NSF FUNDING OPPORTUNITES

Broadening Participation in STEM through Diversity, Equity, and Inclusion

WEBINAR
September 30, 2020
2:30 – 4:30 pm
Webinar Goals

• Highlight EHR/NSF funding opportunities, especially those aimed at broadening participation in STEM
• Provide a forum for the field to ask Program Officers inquiries regarding funding opportunities
• Share other capacity building and professional development opportunities within EHR and across NSF
Presentations

• Overview and Introduction to NSF, EHR, & Broadening Participation
• Division of Human Resource Development (HRD)
• Division of Research on Learning in Formal and Informal Settings (DRL)
• Division of Undergraduate Education (DUE)
• Division of Graduate Education (DGE)
• Capacity Building & Professional Development
National Science Foundation

- Established by the National Science Foundation Act of 1950 (Public Law 81-507).
- FY2020 Annual Budget: $8.3 Billion
- Funds approximately 25% of all federally supported basic research conducted by colleges and universities.
- Funds about 12,000 new awards per year, with an average duration of three years.

NSF vision is a nation that is the global leader in research and innovation.
NSF is committed to broadening participation by:

- Preparing a diverse, globally engaged science, technology, engineering, and mathematics workforce;
- Integrating research with education, and building capacity;
- Expanding efforts to broaden participation from underrepresented groups and diverse institutions across all geographical regions in all NSF activities; and
- Improving processes to recruit and select highly qualified reviewers and panelists that reflect the Nation's diversity.

NSF Strategic Plan for Fiscal Years (FY2018-2022) pg.20
IV. Core Values

NSF's core values are essential and enduring tenets that guide everyone in the organization as we support the agency’s mission. They have been developed with the active engagement of NSF’s staff and the National Science Board. These values identify who we are and what is important to us. They guide how we make decisions, set priorities, address challenges, manage tradeoffs, recruit and develop personnel, and work together with our awards.

NSF’s core values are explicit in what we do every day:

Excellence – We maintain the highest standards in merit review, financial management, and award administration. We use rigorous review by experts to ensure that only the best ideas are funded and that our investments further the national interest.

Public Service – We proudly value our role as public servants, enabling the research community to blaze new paths for expanding knowledge and addressing societal challenges.

Learning – We take advantage of opportunities to improve our skills and we provide all staff members with opportunities to develop. We question our assumptions; we evaluate our activities; we learn what is effective and what can be improved.

Inclusion – We strive to maintain a staff that is representative of the broader national community. We endeavor to support outstanding researchers and innovative thinkers from across our Nation’s diversity of regions, types of organizations, and demographic groups.

Collaboration – We work in a collaborative enterprise in which teamwork is essential. We value the perspectives and values of our fellow team members and recognize that combining our knowledge enables us to find more robust solutions; we acknowledge the contributions that we each make to our shared success, we are committed to listening, communicating effectively, and working collegially.

Integrity – We hold each other and our awardees to the highest standards of ethical behavior. We strive to ensure the trustworthiness of the results of NSF-funded research by promoting the responsible conduct of research.

Transparency – We operate with transparency and openness.
Broadening Participation in STEM

The Broadening Participation portfolio is divided into three categories:

• programs that are primarily **focused** on broadening participation,

• programs that have broadening participation as one of several **emphases**, and

• Dear Colleague Letters expressing interest in specific aspects of broadening participation.

*NSF is committed to expanding efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs.*
Broadening Participation in STEM
Broadening Participation in STEM

[Image of NSF webpage with a list of programs under Broadening Participation Portfolio]

Background
NSF has a variety of approaches to broaden participation across its many programs. While broadening participation is included in the NSF review criteria, some program announcements and solicitations go beyond the standard criteria. They range from encouraging language to specific requirements. Investments range from capacity building, research centers, partnerships, and initiatives to the use of co-funding or supplements to existing awards in the core research programs.

The portfolio presented below is divided into three categories: (1) programs that are primarily focused on broadening participation, (2) programs that have broadening participation as one of several emphases, and (3) Dear Colleague Letters expressing interest in specific aspects of broadening participation. You may also review awards made to each program by following the link to the individual program page, then scrolling to the bottom where you will find a link that displays the awards.

Focused Programs
These programs have an explicit broadening participation program goal. The majority of each award’s budget goes to broadening participation activities, and could involve research on the topic.

<table>
<thead>
<tr>
<th>PROGRAM NAME</th>
<th>Publication No.</th>
<th>Directorate</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVANCE: Organizational Changes for Gender Equity in STEM Academic Professions</td>
<td>20-554</td>
<td>All</td>
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<tr>
<td>Alliance for Graduate Education and the Professions</td>
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<td>Broadening Participation in Engineering</td>
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<td>Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)</td>
<td>19-508</td>
<td>EDR, ENG</td>
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<tr>
<td>Coatings and People</td>
<td>20-507</td>
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<td>BES</td>
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<tr>
<td>Disability and Rehabilitation Engineering</td>
<td>20-5342</td>
<td>ENG</td>
<td>CISE</td>
</tr>
<tr>
<td>EPSCoR Research Infrastructure Improvement Program Track I</td>
<td>20-571</td>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>
Vision: To catalyze the STEM enterprise to work **collaboratively** for inclusive change, resulting in a STEM workforce that reflects the population of the Nation

Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science
The Hub facilitates activities needed to build and maintain a strong NSF INCLUDES National Network, including communications, capacity building, and efforts aimed at increasing visibility. The Hub itself is a collaboration of multiple institutions.
Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)  

NSF INCLUDES Alliances  

PROGRAM SOLICITATION  
NSF 20-569  
REPLACES DOCUMENT(S): NSF 18-529  

Letter of Intent Due Date(s) (required) (due by 5 p.m. submitter’s local time):  

- October 05, 2020  
- October 04, 2021  

Full Proposal Deadline(s) (due by 5 p.m. submitter’s local time):  

- January 26, 2021  
- January 27, 2022  

IMPORTANT INFORMATION AND REVISION NOTES:  
- A Letter of Intent is required for all proposal submissions and must be submitted via FastLane by the due dates listed above.  
- Prior NSF INCLUDES funding is not required to be eligible to submit an Alliance proposal.  
- An NSF INCLUDES Planning Grant is not a prerequisite to submit an Alliance proposal.  
- The inclusion of an NSF INCLUDES Design and Development Launch Pilot Project Principal Investigator and/or Co-Principal Investigator is encouraged but not required.  
- There are limits on the number of proposals that may be submitted per organization and per PI or Co-PI.  

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised NSF Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 20-1), which is effective for proposals submitted, or due, on or after June 1, 2020.
CAREER DEVELOPMENT, EDUCATION CORE RESEARCH, AND HSI PROGRAM

Dr. Claudia Rankins
Faculty Early CAREER Development Program

- CAREER is a Foundation-wide activity that offers the National Science Foundation’s most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education, and to lead advances in the missions of their departments or organizations.

- EHR encourages *eligible* faculty to submit CAREER proposals in STEM education research.

- Solicitation NSF 20-525 provides details. The annual deadline is the 4th Monday in July.
Faculty Early CAREER Development Program

Two recent EHR CAREER awardees won the 2019 Presidential Early Career Award for Scientists and Engineers (PECASE) award:

Christopher Jett
Associate Professor
Mathematics Education
University of West Georgia

Maria Coppola
Associate Professor
Psychology
University of Connecticut
The EHR Core Research program (ECR) invites proposals for fundamental research (basic research or use-inspired basic research) that advances knowledge in one or more of the three Research Tracks: **STEM Learning and Learning Environments**, **Broadening Participation in STEM fields**, and **STEM Workforce Development**. This program cuts across all of EHR’s divisions and information can be found at solicitation NSF 19-508.

Also check out **ECR: Building Capacity in STEM Education** and its solicitation NSF 20-521. Specifically, ECR: BCSER supports activities that enable early and mid-career researchers to acquire the requisite expertise and skills to conduct rigorous fundamental research in STEM education.
The NSF established the HSI Program to build capacity at HSIs that typically do not receive high levels of NSF grant funding with the goals of enhancing the quality of undergraduate STEM education and increasing the recruitment, retention, and graduation rates of students pursuing associate’s or baccalaureate degrees.

Program Solicitation – NSF 20-599; multiple funding opportunities

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5481
HRD is a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of STEM education and research through broadening participation by historically underrepresented groups - minorities, women, and persons with disabilities.

Drs. E. Tatiana Camacho and Claudia Rankins

DIVISION OF HUMAN RESOURCE DEVELOPMENT (HRD)
The mission of HRD is to grow the innovative and competitive U.S. STEM workforce that is vital for sustaining and advancing the Nation’s prosperity by supporting the broader participation and success of individuals currently underrepresented in STEM and the institutions that serve them.
The goal of the **ADVANCE (Organizational Change for Gender Equity in STEM Academic Professions) program** is to broaden the implementation of evidence-based systemic change strategies that promote equity for STEM faculty in academic workplaces and the academic profession.

ADVANCE supports grants that:

- Develop, implement, and evaluate systemic change strategies to transform academic institutional policies, procedures, practices, and culture to create organizations that are inclusive and support diverse STEM faculty; and

- Facilitate the adaptation and scale-up of evidenced-based systemic change strategies by institutions and non-academic organizations.

**Program Solicitation – NSF 20-554; multiple funding opportunities**

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383
Alliances for Graduate Education and the Professoriate (AGEP)

AGEP seeks to advance knowledge about models to improve pathways to the professoriate for historically underrepresented minority doctoral students (including those with disabilities), postdoctoral fellows and faculty in specific STEM disciplines and/or STEM education research fields.

New and innovative models are encouraged, as are models that reproduce and/or replicate existing evidence-based alliances in significantly different disciplines, institutions, and participant cohorts.
Centers of Research Excellence in Science and Technology (CREST)

• The CREST program provides support to enhance the research capabilities of minority-serving institutions through the establishment of centers with collaborating partners that effectively integrate education and research.

• Projects must demonstrate a compelling vision for research infrastructure improvement, and a comprehensive plan to achieve and sustain national competitiveness in a clearly defined area of national significance in science or engineering research.

Program Solicitation – NSF 18-509; multiple funding opportunities, proposal deadlines throughout the year

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6668
Historically Black Colleges & Universities Undergraduate Program (HBCU-UP)

HBCU-UP provides support for the development, implementation, and the study of evidence-based, innovative models and approaches to nourish substantial improvements in the preparation and STEM workforce career success of HBCU undergraduates. HBCU-UP also funds research in broadening participation, as well as all NSF supported disciplines. The program has a number of different tracks.

