Directorate for STEM Education Overview

EDU

Directorate for STEM Education

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

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1. Cross-Directorate
2. NSF-Wide
3. H-1B Visa Fee Funded
4. Stewarded by DUE and EES
5. Co-managed with another Directorate
6. Program Description
7. On behalf of OSTP (in orange font)
8. NSF-wide stewarded by EES (in gold font)

https://new.nsf.gov/edu

Office of the Assistant Director – Directorate for STEM Education

Division of Research on Learning in Formal & Informal Settings (DRL)	Division of Graduate Education (DGE)	Division of Undergraduate Education (DUE)	Division of Equity for Excellence in STEM (EES)
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]			
Racial Equity in STEM Education (EHR Racial Equity)[1,6]			
STEM Education Postdoctoral Research Fellowships (STEM Ed PRF)[1]			
Advancing Informal STEM Learning (AISL)	CyberCorps®: Scholarship for Service (SFS)	Advanced Technological Education (ATE)	Increasing the Participation and Advancement of Women in Academic Science & Engineering Careers (ADVANCE)[8]
National Artificial Intelligence Research Institutes[5]	Graduate Research Fellowship (GRFP)[2]	Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)	Alliances for Graduate Education and the Professoriate (AGEP)
Computer Science for All (CS for All: RPP)[5]	Innovations in Graduate Education (IGE)	Improving Undergraduate STEM Education: Hispanic Serving Institutions (IUSE:HSI; HSI Program)[4]	Centers of Research Excellence in Science and Technology (CREST)
Discovery Research PreK-12 (DRK-12)	NSF Research Traineeship Program (NRT)[2]	NSF Scholarships in STEM (S-STEM)[3]	Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
Innovative Technology Experiences for Students and Teachers (ITEST)[3]	Secure and Trustworthy Cyberspace (SaTC)[5]	Robert Noyce Teacher Scholarship Program (NOYCE)	Improving Undergraduate STEM Education: Hispanic Serving Institutions (HSI Program)[4]
Research on Emerging Technologies for Teaching and Learning (RETTL)[5]		Advancing Innovation & Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education[6]	Louis Stokes Alliances for Minority Participation (LSAMP)
			NSF's Eddie Bernice Johnson Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering (INCLUDES)[8]
			Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)[7]
			Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM)[7]
			Tribal Colleges and Universities Program (TCUP)

The most up-to-date information is on the nsf.gov/edu website.

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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.

Division of Equity for Excellence in STEM (EES)

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https://www.nsf.gov/div/index.jsp?div=EES

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ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions

NSF 20-554 – Deadline: August 7, 2023 (Letter of Intent (LOI) (required))

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

https://new.nsf.gov/funding/opportunities/advance-organizational-change-gender-equity-stem

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Alliances for Graduate Education and the Professoriate (AGEP)

NSF 21-576 – Deadline: February 13, 2024 (preliminary proposal (required))

- Goal: To increase the number of minority faculty in STEM.
- Advancing academic STEM career pathway models and systemic institutional change.
- Alliances promote equity and the professional advancement of doctoral candidates, postdoctoral researchers and faculty in STEM academic careers.

https://new.nsf.gov/funding/opportunities/alliances-graduate-education-professoriate-agep

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Centers of Research Excellence in Science and Technology (CREST)

NSF 23-595 – Deadline: Multiple in December (see website)

- CREST Center awards
- Historically Black Colleges and Universities Research Infrastructure for Science and Engineering (HBCU-RISE)
- CREST Postdoctoral Research Fellowship (PRF)

https://new.nsf.gov/funding/opportunities/centers-research-excellence-science-technology-0

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

NSF 23-563 – Deadlines: Multiple, starting July 25, 2023 (see website)

- 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.

https://new.nsf.gov/funding/opportunities/historically-black-colleges-universities-1

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Louis Stokes Alliances for Minority Participation (LSAMP)

NSF 20-590 – Deadline: November 3, 2023

https://new.nsf.gov/funding/opportunities/louis-stokes-alliances-minority-participation

