NSF Funding Opportunities

V. Celeste Carter
vccarter@nsf.gov
Division of Undergraduate Education
National Science Foundation
Arlington, VA

NSF at a Glance

$7.2 billion
FY 2014 Appropriations

24 percent
NSF's share of total federal support for basic research conducted at academic institutions

10,800
Competitive awards funded by NSF

22 percent
Funding rate of proposals submitted to NSF

50,000
Proposals evaluated through competitive merit review

233,000
Number of proposal reviews

36,500
Number of experts who participate in the merit review process

1,922
Colleges,
universities and other institutions in all U.S. states and territories that receive NSF funding

299,000
Number of people NSF supports directly (researchers, postdoctoral fellows, trainees, teachers and students)

200 plus
Number of Nobel Laureates supported by NSF

90 percent
Proportion of NSF funding allocated through grants and cooperative agreements

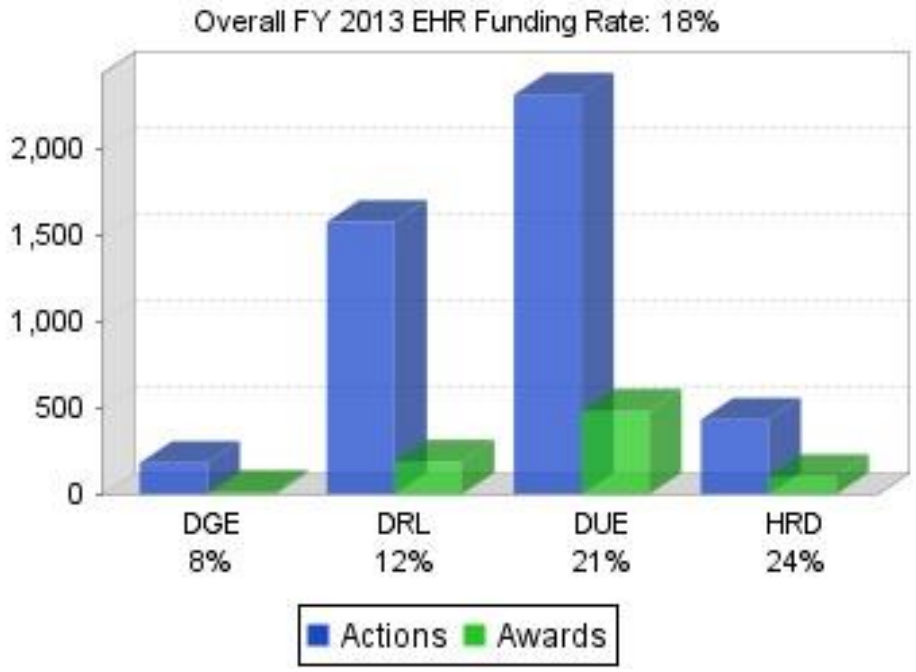
$169,107
Average annual size of NSF research grant

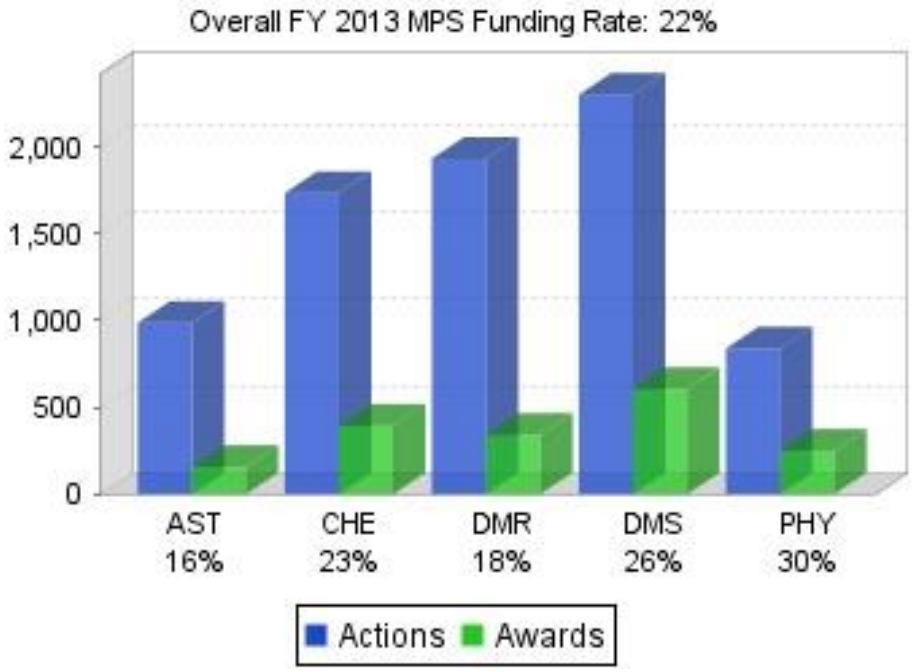
2.9 years
Average duration of NSF research grant

Figures represent FY 2013 actuals except where noted.