Program Solicitation – NSF 20-559; multiple funding opportunities, proposal deadlines throughout the year

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5481
LSAMP was authorized by Congress and established in 1991. The LSAMP program provides funding to alliances that implement comprehensive, evidence-based, innovative, and sustained strategies that ultimately result in the graduation of well-prepared, highly-qualified students from underrepresented groups who pursue graduate studies or careers in STEM.

Program Solicitation – NSF 20-590; multiple funding opportunities, annual deadlines in January and November each year

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13646
**Tribal Colleges and Universities Program (TCUP)**

**TCUP** provides awards to Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions to promote high quality STEM education and research in order to support the preparation of a science and engineering workforce that is broadly inclusive and capable of performing in an international research and development environment in order for the U.S. to remain at the forefront of world science and technology.

*Program Solicitation – NSF 18-546; multiple funding tracks, proposal deadlines throughout the year.*

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5483
NSF Excellence Awards in Science & Engineering

- Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)
- Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM)
DRL invests in projects to improve the effectiveness of STEM learning for people of all ages and from all backgrounds. Its mission includes promoting innovative research, development, and evaluation of learning and teaching across all STEM disciplines by advancing cutting-edge knowledge and practices in both formal and informal learning settings.

Dr. Robert Russell
ITEST Program Overview

• ITEST promotes PreK-12 student interest and involvement in STEM and ICT careers

• Key elements of ITEST projects:
  • Strengthens knowledge of & interest in STEM & ICT careers
  • Develops and researches innovative use of technology
  • Researches and develops innovative learning experiences
  • Engages students within the PreK-Grade 12 age range
  • Develops Strategic partnerships (schools, industry, higher ed, CBO’s, informal orgs)
  • Includes a significant research component
  • Incorporates explicit strategies for broadening participation
STEM Pathways for High-School Urban Students
ITEST #1855763

Through partnerships with industry, underserved urban high-school students learn STEM and work with STEM professionals through structured STEM career pathways.
Inventing, Designing, and Engineering on the Autism Spectrum
ITEST #1614436

A collaborative co-design project engaging participants on the autism spectrum in making and fabricating 3-D objects.
AISL Solicitation-Specific Review Criteria: Broadening Participation

To what extent does the proposal:

• Include explicit and effective strategies for recruiting and selecting participants

• Describe approaches that address diversity, access, equity & inclusion

• Describe research-informed instructional approaches to build on the challenges to and strengths of participants

• Explain how innovations with technology are developmentally and age-appropriate
ITEST Solicitation (NSF 19-583)

- Three project types: Exploring Theory & Design Principles (ETD), Designing and Testing Innovations (DTI), & Scaling, Expanding & Iterating Innovations (SEI)
- Funded through H1-B Work Visa Revenue
- **Proposals require addressing Solicitation Specific Criteria related to broadening participation.**
- Proposal Deadline: August 13, 2021
- Resource Center: STELAR, www.stelar.edu.org
- ITEST questions or inquiries about project ideas (send in a 1 or 2 pager): DRLTEST@nsf.gov

Advancing Informal STEM Learning

Photo Credits: Discover Tech Exhibit – Huntsville, AL. Credit: NCIL/SSI (NSF 1421427)
AISL Program Overview

• Advances new *approaches to and evidence-based understanding of* the design and development of STEM learning in informal environments for public and professional audiences.

• Investments should be of interest and utility to public audiences, informal STEM researchers, developers and practitioners, and decision-makers.

• Priorities: (1) strategic impact, (2) knowledge-building, (3) innovation, (4) collaboration, (5) infrastructure/capacity building and (6) **broadening participation**.
Implemented in over 25 sites, the project presented children with a bilingual STEM curriculum with hands-on activities, supported by staff development, family events at the community sites, and family events with partner museums.
Family Code Night
AISL #1738814

The nation-wide project engages children and parents or other caregivers in evening and weekend sessions engaging the whole family in getting some introductory experiences in coding. The project adapted the program to a bilingual Spanish-English format.
AISL Solicitation-Specific Review Criteria: Broadening Participation

• Does the proposal identify the characteristics and needs of the targeted underrepresented groups (public or professional) to be served?

• Does the proposal include explicit plans or strategies for addressing or accommodating the specific interests, community or cultural perspectives, and educational needs of participants of the identified underrepresented groups?
AISL Solicitation (NSF 20-607)

- Five project types: (1) Pilot & Feasibility Studies, (2) Research in Service to Practice, (3) Innovations in Development, (4) Broader Implementation, (5) Literature Reviews, Syntheses, or Meta-Analyses, and (6) Conferences

- Proposal Deadline: Jan. 12, 2021

- Send questions or project concepts (1-2 pages) to DRLAISL@nsf.gov

- Resource Center: Center for Advancement of Informal Science Education (CAISE): www.informalscience.org

- Must address special review criteria.
Discovery Research PreK-12 (DRK-12) NSF 15-592

Photo Source: Masters of Arts in Teaching, AMNH, DRL #1119444 and DUE #1340006
Discovery Research PreK-12 (DRK-12) Program Overview

• DRK-12 supports projects that significantly enhance the learning and teaching of STEM by PreK-12 students and teachers through fundamental research and the development of innovative approaches.

• **Goals:** enhanced student achievement in STEM, preparation for the scientific workforce, and improved science literacy.

• **Focus:** learning that takes place during the 12-14 years students are enrolled in the formal classroom learning environments.

