EHR Funding Opportunities

2021 NSF Virtual Grants Conference

Dr. Michael Ferrara
Program Director
October 7, 2021

Mission & Investments

"To develop a diverse and well-prepared U.S. STEM workforce and STEM-literate public by supporting excellent research and development in STEM education."

STEM Learning and Learning Environments

Broadening Participation & Institutional Capacity

STEM Professional Workforce Development

National Science Foundation

Persistent and Vexing Issues in STEM Education

- Disparities and persistent inequities

- Grappling with AI and other advanced technologies to transform the work of STEM teaching and learning

- Aligning curriculum with the work of the future and studying its effects

- Understanding the impacts of remote instruction on all learners
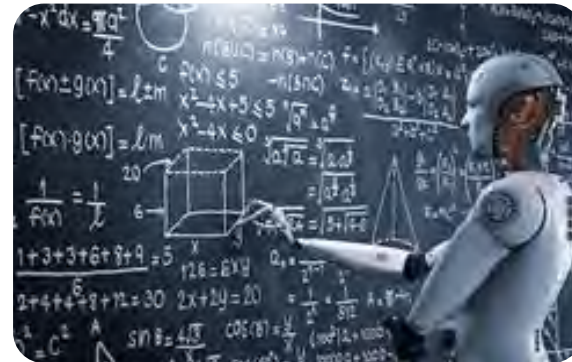
EHR: Program Overview

EHR

DIRECTORATE FOR EDUCATION & HUMAN RESOURCES

NSF

Office of the Assistant Director – Directorate for Education and Human Resources (EHR)

Division of Research on Learning in Formal and Informal Settings (DRL)	Division of Undergraduate Education (DUE)	Division of Graduate Education (DGE)	Division of Human Resource Development (HRD)

EHR Core Research (ECR)[1], Building Capacity in Science Education Research (ECR: BCSER)[1], and Production Engineering Education and Research (ECR: PEER)[1]

Faculty Early Career Development Program (CAREER)[2]

Improving Undergraduate STEM Education: Hispanic Serving Institutions Program (IUSE-HSI)[4]

Racial Equity in STEM Education (EHR Racial Equity)[1]

Supplemental Funding for Postdoctoral Researchers to Mitigate COVID-19 Impacts on Research Career Progression

Advancing Informal STEM Learning (AISL)	Advanced Technological Education (ATE)	CyberCorps®: Scholarship for Service (SFS)	Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)[2]
National Artificial Intelligence Research Institutes[5]	Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)	Graduate Research Fellowship (GRFP)[2]	Alliances for Graduate Education and the Professoriate (AGEP)
Computer Science for All (CS for All: RPP)[5]	NSF Scholarships in STEM (S-STEM)[3]	Innovations in Graduate Education (IGE)	Centers of Research Excellence in Science and Technology (CREST)
Discovery Research PreK-12 (DRK-12)	Robert Noyce Teacher Scholarship Program (NOYCE)	NSF Research Traineeship Program (NRT)[2]	Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
Innovative Technology Experiences for Students and Teachers (ITEST)[3]	Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education	Secure and Trustworthy Cyberspace (SaTC)[5]	Louis Stokes Alliances for Minority Participation (LSAMP)
Research on Emerging Technologies for Teaching and Learning (RETTL)[5]			Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering (NSF INCLUDES)[2]
			Tribal Colleges and Universities Program (TCUP)

1. Cross-Directorate Funded
2. NSF-Wide
3. H-1B Visa Fee Funded
4. Stewarded by DUE and HRD
5. Co-managed with another Directorate

https://www.nsf.gov/dir/index.jsp?org=EHR

National Science Foundation

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INVESTS in the improvement of STEM learning for people of all ages by promoting innovative research, development, and evaluation of learning and teaching across all STEM disciplines in formal and informal learning settings.

Division of Research on Learning in Formal and Informal Settings (DRL)

National Science Foundation

Advancing Informal STEM Learning (AISL)
NSF 21-599 – *Deadline: January 18, 2022*

- Goals:
  - To advance new approaches to and evidence-based understanding of the design and development of STEM learning opportunities for the public in informal environments;
  - To provide multiple pathways for broadening access to and engagement in STEM learning experiences;
  - To advance innovative research on and assessment of STEM learning in informal environments;
  - And to engage the public of all ages in learning STEM in informal environments.