National Science Foundation
Division of Undergraduate Education (DUE)

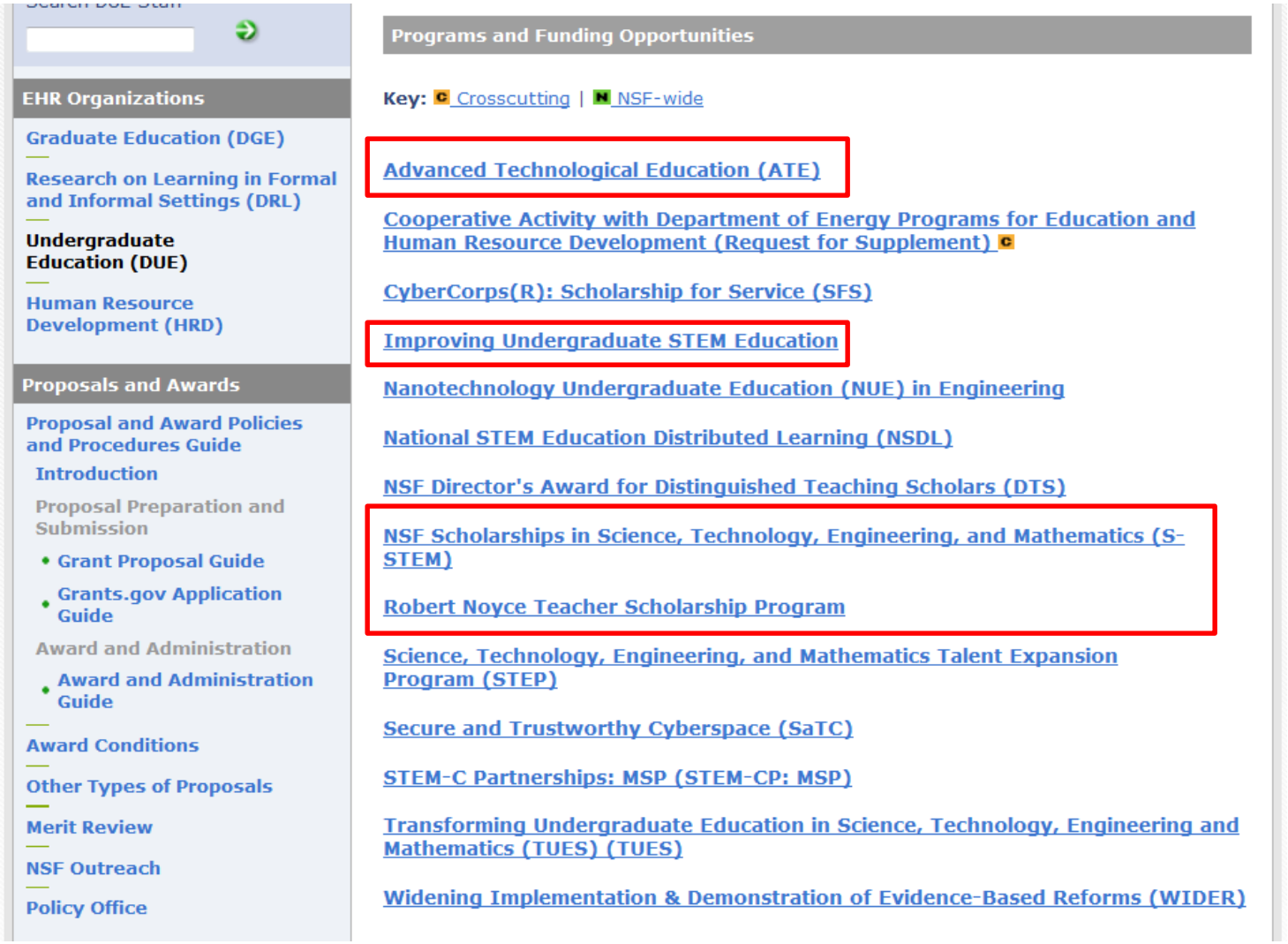
Fiscal Year 2013 Funding Rates





National Science Foundation
Division of Undergraduate Education (DUE)

http://nsf.gov/div/index.jsp?div=DUE



What Questions do you have?

National Science Foundation
Division of Undergraduate Education (DUE)

Advanced Technological Education (ATE) Program

- Focus: education of science and engineering technicians for high-technology fields that drive the nation's economy.
- ATE Projects, ATE Centers &Targeted Research on Technician Ed.
  - Funding from $150,000-$4 million over all 3 tracks
- Grades 7-12, two-year and four-year institutions (**Pathways**).
- **Community and technical colleges *must be* in leadership roles.**
- **Education / Industry Partnerships are a hallmark of ATE.**
- ***Proposal Deadline: October 8, 2015.***

