- d) Effective strategies for writing and submitting proposals to NSF
- e) Thinking like a reviewer

D. Elements of an Engineering Education Proposal (20-30 min)

Mini-activities (e.g. think-pair-share) will be embedded throughout this mini-presentation.

E. Breakouts with Program Directors (45 min -1 hr)

Program directors will run concurrent breakout sessions about EEC funding and EHR funding opportunities. Breakouts will answer participant-generated questions.

IV. OUTCOMES

Participants will leave the session with increased knowledge of NSF program opportunities, and will have had time to discuss current opportunities with program directors. Participants will leave with answers to their questions and new or improved strategies for effective proposal writing.

V. FACILITATOR QUALIFICATIONS

Julie P. Martin is the program director for engineering education in the Engineering Education and Centers Division of the Engineering Directorate at NSF. Julie is an experienced facilitator, and will be joined by colleagues from the Education and Human Resources Directorate.

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