- Supports six types of projects:
  (1) Pilots and Feasibility Studies,
  (2) Research in Service to Practice,
  (3) Innovations in Development,
  (4) Broad Implementation,
  (5) Literature Reviews, Syntheses, or Meta-Analyses, and
  (6) Conferences.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504793

National Science Foundation

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National Science Foundation

Computer Science for All (CSforAll: RPP)
NSF 20-539 – Deadline: 2nd Wed in Feb

- Goal: To provide *all* U.S. students the opportunity to participate in CS/CT education in school at the K-12 level.
  - Focus on both research and research-practitioner partnerships.

- **High school teachers**: preparation, professional development (PD) and ongoing support that CS teachers need to teach rigorous CS courses,

- **K-8 teachers**: the instructional materials and preparation they need to integrate CS/CT into their teaching,

- **Schools and districts**: the resources needed to define and evaluate multi-grade pathways in CS and CT, and

- **Research** about the learning and teaching of introductory computer science.

National Science Foundation

Discovery Research PreK-12 (DRK-12)
NSF 20-572 – Deadline: Oct 5, 2022

- Goal: To significantly enhance the learning and teaching of STEM fields by preK-12 students and teachers, through research and development of STEM education innovations and approaches.

- Awards made across all facets of formal PreK-12 STEM education.
  - Three major research and development strands: Assessment; Learning; and Teaching.
  - Priority areas include early childhood STEM education, statistics and data science, and integrating computing and computational thinking across the curriculum

National Science Foundation

Innovative Technology Experiences for Students and Teachers (ITEST)
NSF 19-583

- Goal: To advance educational innovations that motivate and prepare PreK-12 learners for computationally-intensive industries of the future.

- 5 Design Elements
    - Innovative uses of technologies
    - Innovative learning experiences
    - STEM workforce development
    - Strategies for broadening participation
    - Strategic partnerships

National Science Foundation

Research on Emerging Technologies for Teaching and Learning (RETTL)

NSF 20-612 – Deadline: Oct 17, 2022

- Goal: To fund exploratory and synergistic research in emerging technologies (to include, but not limited to, artificial intelligence (AI), robotics, and immersive or augmenting technologies) for teaching and learning in the future.

- Projects
  - Accepts proposals that focus on learning, teaching or a combination of both
  - Should be exploratory, experimental; those that are risky and potentially transformative are highly encouraged
  - Program envisions cross-disciplinary teams that approach teaching and learning technologies with complementary perspectives and scientific rigor

- Special interest in diverse learner/educator populations, contexts, and content, including teaching and learning in STEM and in foundational areas that enable STEM.

National Science Foundation

STRENGTHEN STEM education at two- and four-year colleges and universities by improving curricula, instruction, laboratories, infrastructure, assessment, diversity of students and faculty, and collaborations.

Division of Undergraduate Education (DUE)

National Science Foundation

Advanced Technological Education (ATE)
NSF 21-598 – Deadline: 1ˢᵗ Thu in Oct

- Focusing on the education of highly-qualified science and engineering technicians for advanced technology fields that drive our nation's economy.

- The ATE program focuses on IHEs that award two-year degrees in advanced technology fields and expects these IHEs and their faculty to have significant leadership roles on all projects.

- Supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5464

National Science Foundation

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

NSF 21-579 – 3rd Wednesday in January and July

- Promoting novel, creative, and transformative approaches to generating and using new knowledge about undergraduate STEM teaching and learning.

- The **Engaged Student Learning** track focuses on design, development, and research that involve the creation, exploration, or implementation of tools, resources, and models.

- The **Institutional and Community Transformation** track focuses on applying evidence-based practices that improve undergraduate STEM education and research on organizational change processes.

National Science Foundation

NSF Scholarships in STEM (S-STEM)
NSF 21-550 – Solicitation Under Revision

- Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to Institutions of Higher Education (IHEs) to fund scholarships and to adapt, implement, and study effective evidence-based curricular and co-curricular activities.

- Ultimately, the S-STEM program looks to increase the number of low-income students who graduate and contribute to the American innovation economy with their STEM knowledge.

National Science Foundation

Robert Noyce Teacher Scholarship Program (NOYCE)

NSF 21-578 – Deadline: Aug 30, 2022

- Projects provide scholarships and stipends to recruit, prepare, and retain highly effective elementary and secondary mathematics and science teachers and teacher-leaders in high-need school districts.