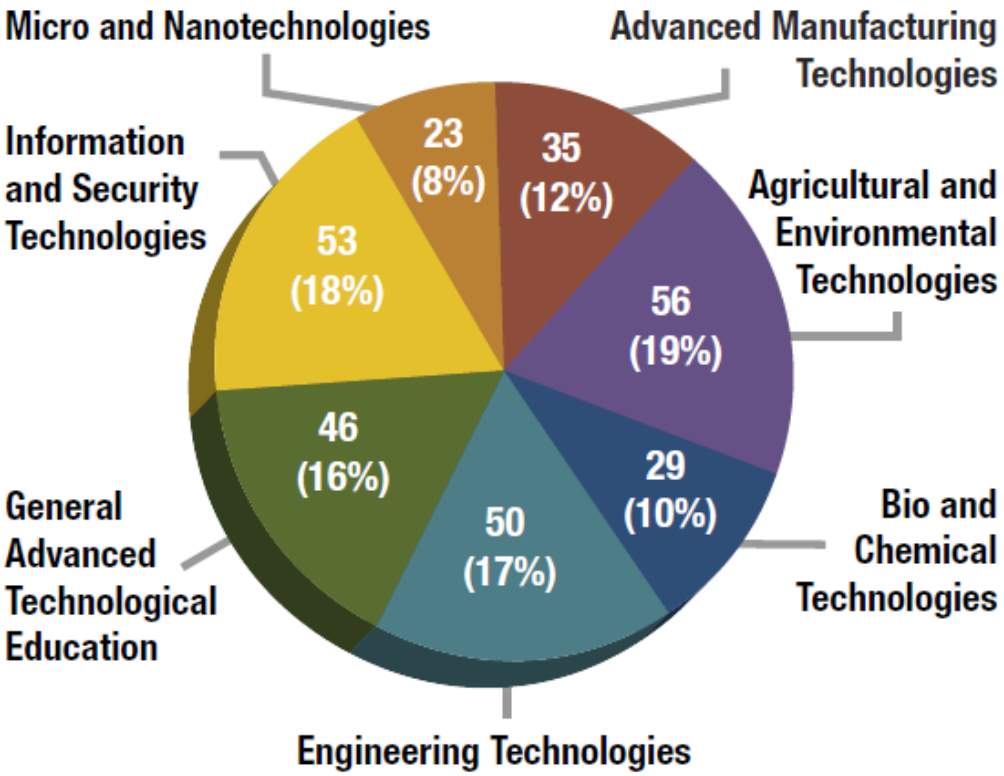
ATE Projects

- Projects: up to $300,000/yr for 3-yrs ($900,000 max. total)
- Small, New to ATE: up to $200,000 total over 2-3-yrs
  - Mentor Connect (www.mentorconnect.org)
- ATE Coordination Networks: up to $200,000/yr for 4-yrs

National Science Foundation
Division of Undergraduate Education (DUE)

ATE Investments

ATE Projects and Centers
292 Active Grants in Spring 2013



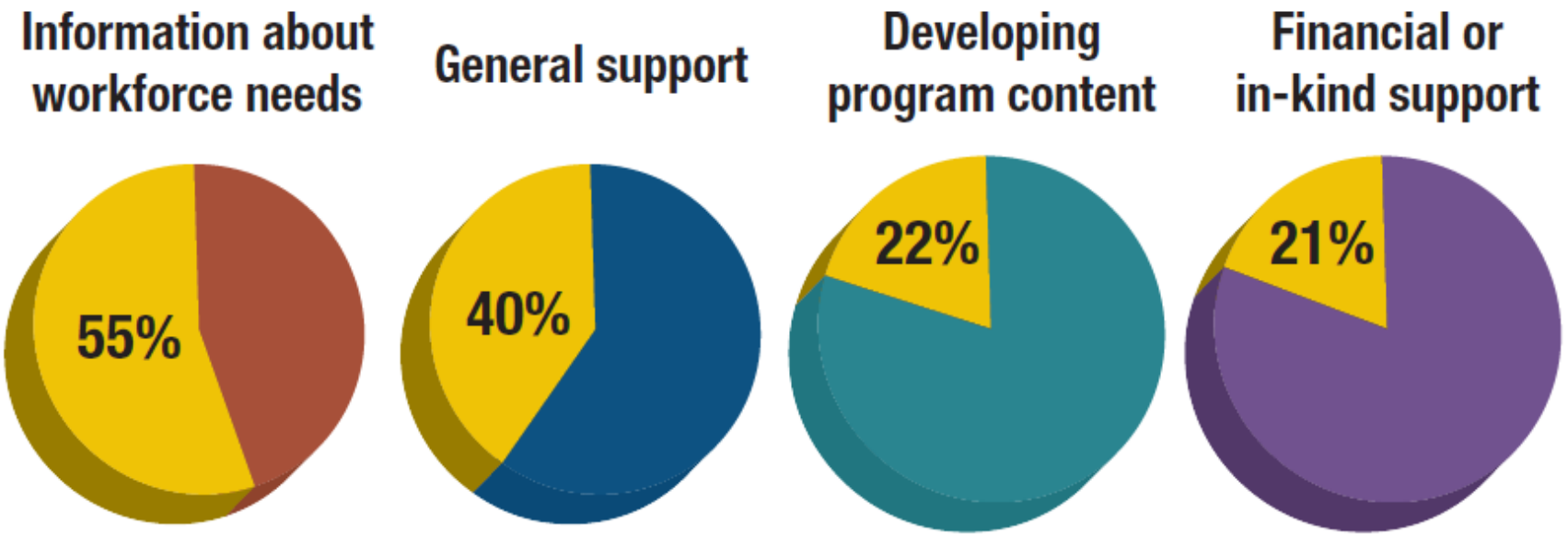
https://atecentral.net/ate20

National Science Foundation
Division of Undergraduate Education (DUE)