Transforming STEM education to support African American, Hispanic American, American Indian, Alaska Native, Native Hawaiian, 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 access to high-quality research experiences
- Facilitate seamless transition of students into graduate programs

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https://new.nsf.gov/funding/opportunities/inclusion-across-nation-communities-learners

https://www.includesnetwork.org/home

NSF's Eddie Bernice Johnson Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering (INCLUDES) *NSF 22-622 – Deadline: October 24, 2023*

- Two tenets:
  - Broadening participation in STEM at scale
  - Building collaborative infrastructure

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Tribal Colleges and Universities Program (TCUP) *NSF 21-595 – Deadline: Multiple, starting June 1, 2023 (see website)*

https://new.nsf.gov/funding/opportunities/tribal-colleges-universities-program-tcup

- **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
- **Small Grants for Research (SGR):** supports STEM or STEM education research
- **TCU Enterprise Advancement Centers (TEA Centers):** paradigm-shifting support to the TCUP institution as an intellectual resource

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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)

https://www.nsf.gov/div/index.jsp?div=DRL

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Advancing Informal STEM Learning (AISL)

NSF 22-626 – Deadline: January 10, 2024

https://new.nsf.gov/funding/opportunities/advancing-informal-stem-learning-aisl

- Seeks to fund:
  - Research and practice, with continued focus on investigating a range of informal STEM learning experiences and environments that make lifelong learning a reality.
  - Proposals that center equity and belonging, and further the well-being of individuals and communities who have historically been and continue to be excluded, underserved, or underrepresented.
  - High-quality plans to generate knowledge through research, evaluation, and practice.

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Discovery Research PreK-12 (DRK-12)

NSF 23-596 – Deadline: November 8, 2023

https://new.nsf.gov/funding/opportunities/discovery-research-prek-12-drk-12

- Goal: to catalyze research and development that enhances all preK-12 teachers' and students' opportunities to engage in high-quality learning experiences related to the sciences, technology, engineering, and mathematics (STEM).
- Awards made across all facets of formal PreK-12 STEM education.

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Innovative Technology Experiences for Students and Teachers (ITEST)

NSF 22-585 – Deadline: August 11, 2023

https://new.nsf.gov/funding/opportunities/innovative-technology-experiences-students

- Goal: To advance educational innovations that motivate and prepare PreK-12 learners for computationally-intensive industries of the future.
  - Engage students in technology-rich learning to develop disciplinary and/or transdisciplinary STEM content knowledge, including skills in data literacy and evidence-based decision-making and reasoning;
  - Prioritize the full inclusion of groups who have been underrepresented and/or underserved in the STEM and information and communication technologies (ICT) workforce;
  - Motivate students to pursue appropriate education pathways to technology-rich careers; and
  - Leverage strategic and community partnerships to expand education pathways in communities through public and private partnerships

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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)

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https://www.nsf.gov/div/index.jsp?div=DUE

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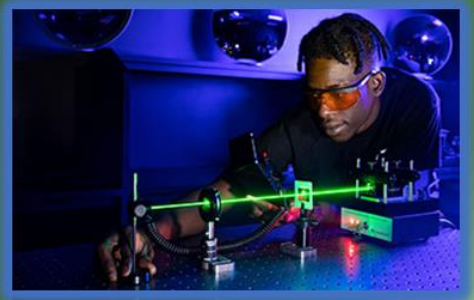
Mission & Investments

"To promote excellence in undergraduate STEM education for ALL students."