- Supports exploratory studies and research projects that address STEM teacher effectiveness and retention in high-need LEAs.

- Funding may also be requested to support STEM research experiences and opportunities for pre-service and in-service STEM teachers.

National Science Foundation

Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education
PD 21-7980 – Deadline: ongoing; Next target date: May 2, 2022

- Potential outcomes of interest include: (1) making systemic improvements in STEM education; (2) promoting diversity, equity, and inclusion; (3) mitigating the disproportionate impact of the COVID-19 pandemic on two-year colleges.

- Interest in projects that aim to advance undergraduate STEM education by:

  - improving student outcomes in foundational STEM courses;

  - broadening and/or creating new STEM curricula;

  - providing STEM students with authentic research experiences, internships, and other experiential learning opportunities;

  - increasing access to high quality STEM education through new technologies;

  - re- or up-skilling incumbent workers for new STEM jobs;

  - building STEM career and seamless transfer pathways;

  - developing novel mechanisms to identify talent and recruit into STEM programs.

- In all cases, NSF is interested in projects that include substantive public and private partnerships that contribute towards advancing STEM education.
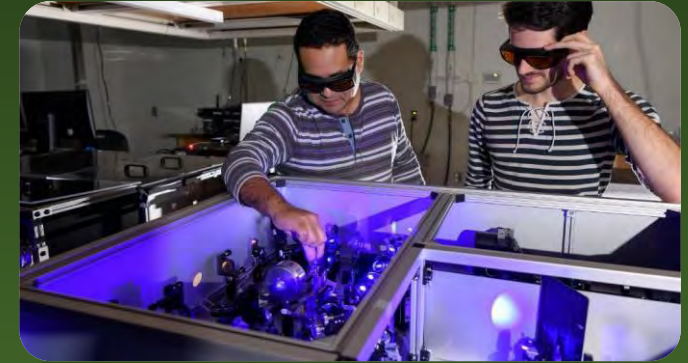
PROVIDE funding to support graduate students and the development of novel, innovative programs to prepare tomorrow's leaders in STEM fields.

Division of Graduate Education (DGE)

National Science Foundation

Graduate Research Fellowship (GRFP)
NSF 20-587 – Deadline: October

- The five-year fellowship includes three years of financial support for graduate students who are or will be pursuing research-based Master's and doctoral degrees in eligible fields of study.

- No post-graduate study service requirement.

- Current annual stipend is $34K and there is an additional $12K cost of education allowance to the institution.

https://www.nsfgrfp.org/

https://www.nsfgrfp.org/resources/about-grfp/about-grfp-infographic/

National Science Foundation

Innovations in Graduate Education (IGE)
NSF 20-595 – Deadline: Mar 25, 2022

- Supports piloting, testing, and validating innovative and potentially transformative approaches to STEM graduate education.

- Projects generate the knowledge base required for the customization, implementation, and broader adoption of transformative improvements in graduate education.

- Addresses both workforce development and institutional capacity building needs in graduate education. Strategic collaborations are encouraged.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505473

National Science Foundation

NSF Research Traineeship Program (NRT)
NSF 21-536 – Deadline: Sep 6, 2022

- Encourages development of bold, new, potentially transformative models for inclusive STEM graduate training in high priority fields of convergent research.

- Projects develop skills, knowledge, and competencies of research-based master's and PhD students needed to pursue a range of STEM careers.

- Proposals that involve strategic collaborations are encouraged.

National Science Foundation

CyberCorps®: Scholarship for Service (SFS)
NSF 21-580 – Deadline: July 15, 2022

- Grant awards to institutions of higher education to provide scholarships to undergraduate and graduate students pursuing training in cybersecurity.

- Aligns with U.S. strategy to develop a superior cybersecurity workforce.

- After graduation, scholarship recipients are required to work for a federal, state, local, or tribal government organization in a cybersecurity-related position for a period equal to the length of their scholarship.

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Secure and Trustworthy Cyberspace (SaTC)
## *NSF 21-500 – EDU proposals accepted any time*

- Welcomes proposals that address cybersecurity and privacy, and draw on expertise in one or more of these areas: computing, communication and information sciences; engineering; education; mathematics; statistics; and social, behavioral, and economic sciences.

- Proposals must be submitted to one of the following designations:
  - **CORE:** This designation is the main focus of the SaTC research program, spanning the interests of NSF's Directorates for Computer and Information Science and Engineering (CISE), Engineering (ENG), Mathematical and Physical Sciences (MPS), and Social, Behavioral and Economic Sciences (SBE).