Academic-Industry Partnerships

8,000 Business & Industry Collaborations in 2012

Reported purposes of collaboration



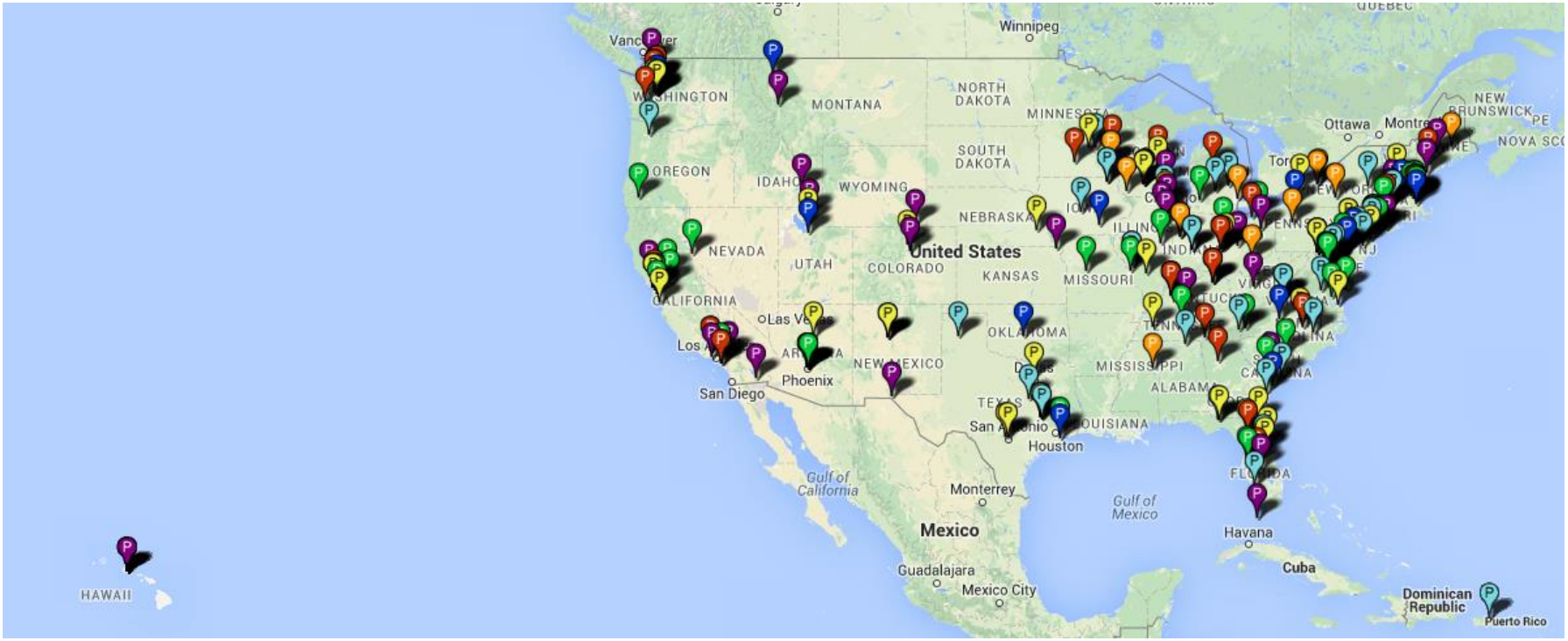
Percentage of respondents indicating collaboration served this purpose.

https://atecentral.net/ate20

Source: EvaluATE

National Science Foundation
Division of Undergraduate Education (DUE)

Active ATE Projects



https://atecentral.net/projects

National Science Foundation
Division of Undergraduate Education (DUE)

An ATE Project

Single-Use Bioreactor Systems Education and Training

Award ID DUE 1405766 PI: James DeKloe, Solano Community College

- PROJECT GOAL – To create curricular materials to address the single-use, disposable bioreactor gap in the national biotechnology curricula and expanding the biotechnology program at the college to incorporate this technology.
- PROJECT OBJECTIVES
  a. Develop educational units that can be inserted into courses that utilize single-use cell culture technology, including detailed content, learning objectives, teaching materials and instruction activities for the new units
  b. Support the implementation of the curriculum at the college and other institutions
  c. Host workshops to disseminate the curriculum
  d. Develop a web site hosting the model curriculum and other information generated from this project
  e. Disseminate through Bio-Link.