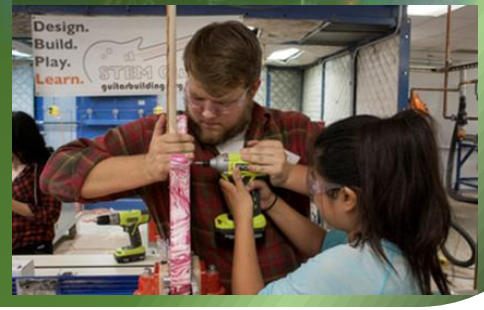
Provide Leadership

Support Curriculum Development

Prepare the Workforce



Foster Connections



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Advanced Technological Education (ATE)

NSF 21-598 – Deadline: October 5, 2023

https://new.nsf.gov/funding/opportunities/advanced-technological-education-ate

- Focusing on the education of highly-qualified science and engineering technicians for advanced technology fields that drive our nation's economy.
- Improving STEM education of science and engineering technicians with a focus on two-year public community and technical colleges.

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

NSF 23-510 – Deadlines: July 19, 2023 & January 17, 2024

https://new.nsf.gov/funding/opportunities/improving-undergraduate-stem-education-directorate

- Promoting discovery of new evidence-based interventions to improve undergraduate STEM teaching and learning.
- Transforming institutions and STEM communities through the adoption and implementation of best practices in undergraduate STEM teaching and learning.
- Supporting diversity and inclusion in STEM by advancing knowledge and adoption of effective STEM education for all.

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NSF Scholarships in STEM (S-STEM)

NSF 23-527 – Deadline: February 20 & March 28, 2024

https://new.nsf.gov/funding/opportunities/nsf-scholarships-science-technology-engineering

- Addressing the need for a high-quality scientific workforce in STEM disciplines.
- Providing grants to institutions to support the increased success of low-income, academically talented students with demonstrated unmet financial need.

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Robert Noyce Teacher Scholarship Program (NOYCE) *NSF 23-586 – Deadline: August 29, 2023*

https://new.nsf.gov/funding/opportunities/robert-noyce-teacher-scholarship-program-0

- Addressing the critical need for highly effective K-12 STEM teachers and teacher leaders by recruiting, preparing, and retaining talented STEM undergraduates and professionals for teaching careers.
- Researching effectiveness and retention of STEM teachers in high-need school district.
- Includes a research track.

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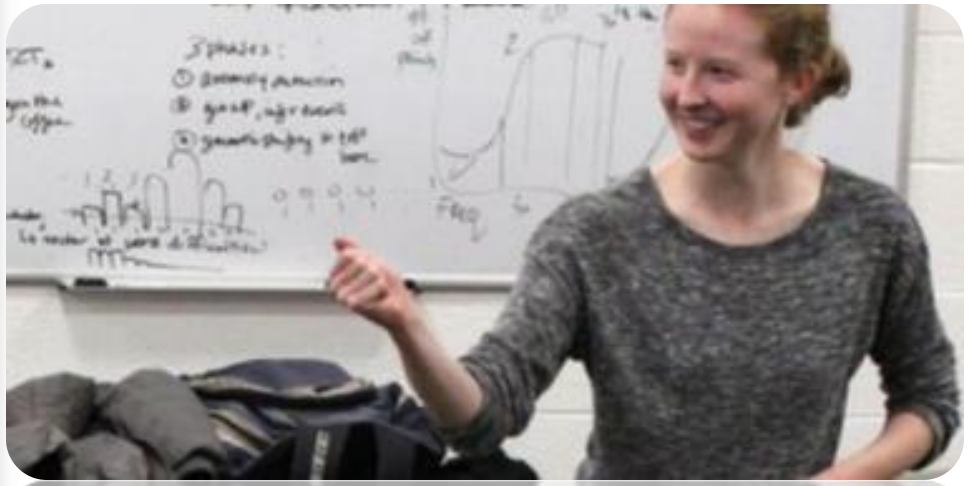
MISSION: Enable and inspire an inclusive, equitable, and globally competitive U.S. STEM workforce by supporting students, research, scholarship, and innovations in graduate education.