  - **EDU: The Education (EDU) designation will be used to label proposals focusing entirely on cybersecurity education.**

  - **TTP:** The Transition to Practice (TTP) designation will be used to label proposals that are focused exclusively on transitioning existing research results to practice.

National Science Foundation

SUPPORT and **PROMOTE** activities that seek to strengthen STEM education for underserved communities, broaden their participation in the workforce, and add to our knowledge base about programs of inclusion.
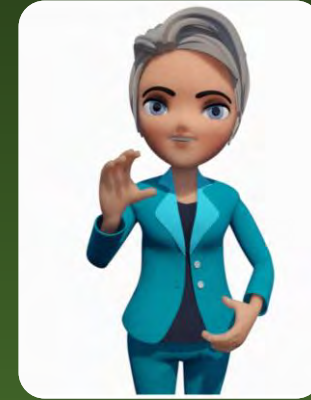
Human Resource Development (HRD)

National Science Foundation

Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)

NSF 20-554 – Deadline: Aug 1, 2022 (LOI)

- Issues grant awards to institutions of higher education and other organizations to address systemic gender-based inequities impacting STEM faculty with systemic change strategies.

- More information at: www.nsf.gov/ADVANCE

- Email questions to ADVANCE@nsf.gov

National Science Foundation

Alliances for Graduate Education and the Professoriate (AGEP)

NSF 21-576 – Deadline: Jun 2, 2022 (LOI)

- Goal: To increase the number of historically underrepresented minority faculty in STEM.

- Seeks to advance and enhance systemic factors that support equity and inclusion and mitigate systemic inequities in the academic profession and workplace.

- Alliances promote equity and the professional advancement of doctoral candidates, postdoctoral researchers and faculty in STEM academic careers.

National Science Foundation

Centers of Research Excellence in Science and Technology (CREST)

NSF 18-509 – Deadline: Multiple (see RFP)

- Provides support to enhance the research capabilities of minority-serving institutions (MSI) through the establishment of centers that effectively integrate education and research.

  - CREST Center awards

  - Historically Black Colleges and Universities Research Infrastructure for Science and Engineering (HBCU-RISE)

  - CREST Postdoctoral Research Fellowship (PRF)

National Science Foundation

Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)

NSF 20-559 – Deadline: Multiple (see RFP)

- Supports development, implementation, and study of evidence-based, innovative models and approaches to prepare HBCU undergraduates for the STEM workforce.

- Bolsters STEM faculty research capacity and professional development.

- Encompasses broadening participation research in STEM Education.

National Science Foundation

Louis Stokes Alliances for Minority Participation (LSAMP)

NSF 20-590 – Deadline: June, November

Transforming STEM education to support African American, Hispanic American, American Indian, Alaska Native, Native Hawaiian, and Native Pacific Islander students

- Innovative, evidence-based recruitment, retention, and graduation strategies (alliance-based, centers and pathways)

- Enable successful transfer of students from 2-yr to 4-yr institutions (Bridge to the Baccalaureate)

- Increase undergraduate access to high-quality research experiences (REU)

- Facilitate seamless transition of students into graduate programs (Bridge to the Doctorate)

National Science Foundation

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science(NSF INCLUDES)
NSF 20-569

- Expressed mission to enhance U.S. leadership in discoveries and innovations focused on NSF's commitment to equity, inclusion, and broadening participation in STEM at scale.

- Two tenets:
  - broadening participation in STEM at scale (projects focus on realizing systemic change at large, national scales); and
  - collaborative infrastructure (organizations coming together to develop a shared goal, mutually reinforcing activities, objectives and measures to map progress, a mechanism for continuous communication, and potential for expansion, sustainability, and scale)

National Science Foundation

Tribal Colleges and Universities Program (TCUP)
NSF 21-595 – Deadline: Multiple (see RFP)

- **Instructional Capacity Excellence in TCUP Institutions (ICE-TI):** Support for transformational STEM instruction and research

- **Targeted STEM INFUSION Projects(TSIP):** Similar but smaller in scale and impact

- **TCUP for Secondary and Elementary Teachers in STEM (TSETS):** Extending TCUP institutions' research and instructional capacity to the K-12 domain

- **Small Grants for Research (SGR):** Supporting STEM and STEM Education research

- **TCU Enterprise Advancement Centers (TEA Centers):** Paradigm-shifting support to the TCUP institution

- **Cyberinfrastructure Health, Assistance, and Improvements (CHAI):** Upgrading cyberinfrastructure to meet the demands of virtual instruction, advanced computing and data science

- **Preparing for TCUP Implementation (Pre-TI): S**upport for activities that prepare an institution for Implementation-level projects

- **TCUP Partnerships:** Support for collaborations that will improve TCUP institutions' instructional and research capacity.