National Science Foundation
Division of Undergraduate Education (DUE)

An ATE Project

A Biomanufacturing Enterprise for Innovative Student Training & Entrepreneurship

Award ID DUE 1003292 PI: Mary Nelson, Salt Lake Community College

- PROJECT GOAL - To develop a faculty and industry mentored, student-run contract manufacturing organization known as STUDENTfacturED
- PROJECT OBJECTIVES
  a. Support students mastering competencies essential to biomanufacturing by preparing products that are needed by the community college biotechnology program, and neighboring high school biology and biotechnology programs.
  b. Students from biomanufacturing and the School of Business work together.

Questions about ATE?

National Science Foundation
Division of Undergraduate Education (DUE)

NSF Scholarships in STEM (S-STEM) Program

- Supports institutional scholarship programs for full-time, academically-talented students with financial need. Funds are provided through H1B visa fees.

- Strong proposals develop programs for cohorts of students that address local needs, and effectively mentor and support students to enable them to enter the STEM workforce or graduate school.

Proposal Deadline: Sept. 22, 2015

http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=5257&ods_key=nsf15581

S-STEM Strands

- Strand 1: S-STEM Institutional Capacity Building
  - $650,000 over 5-yr, 60% funds go to scholarships
  - work with offices of institutional research or researchers. Findings from these types of projects shall be used to improve local implementation of academic and student supports, provide an understanding of student success and inform any future proposals for S-STEM Design and Development Strand.
- Strand 2: S-STEM Design and Development
  - Single Institution, $1 million over 5-yr, 60% scholarships
  - Multi-Institutional Consortia, $5 million over 5-yr, 60% scholarships
    - 2-yr – 4-yr, or any combination in consortium

National Science Foundation
Division of Undergraduate Education (DUE)

Robert Noyce Teacher Scholarship Program

- Supports and encourages talented STEM undergraduates (and professionals) in pursuing teaching careers

  - ✓ Noyce Scholarship Track: supports institutional scholarships and programs for talented undergraduate STEM majors to become K-12 teachers who commit to teach in high-needs school districts

  - ✓ Capacity-Building Track: supports the establishment of infrastructure and partnerships for a future Noyce project

  - ✓ NSF Teaching Fellowship/Master Teaching Fellowship Track: supports STEM professionals enrolled in master's degree programs leading to teacher certification

- ***Proposal Deadline: August 4, 2015***

National Science Foundation
Division of Undergraduate Education (DUE)

IUSE Program [NSF 15-585]

http://www.nsf.gov/pubs/2015/nsf15585/nsf15585.pdf

IUSE emphasizes knowledge-based & knowledge-generating approaches.

Two program tracks

Engaged Student Learning

Two tiers

Exploration (Smaller Scope)

Up to $300k, 3 yrs.

Nov 3, 2015

Design and Implementation (Larger Scope)

Level I: Up to $600k, 3 yrs.
Level II: $601k to $2M, 5 yrs.

Jan. 13, 2016

Focus on design, development, implementation of and research on STEM learning models, approaches, and tools

Institutional and Community Transformation

Two tiers

Exploration (Smaller Scope)

Up to $300k, 3 yrs.

Nov 3, 2015

Design and Development (Larger Scope)

Up to $3M, 5 yrs.

Jan. 13, 2016

Focus on approaches to increase the propagation of highly effective methods of STEM teaching and learning

NSF-IUSE Goals

- use and build evidence about improved STEM instructional practices;
- design and study innovative learning opportunities, including cyberlearning;
- create, implement, and test program, curricular, course, and technology-driven models;
- develop, implement, and test creative approaches for adoption of education research into disciplinary teachings;
- develop and validate assessments/metrics for undergraduate STEM learning and instructional practice; and
- conduct fundamental research on issues of undergraduate STEM teaching and learning.

National Science Foundation
Division of Undergraduate Education (DUE)

RISE - Research-based Interdisciplinary STEM Education

Award ID DUE 1432018 PI: Kalyn Owens, North Seattle Community College

Collaborative Project between N. Seattle CC and Central Washington University

- PROJECT GOAL - To use undergraduate research and interdisciplinary experiences as vehicles to cultivate meaningful thinking opportunities in the first and second years of the college experience.

- PROJECT OBJECTIVES

  a. Provide progressive and innovative STEM curriculum that significantly improves preparation of diverse student populations for upper level courses and careers in science

  b. Establish the foundation for a Pacific Northwest Collaboration focused on excellence in STEM education at the community college level

  c. Make a significant contribution to the body of knowledge regarding our understanding of how students think, learn, and problem solve in a research and interdisciplinary context early in the college experience

National Science Foundation
Division of Undergraduate Education (DUE)

Expanding Instrumentation Access at Multiple Institutions Using Portable IR, Raman, and XRF Spectrometers

Award ID: DUE 1431522 PI: Christopher Stromberg, Hood College

Collaborative Project between Hood College, Frederick CC and Mt. St. Mary's College

- PROJECT GOAL - To develop inquiry based laboratory experiments while providing a replicable model for increasing instrumentation access across multiple institutions.