Division of Graduate Education (DGE)

National Science Foundation

https://www.nsf.gov/div/index.jsp?div=DGE

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CyberCorps®: Scholarship for Service (SFS)

NSF 23-574 – Deadline: July 17, 2023

Goal: Increase the number and diversity of qualified cybersecurity professionals prepared to serve the cybersecurity mission of the government

- Aligns with NSF Statutory Mission to secure the national defense
- Institutions of higher education provide scholarships to undergraduate and graduate students pursuing degrees related to cybersecurity
- After graduation, scholarship recipients serve the cybersecurity mission of the government for a period equal to the length of their scholarship
- Partnership with Office of Personnel Management and the Department of Homeland Security
- 12-16 awards/year; ~$2.5-$4MM; 5-year duration

https://new.nsf.gov/funding/opportunities/cybercorps-scholarship-service-sfs-0

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Secure and Trustworthy Cyberspace (SaTC)

NSF 22-517 – Deadline: ongoing

https://new.nsf.gov/funding/opportunities/secure-trustworthy-cyberspace-satc

Goal: Protect and preserve the growing social and economic benefits of cyber systems while ensuring security and privacy

- Proposals managed in DGE respond to the SaTC-EDU Track focusing **on cybersecurity education and training**
- Projects develop evidence-based and evidence-generating approaches to improve cybersecurity education and workforce development at the K-12, undergraduate, graduate, and professional education levels.
- $400-500k maximum award; 3-year duration

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Graduate Research Fellowship Program (GRFP)

NSF 22-614 – Deadline: October (Multiple)

Goal: Support outstanding graduate students as they prepare to serve as the nation's future STEM scholars and leaders

- Supports research-based master's and doctoral degree-seeking students in eligible fields of study
- Current annual stipend is $37K, plus $12K cost of education allowance
- ~12,500 applications processed per year; anticipate 2500 awards for FY2023

https://new.nsf.gov/funding/opportunities/nsf-graduate-research-fellowship-program-grfp

https://www.nsfgrfp.org/

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Innovations in Graduate Education (IGE)

NSF 20-595 – Deadline: March 25, 2024

https://new.nsf.gov/funding/opportunities/innovations-graduate-education-program

Goal: Encourage development and implementation of bold and potentially transformative approaches to STEM graduate education and training

- Supports piloting, testing, and validating innovative and potentially transformative approaches to STEM graduate education.
- Projects generate knowledge required for customization, implementation, and broader adoption.
- 6-10 awards/year; $1MM maximum award; 5-year duration

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NSF Research Traineeship Program (NRT)

NSF 21-536 – Deadline: September 6, 2023

https://new.nsf.gov/funding/opportunities/national-science-foundation-research-traineeship

Goal: Prepare diverse cohorts of STEM graduate students for a range of STEM careers in high-priority interdisciplinary or convergent research areas

- Addresses workforce development, emphasizing broad participation
- Builds institutional capacity for convergent graduate education
- Strategic collaborations encouraged (private sector, non-governmental organizations, government, national laboratories, field stations, teaching and learning centers, informal science centers, and academic partners)
- 18-20 awards/year; 5-year duration; Track 1: $3MM; Track 2: $2MM

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STEM Education Postdoctoral Research Fellowships (STEM Ed IPRF)

NSF 23-544 – Deadline March 24, 2023

Goal: Build the national capacity to conduct STEM education research by funding early-career scholars.

- Postdoctoral fellowship projects designed to enhance the research knowledge, skills, and practices of STEM Education research by recent doctoral graduates in STEM, STEM Education, Education, and related disciplines.

https://new.nsf.gov/funding/opportunities/science-technology-engineering-mathematics-0

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STEM Education Organizational Postdoctoral Research Fellowships (STEM Ed OPRF) *NSF 23-544* – *Deadline March 24, 2023*

https://new.nsf.gov/funding/opportunities/science-technology-engineering-mathematics-1

Goal: Build the national capacity to conduct STEM education research by funding early-career scholars.

- Postdoctoral fellowship projects designed to enhance the research knowledge, skills, and practices of STEM Education research by recent doctoral graduates in STEM, STEM Education, Education, and related disciplines.