• The program encourages proposals from minority-serving institution such as HBCU’s, Tribal Colleges, Hispanic Serving Institutions, Alaska Native and Native Hawaiian Serving Institutions.

• Collaborations are encouraged with NSF INCLUDES proposals.
How video storytelling reengages teenagers in STEM learning

Student Reporting Lab
DRK12 #1503315

Students learn STEM through an NGSS-linked curriculum, receive training in journalism, and create stories with guidance from a mentor.
Engaging Girls in STEM Through Programming Experiences in Games
NSF Program: Many DRL programs

Young girls gain in technology interest and identity through play with science- and technology-related toys.
DRK-12 Strands and Project Types

• DRK-12 has three major research and development strands: Assessment, Learning and Teaching.

• DRK-12 has six project types: (1) Exploratory, (2) Design and Development, (3) Impact, (4) Implementation & Improvement, (5) Syntheses, and (6) Conferences.

• Proposals specify which Project Type and Strand applies to the proposed project.
Discovery Research PreK-12 Solicitation (NSF 20-572)

DRK-12 invites proposals that address immediate challenges that face PreK-12 STEM education as well as proposals that anticipate radically different structures and functions of teaching and learning. The program builds on fundamental research that provides theoretical and empirical justification for proposed projects.

- **Proposal Deadline:** Oct. 7, 2020, Oct. 6, 2021 & first Wednesday in October thereafter.

- **Resource Center:** [www.cadrek12.org](http://www.cadrek12.org)

- **Send questions and project concepts to:** DRLDRK12@nsf.gov

NSF Video Showcase 2020: Watch Hundreds of Short, Fun Videos Showcasing DRL Projects

Browse 171 videos of the latest federally funded projects to transform STEM!

stemforall2020.videohall.com
DUE invests in efforts aimed at strengthening STEM education at two- and four-year colleges and universities by improving curricula, instruction, laboratories, infrastructure, assessment, diversity of students and faculty, and collaborations.

Drs. Abby Ilumoka and Pushpa Ramakrishna
Division of Undergraduate Education (DUE)

IUSE: EHR
Improving Undergraduate STEM Education

S-STEM
NSF Scholarships in STEM

ATE
Advanced Technological Education

Noyce
Robert Noyce Teacher Scholarships
Division of Undergraduate Education

IMPROVING UNDEGRADUATE STEM EDUCATION (IUSE:EHR)

Solicitation: NSF 19-601
## Program Goals

<table>
<thead>
<tr>
<th>Improve STEM Learning &amp; Learning Environments:</th>
<th>Build the Professional STEM Workforce for Tomorrow:</th>
<th>Broaden Participation &amp; Institutional Capacity for STEM Learning:</th>
</tr>
</thead>
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<td>Increase the number and diversity of undergraduate students recruited and retained in STEM education and career pathways through improving the evidence base for successful strategies to broaden participation and implementation of the results of this research</td>
<td>Improve the preparation of undergraduate students so they can succeed as productive members of the future STEM workforce, regardless of career path, and be engaged as members of a STEM-literate society</td>
<td>Increase the number and diversity of undergraduate students recruited and retained in STEM education and career pathways through improving the evidence base for successful strategies to broaden participation and implementation of the results of this research</td>
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Competitive proposals should **build on available evidence and theory, generate evidence,** and **build knowledge.**
Improving Undergraduate STEM Education (IUSE) Solicitation NSF 19-601

Two Program Tracks

Engaged Student Learning
Focus on designing, developing, and implementing research on STEM learning models, approaches & tools

3 levels

Level 1
Up to $300,000
Up to 3 yrs

Level 2
$300,001 to $600,000
Up to 3 yrs

Level 3
$600,001 to $2M
Up to 3 yrs

Deadlines:
Feb 2, 2021
Aug 3, 2021
1st Tues in Feb & Aug Annually

Institutional and Community Transformation
Focus on increasing the propagation of highly effective methods of STEM teaching and learning

3 levels

Capacity Building
Up to $150,000
single institution
$300,000
multiple institutions
Up to $300,000
Up to 3 yrs

Level 1
Up to $300,000
Up to 3 yrs

Level 2
Single Institution
$600,001 to $2M
Multiple institutions
Up to $3M, 5 yrs

Deadlines:
Feb 2, 2021
Aug 3, 2021
1st Tues in Feb & Aug Annually

Deadline:
Dec 1, 2020
1st Tues in Dec Annually

Deadline:
Dec 1, 2020
1st Tues in Dec Annually

Deadline:
Dec 1, 2020
1st Tues in Dec Annually

Deadline:
Dec 1, 2020
1st Tues in Dec Annually

Estimated IUSE Funding in FY 20
Amount: $63 million (105 awards)
60 Level 1
35 Level 2 & 3
10 Capacity-Building projects
The Bowman Creek Educational Ecosystem
(DUE 1612021, ICT, E&D)

• IUSE ICT E&D project in South Bend, Indiana
• Collaboration between University of Notre Dame, Indiana University South Bend, Ivy Tech Community College, K-12 schools, city government and community organizations
• Name of project refers to Bowman Creek, a badly polluted tributary of St. Joseph River in South Bend, IN
• Impaired waterway is focus of project’s activities
• Project built upon "multidimensional diversity" where interns represent a very broad range of schools, ages, majors, and ethnic and racial backgrounds
• Participants identify computer-based projects that will have real community impact, and then work in interdisciplinary teams to implement them
• Project generates knowledge through investigation of research questions that explore how perceptions of identity and possibility together with life experiences shape student choices with regard to STEM as a career
Division of Undergraduate Education

ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM (NOYCE)

Solicitation: NSF 17-541
Due Date: Last Tuesday in August
Annually thereafter
Robert Noyce Teacher Scholarship Program


**GOAL**: to encourage talented STEM majors and STEM professionals to become K-12 STEM teachers

Scholarship, stipend, and fellowship recipients must teach in a high-need school district for a specified number of years

**Track 1 (S&S) Scholarships & Stipends**
Undergraduate STEM majors and/or STEM career changers

**Track 2 (TF) NSF Teaching Fellowships**
STEM career changers

**Track 3 (MTF) NSF Master Teaching Fellowships**
Exemplary, experienced STEM teachers

**Track 4 (Noyce Research) Research on the Preparation, Recruitment, and Retention of K-12 STEM Teachers**

**Deadline (All Tracks)**: Last Tuesday in August, Annually Thereafter

Robert Noyce Teacher Scholarship Program

Project Title: Supporting Noyce Scholars through Professional Learning Communities
University of Colorado Colorado Springs (UCCS), DUE 1660679, NOYCE Track 1

- Addresses STEM teacher shortage across Southern Colorado, particularly in middle and high school classrooms serving economically and ethnically diverse student populations
- Partnership between UCCS and 3 high-need local educational agencies: Colorado Springs School District 11, Falcon School District 49, and Harrison School District 2
- Financial support to 35 talented and highly qualified undergraduate STEM majors & post-baccalaureate STEM professionals, military veterans
- NOYCE scholars to complete requirements for secondary education teaching license in math or science through UCCS’ Teach program

Benefits
- Pre-service STEM teacher training, supplementary field experiences, pre-ternships, Professional Learning Communities
- In-service support for Noyce graduates through Noyce Support Network
- Free conferences designed for teachers, faculty and STEM industry partners
Division of Undergraduate Education

NSF SCHOLARSHIPS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS PROGRAM (S-STEM)

Solicitation: NSF 20-526
Due Date: March 21, 2021
S-STEM Program Goals

- **increase the number** of low-income academically talented **full- and part-time students** with demonstrated financial need obtaining degrees in S-STEM eligible disciplines and entering the workforce or graduate programs in STEM

- **improve the education** of future scientists, engineers, and technicians, with a focus on low-income academically talented students with demonstrated financial need

- **generate knowledge** to advance understanding of how interventions or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation of low-income students in STEM
S-STEM Program
Three Program Tracks

Track 1: Institutional Capacity Building
For institutions without prior funding from S-STEM or STEP programs
Up to $650K
Up to 5 yrs

Track 2: Design and Development:
Single Institution
Tracks 2 & 3 seek to leverage S-STEM funds with institutional efforts and infrastructure to increase and understand impacts
Up to $1M
Up to 5 yrs

Track 3: Design and Development:
Multi-Institution Consortia
Up to $5M
Up to 5 yrs

Deadline (All Strands and Types):
Last Wednesday in March, Annually Thereafter
Virginia Tech Network for Engineering Transfer Students: NSF DUE S-STEM #1644138

Undergraduate research experience: Integration of electronic sensors with personalized 3D printed prosthetics
ADVANCED TECHNOLOGICAL EDUCATION (ATE)

Solicitation: NSF 18-571
Due Date: October 1, 2020
October 7, 2021
ATE Program Goals

• Produce more qualified science and engineering technicians to meet workforce demands

• Improve the technical skills and the general science, technology, engineering, and mathematics (STEM) preparation of these technicians and the educators who prepare them
ATE Projects/Centers in every State and 5 Territories

From 1993 to 2018 NSF has invested $1.11 billion in the ATE program, funding 1,294 projects and 61 centers.
ATE Projects and Centers

NSF-ATE Centers and Projects

**EDUCATED**
- 114,963 students
  - (65% at Community Colleges)
  - 91% completed or continued in their program in 2015

**SERVED**
- 47,090 Underrepresented Minority Students (44%)

**DEVELOPED**
- 2,430 Materials And Educational Activities

**$ COLLABORATED**
- 3,890 Businesses and Industries and Received over $20 Million in Monetary and in-kind Support
Advanced Technological Education

Projects
≤ $600K
≤ 3 yrs
Adapt & Implementation
$300K to $400K

Small and New to ATE
$300K, 3 yrs

Centers
Two types

Centers
≤ 7.5M
5 yrs
One renewal possible

Resource Centers
≤ 1.6M
3 yrs
One renewal possible

Targeted Research
$150K
≤ 2 yrs
$800K
≤ 3 yrs

Deadline: Oct 1, 2020
A student verifies proper operation of a commercial variable air volume box at a Building Efficiency for a Sustainable Tomorrow (BEST) center.
DGE advocates for innovative, inclusive, high quality graduate education in the STEM fields. DGE manages innovative cross-Foundation programs that directly or indirectly support U.S. citizens and permanent residents in their quest to become the leading scientists and engineers of the future.