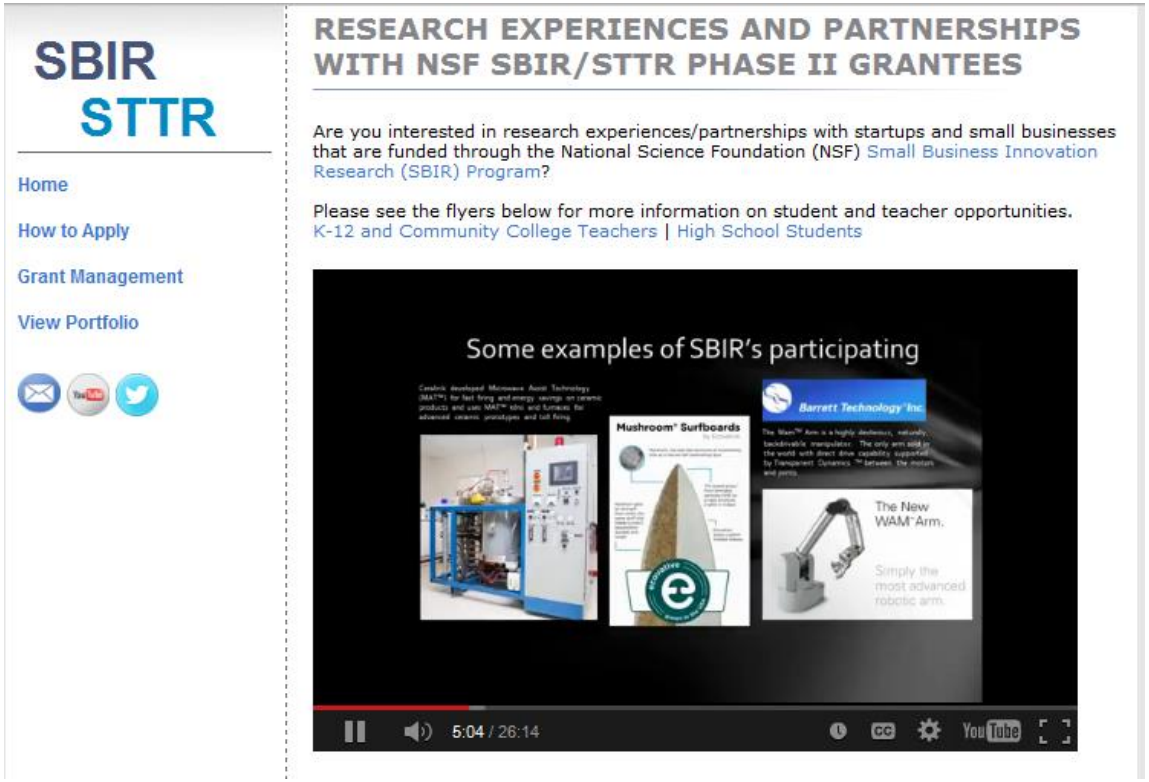
- PROJECT OBJECTIVE - Activities will place the responsibility for learning on the students, so that they engage with the material at a deeper level than in traditional "confirmation" experiments. This will lead to greater internalization and integration of the material, which increases both student learning and confidence.

- BROADER IMPACTS - Assessment will allow the activities to be vetted across different institution types (PUI and community college) with varied student profiles, resulting in a library of experiments that can be shared with the chemical education community.

Questions about S-STEM, Noyce, IUSE?

National Science Foundation
Division of Undergraduate Education (DUE)

Research Collaborations with SBIR/STTR Phase II Grantees



http://www.nsf.gov/eng/iip/sbir/portfolio/researchexp.jsp

Community College Students and Teams Partnership funding between small businesses and community college researchers and students.