Programs that cut across the directorate and beyond

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EDU Core Research (ECR)

NSF 21-588 – Deadline: October 5, 2023

https://new.nsf.gov/funding/opportunities/ehr-core-research-ecrcore

Funds:

- Foundational Research that has potential implications for STEM education interventions and policies
  - Track I – Research on STEM Learning and Learning Environments
  - Track II – Research on Broadening Participation in STEM
  - Track III – Research on STEM Workforce Deve

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

NSF 22-548 – Deadline: February 24, 2023

- Supports activities that enable early and mid-career researchers to acquire expertise and skills to conduct rigorous fundamental research in STEM education.
- Welcomes proposals from new and more seasoned faculty and investigators from academic as well as non-academic organizations

https://new.nsf.gov/funding/opportunities/ehr-core-research-building-capacity-stem-education

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Faculty Early Career Development Program (CAREER)

NSF 22-586 – Deadline: July

- 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)
- EDU appropriate research qualifies

https://new.nsf.gov/funding/opportunities/faculty-early-career-development-program-career

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Racial Equity in STEM Education (Racial Equity)

NSF 22-634 – Deadline: October 10, 2023

https://new.nsf.gov/funding/opportunities/racial-equity-stem-education-ehr-racial-equity-0

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

- Proposals should
  - Advance racial equity in STEM education
  - Center the voices of those most impacted by systemic racism.
  - Be led by, or developed and led in authentic partnership with, individuals and communities most impacted by the inequities caused by systemic racism.

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Computer Science for All (CSforAll: RPP)

NSF 20-539 – Deadline: February, 14, 2024

https://new.nsf.gov/funding/opportunities/computer-science-all-csforall-research-rpps

Goal: To provide *all* U.S. students the opportunity to participate in CS/CT education in school at the K-12 level.

- **High school teachers**: preparation, professional development (PD) & ongoing support for CS teachers to teach rigorous courses,
- **K-8 teachers**: the instructional materials and preparation they need to integrate CS/CT into their teaching,
- **Schools and districts**: resources needed to define & evaluate pathways in CS & CT, &
- **Research** about the learning & teaching of introductory computer science.

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Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)

NSF 22-611 – Deadline: Multiple, starting August 30, 2023 (see website)

- Enhancing quality of undergraduate STEM education at HSIs.
- Increasing retention and graduation rates of undergraduate students pursuing degrees in STEM at HSIs.
- Building capacity in undergraduate STEM education at HSIs that typically do not receive high levels of NSF grant funding.

https://new.nsf.gov/funding/opportunities/improving-undergraduate-stem-education-hispanic

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Workplace Equity for Persons with Disabilities in STEM and STEM Education

NSF 23-593 – Deadline: September 19, 2023

https://new.nsf.gov/funding/opportunities/workplace-equity-persons-disabilities-stem-stem

Funds projects that:

- Study barriers and solutions to diversity, equity, inclusion, and accessibility in STEM and STEM education workplaces and training settings for persons with disabilities;
- Apply intersectional social identity perspectives to investigate characteristics and conditions of STEM and STEM education workplaces and training environments that limit and/or improve diversity, equity, inclusion, and accessibility for persons with disabilities;
- Conduct use-inspired and solution-oriented translational research about diverse, equitable, inclusive, and accessible STEM and STEM Education workplaces and training settings for persons with disabilities.

