NSF Program Possibilities for DLRC and/or STEM Education Faculty

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K-12 Education and Teaching

Math and Science Partnership (MSP)

• Major research and development effort supporting innovative partnerships to improve K-12 student achievement in mathematics and science
• Projects are expected to raise achievement levels of all students and significantly reduce achievement gaps in mathematics and science performance of diverse student populations

Discovery Research K-12 (DR-K12)

• Projects enable significant advances in preK-12 and teacher learning of STEM disciplines through research and development on innovative resources, models, and technologies for use by students, teachers, administrators and policy makers.
K-12 Education and Teaching

Robert Noyce Teacher Scholarship Program

- Encourages talented science, technology, engineering, and mathematics majors and professionals to become K-12 mathematics and science teachers

- Scholarship Track supports institutional scholarships, stipends, and academic programs for undergraduate STEM majors and post-baccalaureate students holding STEM degrees who earn a teaching credential and commit to teaching in high-need K-12 school districts
Informal Education

Informal Science Education (ISE)

• Supports innovation in anywhere, anytime, lifelong learning, through investments in research, development, infrastructure and capacity-building for STEM learning outside formal school settings.
Undergraduate Education and Research

Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)


- STEP centers seek to increase number of students receiving associate or baccalaureate degrees in established or emerging STEM fields
- Type 1 proposals provide for full implementation efforts at academic institutions. Type 2 proposals support educational research projects on associate or baccalaureate STEM degree attainment
Undergraduate Education and Research

Science, Technology, Engineering, and Mathematics Talent Expansion Program Centers (STEP Centers)


- STEP centers support groups of faculty representing a cross section of institutions of higher education to identify national challenge or opportunity in undergraduate STEM education, and to propose comprehensive and coordinated activities to address that challenge or opportunity within national context.
Undergraduate Education and Research

Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES)


• Formerly the CCLI program, TUES seeks to improve quality of science, technology, engineering, and mathematics (STEM) education for all undergraduate students, and especially encourages projects having the potential to transform undergraduate STEM education
Undergraduate Education–Disciplinary

Nanotechnology Undergraduate Education (NUE) in Engineering


- Promotes introducing nanoscale science, engineering, and technology through a variety of interdisciplinary approaches into undergraduate engineering education

- FY11 focus was nanoscale engineering education with relevance to devices and systems and/or on societal, ethical, economic and/or environmental issues relevant to nanotechnology
Undergraduate Education—Disciplinary

Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM)

• Goal is to enhance undergraduate education and training at intersections of biological and mathematical sciences and to better prepare undergraduate biology or mathematics students to pursue graduate study and careers in fields integrating mathematical and biological sciences

• Activity core is jointly-conducted long-term research experiences for interdisciplinary balanced teams of at least two undergraduates from departments in biological and mathematical sciences
Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)

• Grants to institutions of higher education to support scholarships for academically talented, financially needy students, enabling them to enter workforce following completion of associate; baccalaureate; or graduate-level degree in science and engineering disciplines

• Grantee institutions are responsible for selecting scholarship recipients, reporting demographic information about student scholars, and managing S-STEM project
Graduate Education and Research

Graduate Stem Fellows in K-12 Education (GK-12)

- Funds graduate students in NSF-supported science, technology, engineering, and mathematics (STEM) disciplines to bring their leading research practice and findings into K-12 learning settings
- Through collaborations, graduate students can gain deeper understanding of their own research and place it within societal and global context
Graduate Education and Research

Integrative Graduate Education and Research Traineeship Program (IGERT)


- Focus is on meeting challenges of educating U.S. Ph.D. scientists and engineers who will pursue careers in research and education, with interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become leaders and creative agents for change.
STEM Research and Evaluation

Research and Evaluation on Education in Science and Engineering (REESE)


• Advances research at frontiers of STEM learning, education, and evaluation to provide foundational knowledge for improving STEM teaching and learning at all educational levels in all settings
Supports research on evaluation with special emphasis on exploring innovative approaches for determining impacts and usefulness of STEM education projects and programs

Builds on and expands theoretical foundations for evaluating STEM education and workforce development initiatives, including translating and adapting approaches from other fields, and growing capacity and infrastructure of evaluation field
Disabilities, Gender, Workforce Research

Research in Disabilities Education (RDE)

• Broadens participation and achievement of people with disabilities in all fields of science, technology, engineering, and mathematics (STEM) education and associated professional careers

• Particular emphasis on addressing disability related differences in secondary and post-secondary STEM learning and in educational, social and pre-professional experiences that influence student interest, academic performance, retention in STEM degree programs, STEM degree completion and career choices
Disabilities, Gender, Workforce Research

Research on Gender in Science and Engineering


- Supports efforts to understand and address gender-based differences in science, technology, engineering, and mathematics (STEM) education and workforce participations through research, diffusion of research-based innovations, and extension services in education that will lead to larger and more diverse domestic science and engineering workforce.

Innovative Technology Experiences for Students and Teachers (ITEST)


- Supports projects designed to address growing demand for professional and information technology workers through the design, implementation, scale-up, and testing of technology-intensive educational experiences for students and teachers, and through related research studies.
Interdisciplinary Opportunities

Fostering Interdisciplinary Research on Education (FIRE)


- Seeks to facilitate the process by which scholars can cross disciplinary boundaries to acquire skills and knowledge to improve their ability to conduct rigorous research on STEM learning and education.

- Primary goal: to facilitate development of innovative theoretical, methodological, and analytic approaches to understanding complex STEM education issues of national importance and, by so doing, make progress toward solving them. Secondary goal: to broaden and deepen pool of investigators engaged in STEM educational research.
Interdisciplinary Opportunities

Transforming STEM Learning (TSL)

• Supports interdisciplinary teams for research projects that
  1. study efficacy of existing prototypes for innovations like virtual schools, special STEM schools, and educational programs combining opportunities of formal and informal learning resources in their communities; or
  2. Design and conduct exploratory development of new potentially transformative models for STEM learning environments
Examples of Unique Opportunities

Science and Technology Centers: Integrative Partnerships (STC)

- Supports innovative, potentially transformative, complex research and education projects requiring large-scale, long-term awards. STCs conduct world-class research through partnerships among academic institutions, national laboratories, industrial organizations, and/or other public/private entities, and via international collaborations, as appropriate
Examples of Unique Opportunities

Partnerships for International Research and Education (PIRE)


• FY2011-2012 PIRE competition will focus exclusively on NSF-wide Science, Engineering, and Education for Sustainability (SEES) investment area. NSF seeks to enable discoveries needed for environmental, energy and societal sustainability while creating the necessary workforce to address these challenges. Intellectual foci are global; comparative understanding of international variability is required.
Examples of Unique Opportunities

Research Coordination Network (RCN)


• Goal is to advance a field or create new directions in research or education. Innovative ideas for implementing novel networking strategies are especially encouraged. Groups of investigators are supported to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic and international boundaries. Proposed networking activities should focus on a theme to give coherence to the collaboration.

National STEM Education Distributed Learning (NDSL)


• Aims to establish a national network of learning environments and resources for science, technology, engineering, and mathematics (STEM) education at all levels.
Thank You!