Drs. Nacrisha Norman and Daniel Denecke
Division of Graduate Education

Solicitations and Program Descriptions:
- CyberCorps(R) Scholarship for Service (SFS)
- EHR Core Research (ECR)
- EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR: BCSER)
- DGE: Faculty Early Career Development (CAREER)
- NSF Graduate Research Fellowship Program (GRFP)
- Innovations in Graduate Education (IGE) Program
- National Science Foundation Research Traineeship (NRT) Program
- Secure and Trustworthy Cyberspace (SaTC)/(SaTC Frontiers)
- Secure and Trustworthy Cyberspace Frontiers Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining)

Dear Colleague Letters (DCLs)
- Graduate Research Internship Program (GRIP)
- Non-Academic Research Internships for Graduate students (INTERN)

MORE INFO ON ALL: https://www.nsf.gov/funding/programs.jsp?org=DGE
Division of Graduate Education

Solicitations and Program Descriptions:

› CyberCorps(R) Scholarship for Service (SFS)
› EHR Core Research (ECR)
› EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR: BCSER)
› DGE: Faculty Early Career Development (CAREER)
➢ NSF Graduate Research Fellowship Program (GRFP)
➢ Innovations in Graduate Education (IGE) Program
➢ National Science Foundation Research Traineeship (NRT) Program
   › Secure and Trustworthy Cyberspace (SaTC)/(SaTC Frontiers)
   › Secure and Trustworthy Cyberspace Frontiers Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining)

Dear Colleague Letters (DCLs)

➢ Graduate Research Internship Program (GRIP)
➢ Non-Academic Research Internships for Graduate students (INTERN)

MORE INFO ON ALL: https://www.nsf.gov/funding/programs.jsp?org=DGE
Broadening Participation with the NSF Graduate Research Fellowship Program
GRFP
Fellows from every state

60,000+ GRFPs awarded

40+ fellows have gone on to become Nobel laureates

450+ fellows have become members of the National Academy of Sciences

$34,000 annual stipend

$12,000 cost of education allowance

3-year financial support

5-year fellowship period

No post-graduate study service requirement

2020 competition

12,000+ applicants

2,000+ offers

500+ academic institutions represented

OPEN TO:

Graduate students who are or will be pursuing research-based master’s and doctoral degrees in eligible fields of study

Graduate Research Fellowship Program (GRFP)

nsfgrfp.org

Each major field has numerous sub-fields:

- Chemistry
- Computer and Information Sciences & Engineering
- Engineering
- Geosciences
- Life Sciences
- Materials Research
- Mathematical Sciences
- Physics & Astronomy
- Psychology
- Social Sciences
- STEM Education & Learning Research
INELIGIBLE Degree Programs

- Professional degree programs
  - e.g., MBA, MD, JD, DVM, DDS
- Joint science-professional degree programs
  - E.g., MD/PhD, JD/PhD
- Community, Global, or Public Health (MPH)
- Counseling, Social Work (MSW)
- Education (except STEM education)
- History (except history of science)

See Detailed Eligibility Requirements GRFP Program Description
Ineligible Fields of Study

• Research with directly health-related goals
  • Etiology, diagnosis, or treatment of disease or disorder
  • Animal models of disease for drug development/testing
  • Epidemiology
  • Disease prevention
  • Public, community, global health
  • Clinical research
  • Patient-oriented research
  • Epidemiological and behavioral studies

• Outcomes research
  • Health services, standard of care, health policy
  • Research directly leading to clinical trials

• Applied research on plant pathology
  • Maximizing agricultural production

• Impacts on food safety
National Science Foundation

Graduate Research Fellowship Program (GRFP)

DESCRIPTION
NSF Graduate Research Fellowships

Five Year Awards – $138,000

*Three* years of financial support
- $34,000 Stipend per year to the graduate institution
- $12,000 Educational allowance directly to graduate institution
- In lieu of tuition and fees

Other NSF Opportunities
- INTERN – non-academic internship program
- FASED Individuals with Disabilities support
- Career-Life Balance Initiative (family leave)
GRFP Goals

• The OVERALL GOAL of the Graduate Research Fellowship Program is to recruit individuals into Science, Technology, Engineering, and Mathematics (STEM) fields
  • To select, recognize, and financially support individuals who have demonstrated the potential to be high achieving scientists and engineers, early in their careers
  • To broaden participation in science and engineering of underrepresented groups, including women, minorities, persons with disabilities, and veterans
GRFP Features

• **Fellowship:** Awarded to individual, paid through the attended graduate institution
• **Flexible:** Choice of project, advisor, and graduate program
• **Unrestricted:** No service requirement after completion
• **Portable:** Can be used at any accredited, non-profit, US institution of higher education, with campus in US research-based master’s and doctoral degrees

• 2010 - 2019: ~2,000 Fellowships yearly
• 2016: ~16,800 Applications - ~12% success rate
• 2017: ~13,200 Applications - ~15% success rate
• 2018: ~12,400 Applications - ~16% success rate
• 2019: ~12,200 Applications - ~16% success rate
National Science Foundation

Graduate Research Fellowship Program (GRFP)

ELIGIBILITY
GRFP Eligibility - NSF 20-587

- U.S. citizens, nationals, and permanent residents
- Early-career: undergrad & graduate students
- Pursuing research-based master’s and/or doctoral degrees (no professional degrees)
- Science, Technology, Engineering, Mathematics (STEM) or STEM Education
- Full-time enrollment in graduate degree program at accredited, non-profit US institution of higher education
- NO foreign institutions

Level 1: Seniors/baccalaureates: no graduate study

Level 2: 1st-year graduate students
  • Joint bachelor’s-master’s (completed 3 years)

Level 3: Second-year graduate students
  • No more than 1 academic year completed in 1st graduate degree program
  • For joint BS/MS holders ONLY, can apply as 1st year doctoral students if went directly into PhD program, after completing joint bachelor’s-master’s degree