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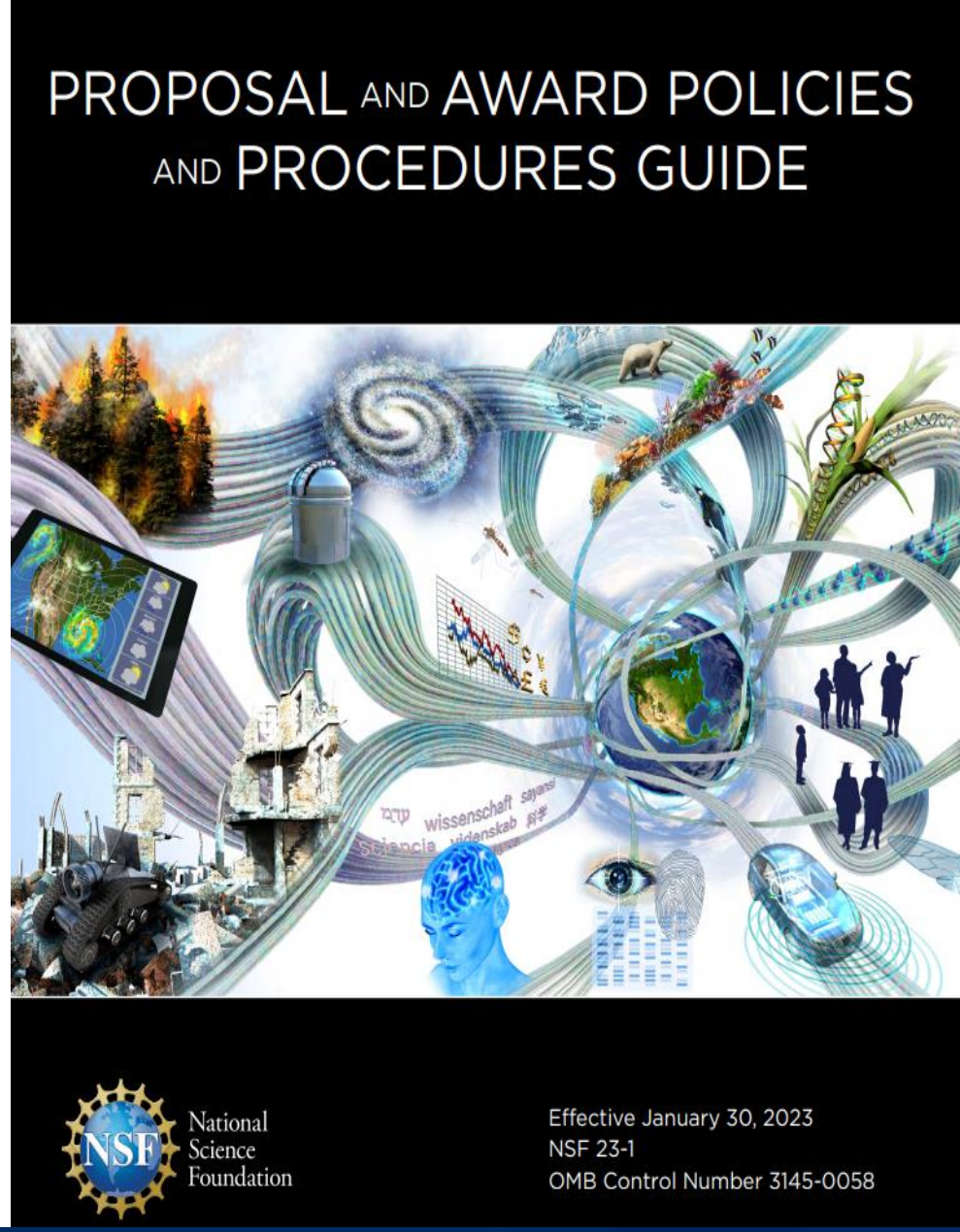
Proposal and Awards Policy Procedure Guide

- The PAPPG is updated regularly and provides
  - Information for Proposal Preparation and Submission Guidelines
  - Award, Administration and Monitoring Processes for Funded Projects
  - It is named the NSF XX-1, e.g. in 2023, it is NSF 23-1; the next one will be NSF 24-1.

https://new.nsf.gov/policies/pappg/23-1



Interested in finding out more?

NSF By the Numbers

Provides statistical and funding information for awards, NSF-funded institutions, funding rate, proposals evaluated, and obligations by fiscal year

https://new.nsf.gov/about/about-nsf-by-the-numbers

Award Abstract Search

Use search terms or other classifications to find out what has been funded in varying divisions, programs, or concepts

https://www.nsf.gov/awardsearch/

Questions?