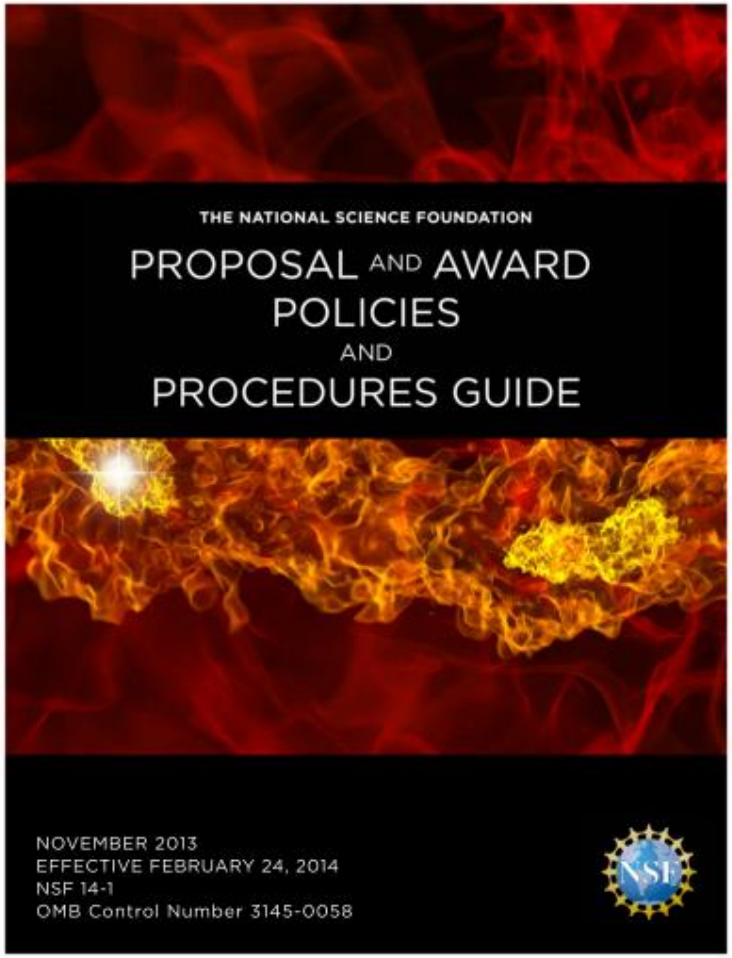
Max Funding: $40,000 per year

Deadline: Rolling submission; submission 3 months before target start date is suggested

National Science Foundation
Division of Undergraduate Education (DUE)

NSF PAPPG

Part I: Grant Proposal Guide (GPG) and Part II: Award & Administration Guide (AAG)

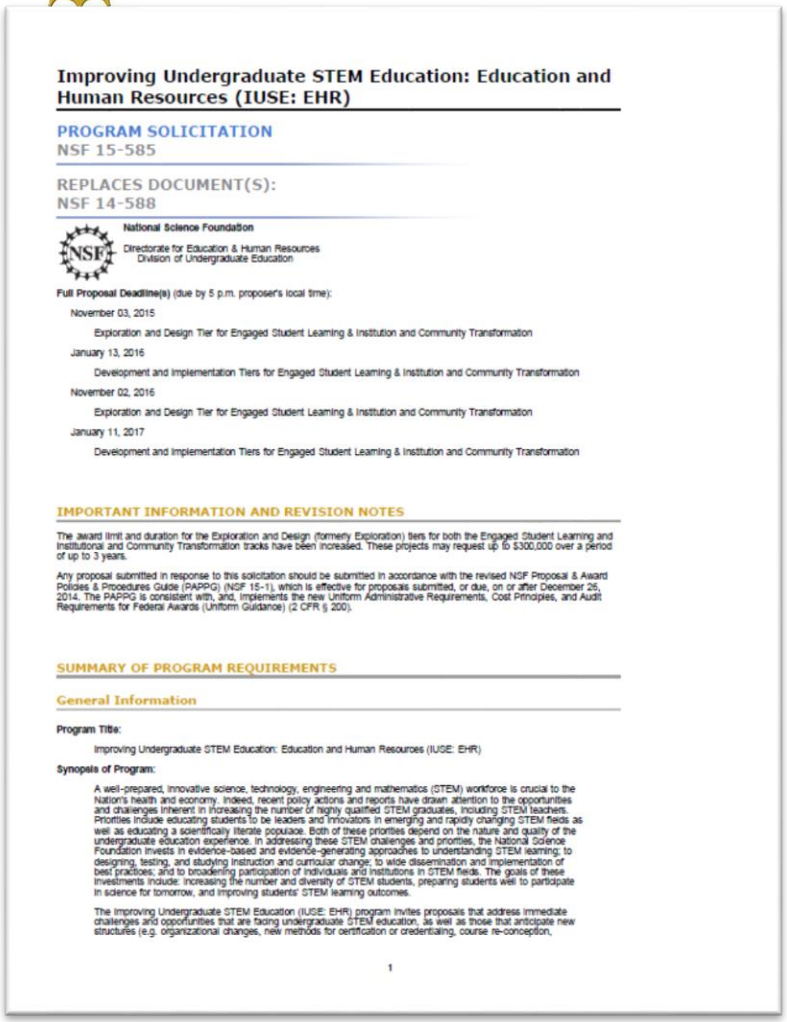


Grant Proposal Guide (GPG)

- Chapter I: Pre-submission Information
- Chapter II: Proposal Preparation Instructions
- Chapter III: NSF Proposal Processing and Review
- Chapter IV: Non-Award Decisions and Transactions
- Chapter V: Renewal Proposals

Award & Administration Guide (AAG)

- Chapter I: NSF Awards
- Chapter II: Grant Administration
- Chapter III: Financial Requirements and Payments
- Chapter IV: Grantee Standards
- Chapter V: Allowability of Costs
- Chapter VI: Other Post Award Requirements
- Chapter VII: Grant Admin. Disputes and Misconduct



Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

PROGRAM SOLICITATION
NSF 15-585

REPLACES DOCUMENT(S):
NSF 14-588

National Science Foundation
Directorate for Education & Human Resources
Division of Undergraduate Education

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

November 03, 2015
Exploration and Design Tier for Engaged Student Learning & Institution and Community Transformation

January 13, 2016
Development and Implementation Tiers for Engaged Student Learning & Institution and Community Transformation

November 02, 2016
Exploration and Design Tier for Engaged Student Learning & Institution and Community Transformation

January 11, 2017
Development and Implementation Tiers for Engaged Student Learning & Institution and Community Transformation