Level 4: Returning graduate students
  • > 2-year interruption in graduate study
  • No doctorates or >1 academic year in graduate program
  • NOT ENROLLED in graduate program at application deadline
Complete Application Package:


2) Personal, Relevant Background and Future Goals Statement (3-page PDF)

3) Graduate Research Statement (2-page PDF)

4) Transcripts (PDFs; mandatory)

5) Letters of reference (may provide up to five reference letters; 2 mandatory; 3 RECOMMENDED)
Complete Application

DEADLINES (5 p.m. local applicant mailing address):

• Oct 19: Life Sciences
• Oct 20: CISE, Materials Research, Psychology, Social Sciences, STEM Education and Learning
• Oct 21: Engineering
• Oct 22: Chemistry, Geosciences, Math, Physics & Astronomy

Read GRFP Solicitation for detailed application instructions and requirements (NSF 20-587)

If accessibility accommodations are required, please contact info@nsfgrfp.org at least four weeks before the application deadline
Example GRFP Application Timeline

- Late October:
  - Applications Due

- Shortly after application is due:
  - Reference Letters Due

- For Level 1 only:
  - Apply to Grad Schools!

- March – April:
  - Fellowship Offers

- Early May:
  - Acceptance of Award and Declaration of Tenure/Reserve

- Early September:
  - Fellowship Year Begins
National Science Foundation

Graduate Research Fellowship Program (GRFP)

Personal and Research Statements
GRFP Complete Application

• Personal Information, Education, Work/Research Experience, Proposed Major Field of Study, Honors, Awards, Publications
• Personal, Relevant Background and Future Goals Statement (3-page PDF)
• Graduate Research Statement (2-page PDF)
• Transcripts (PDFs; mandatory)
• Letters of reference you are welcome to provide five references (2 mandatory; 3 RECOMMENDED)
Two Statements

**Personal, Relevant Background & Goals**

Tell your story; demonstrate your potential for STEM research

Experiences (professional and personal) that contributed to your motivation and preparation for pursuing a STEM career

**Career aspirations and future goals**

• How have your experiences shaped your goals?

**Previous research/industrial/professional experiences:**

• What was the project, what was your role?
• How did you become involved? Where was it done?
• Why was this project worth doing? What have you learned? Any advanced course work?
• What was your contribution to the project and how did it fit into the whole?
**Research Statement**

Describe your proposed research plan:
- Communicate your research idea and approach
- Explain your research plan and methods
- What do you expect to learn? How will you know if the project is successful?
- What would you do next?

**Keep in mind:**
- Avoid jargon
- Communicate clearly for non-specialists
- Make your contributions clear

Clearly address NSF’s Merit Review Criteria – Intellectual Merit and Broader Impacts – under separate headings
Reference Letters

- THREE (3) reference letters are STRONGLY RECOMMENDED
- Two (2) reference letters are MANDATORY
- List and rank up to 5 reference letter writers - Top 3 will be used

Transcripts

- All applicants must submit bachelor’s degree transcript
- Transcripts are required for all degree-programs
- Graduate transcripts for all graduate degree enrollment
- Official or unofficial transcripts accepted
Comprehensive Review

National Science Board-approved merit review criteria:

• **Intellectual Merit**
  • How important is the proposed activity to advancing knowledge within its own field or across different fields?

• **Broader Impacts**
  • How well does the proposed activity benefit society or advance desired societal outcomes?
Comprehensive Review

Applicants are reviewed based on:

• Their demonstrated potential for significant achievement in STEM
• Using a comprehensive, holistic approach
• A balanced consideration to all components of the application
  • Including the educational and research record, leadership, outreach, service activities, future plans, individual competencies, experiences, and other attributes
Intellectual Merit

Potential to advance knowledge

Evidence of potential, such as ability to:

- Demonstrated intellectual ability (grades, curricula, awards, publications, presentations, etc.)
- Plan and conduct research
- Work as a member of a team as well as independently
- Interpret and communicate research
- Take initiative, solve problems, persist
- The potential of your approach to your major field of study and your Research Plan to advance knowledge

Evidence of Intellectual Merit can be found in all parts of the application: Personal Statement, Research Plan, letters, experiences, awards, achievements, and transcripts
Broader Impacts

Potential impact of the individual and/or the research on society; why it’s important

Societal benefits may include, but are not limited to:

• Increasing participation of underrepresented groups, women, persons with disabilities, veterans
• Outreach: Mentoring; improving STEM education in schools
• Increasing public scientific literacy; increased public engagement with STEM
• Community outreach: science clubs, radio, TV, newspapers, blogs
• Increasing collaboration between academia, industry, others

Evidence of Broader Impacts can be in all parts of the application: Personal Statement, Research Plan, letters, experiences, awards, achievements
GRFP

Graduate Research Fellowship Program
Division of Graduate Education

Jong-on Hahm, Ph.D., Program Director
Christopher L. Hill, Ph.D., Program Director
Narcrisha Norman, Ph.D., Program Director

www.nsf.gov/grfp
info@nsfgrfp.org
www.nsfgrfp.org
Broadening Participation Opportunities with the NSF Research Traineeship (NRT) Program
NSF Research Traineeship (NRT) Program Overview

Encouraging the development of innovative models for interdisciplinary/convergent STEM graduate training