National Science Foundation

Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)
NSF 20-599 – Feb, Aug 2022

- Enhance the quality of undergraduate STEM education at HSIs.

- Increase the recruitment, retention, and graduation rates of all undergraduate students pursuing STEM degrees at HSIs.

- Promote research on engaged student learning at HSIs and about what it takes to diversify and increase participation in STEM effectively.

- Incentivize institutional or community transformation.

- Build STEM education research capacity at HSIs.

National Science Foundation

Faculty Early Career Development Program (CAREER)

NSF 20-525 – Deadline: Jul 25, 2022

- NSF-wide activity supporting early-career faculty with potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.

- Single PI project (5 years) and PI must meet eligibility requirements (e.g., assistant professor, tenure-track or equivalent can only submit 3 times)

- Integration of Research and Education plan is required

- Another program must be selected when submitting proposal (e.g., EHR CORE Research, IUSE, DRK-12, etc.)

- EHR strongly recommends advisory boards

National Science Foundation

EHR Core Research (ECR)
NSF 19-508 – Deadline: 1ˢᵗ Thu in Oct

- **Track I – Research on STEM Learning and Learning Environments** supports research projects that seek to advance the fundamental knowledge necessary to improve STEM learning in the many environments and contexts in which such learning takes place.

- **Track II – Research on Broadening Participation in STEM** supports fundamental research investigating issues related to the learning and participation of groups underrepresented in STEM fields, at both the individual and institutional levels.

- **Track III – Research on STEM Workforce Development** supports fundamental research on STEM workforce development at all levels of education, from K-12 through higher education and the workplace.

National Science Foundation

EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR:BCSER)

NSF 20-521 – Deadline: 1st Thu in Oct

- Supports activities that enable early and mid-career researchers to acquire expertise and skills to conduct rigorous fundamental research in STEM education.

- Funds research career development activities on topics relevant to qualitative and quantitative research methods and design, including the collection and analysis of new qualitative or quantitative data, secondary analyses using extant datasets, and meta-analyses.

- Complements the Faculty Early Career Development (CAREER) Program's mission and focus.

- Welcomes proposals from mid-career faculty and investigators from academic as well as non-academic organizations, including researchers with a doctoral degree in a disciplinary STEM field outside of education who wish to pursue research in STEM education, and those with doctoral degrees from an education research program who wish to complement their expertise with training in a disciplinary STEM field.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505645

National Science Foundation

Racial Equity in STEM Education (EHR Racial Equity)

PD 21-191Y

Target Dates Oct 12, 2021, March 22, 2022

- Goal: To support bold, ground-breaking, and potentially transformative projects addressing systemic racism in STEM.

- Proposals should
  - Advance racial equity in STEM education and workforce development through research (both fundamental and applied) and practice.
  - Be led by, or developed and led in authentic partnership with, individuals and communities most impacted by the inequities caused by systemic racism.

- Contexts may include, but are not limited to: PreK-12, two- and four-year undergraduate, and graduate institutions; municipal organizations; STEM workplaces; and informal STEM contexts, such as museums, community organizations, and media.

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DCL: Supplemental Funding for Postdoctoral Researchers to Mitigate COVID-19 Impacts on Research Career Progression

Deadline: rolling basis through December 31, 2021

- Provides funds to support a new postdoctoral researcher for up to two years or a continuing postdoctoral researcher for one year.

- Encourage requests from PIs working at institutions disproportionately impacted by the pandemic, or PIs who are early in their careers and/or who are still actively building their careers.

- Eligibility:
  - Active award in specific programs see DCL for details
  - Postdoctoral researcher must hold a terminal degree at the time that the supplemental funding is awarded
  - Postdoctoral researcher must be engaged in mentored STEM research or STEM education research and development

https://www.nsf.gov/pubs/2021/nsf21066/nsf21066.jsp?WT.mc_id=USNSF_25&WT.mc_ev=click

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