IMPORTANT INFORMATION AND REVISION NOTES

The award limit and duration for the Exploration and Design (formerly Exploration) tiers for both the Engaged Student Learning and Institutional and Community Transformation tracks have been increased. These projects may request up to $300,000 over a period of up to 3 years.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised NSF Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 15-1), which is effective for proposals submitted, or due, on or after December 26, 2014. The PAPPG is consistent with, and, implements the new Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance) (2 CFR § 200).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

Synopsis of Program:

A well-prepared, innovative science, technology, engineering and mathematics (STEM) workforce is crucial to the Nation's health and economy. Indeed, recent policy actions and reports have drawn attention to the opportunities and challenges inherent in increasing the number of highly qualified STEM graduates, including STEM teachers. Priorities include educating students to be leaders and innovators in emerging and rapidly changing STEM fields as well as educating a scientifically literate populace. Both of these priorities depend on the nature and quality of the undergraduate education experience. In addressing these STEM challenges and priorities, the National Science Foundation invests in evidence-based and evidence-generating approaches to understanding STEM learning; to designing, testing, and studying instruction and curricular change; to wide dissemination and implementation of best practices; and to broadening participation of individuals and institutions in STEM fields. The goals of these investments include: increasing the number and diversity of STEM students, preparing students well to participate in science for tomorrow, and improving students' STEM learning outcomes.

The Improving Undergraduate STEM Education (IUSE: EHR) program invites proposals that address immediate challenges and opportunities that are facing undergraduate STEM education, as well as those that anticipate new structures (e.g. organizational changes, new methods for certification or credentialing, course re-conception,

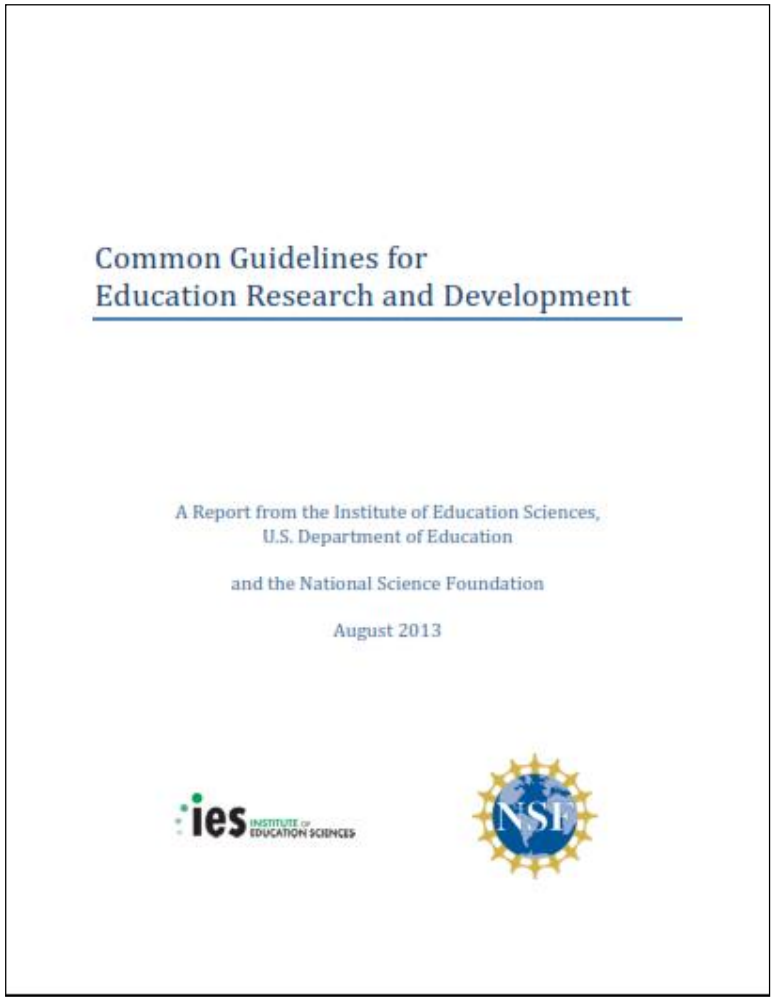
1

The Program Solicitation

- Program Description
- Program-specific considerations & restrictions
  - Institutional Eligibility & Limitations
  - PI Eligibility & Limitations
  - Budgetary Limitations
- Submission Deadlines & Target Dates
- Resources for proposal preparation
- Program Director Contact Information

National Science Foundation
Division of Undergraduate Education (DUE)

Developed by representatives from Dept. of Education and NSF and offer guidance on building the evidence base in STEM learning



Common Guidelines for
Education Research and Development

A Report from the Institute of Education Sciences,
U.S. Department of Education

and the National Science Foundation

August 2013

Contents

Common Guidelines

- The *Common Guidelines* describe the roles of different types of R & D projects in generating evidence about strategies and interventions for enhancing student learning.

- For each type of R & D, the *Common Guidelines* describe:
  - Purpose
  - Empirical and theoretical justifications (evidence base)
  - Types of project outcomes (evidence generation)
  - Quality of evidence

Questions?