Core Elements

• Interdisciplinary/Convergent Research & Training
• Inclusive Workforce Development
• Institutional transformation
Key Characteristics of NRT-funded Projects

FY2020 Priority Research Areas

- Harnessing the Data Revolution – (HDR)
- Future of Work at the Human Technology Frontier (FW-HTF)
- Windows on the Universe (WoU)
- Navigating the New Arctic (NNA)
- Quantum Leap (QL)
- Understanding the Rules of Life (URoL)

FY2020 Review Criteria

NRT-specific criteria
- Integration of research & education
- Interdisciplinarity/Convergence
- Professional development/training
- Integrating diversity
- Evaluation

NSF merit review criteria
- Intellectual merit: research & training/evaluation
- Broader impacts: including & beyond diversity
PI: Maya Trotz, University of South Florida (NSF 1735320)

Partnership between University of South Florida (USF) and University of the Virgin Islands (UVI) to develop community-engaged training and research program in Food Energy Water Systems (FEWS). Trainees design innovative solutions to sustainably manage complex and interconnected coastal systems considering the technological, institutional, environmental, and sociocultural factors that shape FEWS. Co-funded by NSF Louis Stokes Alliances for Minority Participation (LSAMP) program.
NRT Award Information

• Historically, NRT has typically awarded 14-17 awards per year for 5-year projects up to $3 million each.

• The NRT solicitation NSF 19-522 is currently being revised. A revised solicitation is expected soon.

Program Officers:
• Daniel Denecke, ddenecke@nsf.gov
• Vinod Lohani, vlohani@nsf.gov
• John Weishampel, jweisham@nsf.gov
Broadening Participation Opportunities with the Innovations in Graduate Education (IGE) Program
Innovations in Graduate Education (IGE)
Program Overview

Designed to encourage the development and implementation of bold, new, and potentially transformative approaches to STEM graduate education and training.

Seeks proposals that explore ways for graduate students in STEM master’s and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers.

IGE is dedicated to:
- piloting, testing, and validating innovative approaches to graduate education, and
- generating the knowledge required for the customization and implementation of the most successful, transformative approaches.
IGE Program Goals

1. **Generate the knowledge base** needed to inform the development of models of bold, new, and potentially transformative approaches to graduate education as well as their implementation and adaptability.

2. **Catalyze rapid advances** in STEM graduate education broadly as well as those responsive to the needs of particular disciplinary and interdisciplinary STEM fields.
Collaborative Research: IGE: Scaling Faculty Development to Broaden Participation in Graduate Education
PI: Julie Posselt, University of Southern California (NSF 1807047)

• Pilot a network of faculty and administrators across six major California universities (the University of Southern California and University of California campuses at Berkeley, Davis, Irvine, Los Angeles, and Santa Barbara) to improve how universities choose the scientists of the future.

• Provide faculty and graduate school administrators with opportunity and incentives to critically reflect upon and change longstanding practices.

• Participating STEM PhD programs receive professional development workshops and learning activities on recruiting, admitting, and mentoring graduate students from diverse backgrounds.

• Leaders that emerge from each program in years 1 and 2 will establish campus-level teams who will deliver similar faculty-to-faculty learning opportunities on their own campuses.

• Research and evaluation involves a sequential multi-method study, including the first-ever clustered randomized experiment to test the impact of faculty development around three outcomes: the admissions practices that PhD programs use, the diversity of their admitted cohorts, and the programs’ selectivity.
What’s New in IGE Award Information NSF 20-595

1. Broadened STEM degree program emphases

The program now also expands earlier focus on research-based master’s and dissertations to include also graduate students in STEM master's and doctoral degree programs more broadly (e.g., Professional Science Master’s).

2. IGE Innovation Acceleration Hub

This solicitation also includes a one-time award for an IGE Innovation Acceleration Hub. The Hub will facilitate IGE awardee communications about research activities and outcomes and provide a platform for external stakeholder engagement.
IGE Award Information NSF 20-595

IGE Project Awards (6 to 10 anticipated in FY 2021) are expected to be up to three (3) years in duration with a total budget between $300,000 and $500,000, subject to the availability of funds.

IGE Innovation Acceleration Hub: One award in the form of a cooperative agreement is anticipated. $500,000 in FY21; remaining funds disbursed in years FY 2022 – FY 2025. The maximum award amount is $1,000,000 for five years.

2020 Deadline = November 4 for:

*both* IGE Project Awards

*and* IGE Innovation Acceleration Hubs

Program Officers:

- Daniel Denecke, ddenecke@nsf.gov
- Vinod Lohani, vlohani@nsf.gov
- John Weishampel, jweisham@nsf.gov
CAPACITY BUILDING AND PROFESSIONAL DEVELOPMENT

Dr. Monya Ruffin-Nash
Capacity Building and Professional Development

- Attend NSF Informational Events, Workshops, and Webinars
- Get Connected (social media, Science360, Science Nation, Discovery Files Podcast)
- Serve as a proposal reviewer (ad hoc) and panelist (in-person, virtual), Link sent following the webinar (2 weeks to sign up)
- NSF Summer Scholars Internship Program (HACU, QEM)
- Consider joining NSF as a Rotator!
- Contact NSF Program Officers if you have questions about a program

**Submit Proposals!**
NSF FUNDING OPPORTUNITIES

Broadening Participation in STEM through Diversity, Equity and Inclusion

WEBINAR
September 30, 2020
2:30 – 4:30 pm