Selected NSF Programs in Education

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Selected Programs in DUE

CCLI: NSF 09-529
STEP: NSF 08-569
S-STEM: NSF 07-524
NOYCE: NSF 09-513
2 Other Selected Programs

CI-TEAM: NSF 10-xxx

REESE: NSF 09-601
Our broadest, most innovative program

Vision
Excellent STEM education for all undergraduate students.

Goal
Stimulate, disseminate, and institutionalize innovative developments in STEM education through the production of knowledge and the improvement of practice.
Type 1
$200,000  duration: 1 to 3 years
(+ $50,000  with community college partner)

Type 2
$600,000  duration: 2 to 4 years

Type 3
$5,000,000  duration: 3 to 5 yrs (5 if max reqst)
Scale of the Project
- Number of institutions, students and faculty

Maturity of the Project (Stage)
- Phase 1 may lead to Phase 2, etc.
- But prior CCLI funding is not required

Scope of the Project
- Defined by number of components, based on our view of the cyclic nature of educational innovation
**Scope and Scale:**
- One or two program components
- Limited number of students & faculty at one institution

**Expected Results:**
- Contribute to understanding of effective STEM education, typically by exploring new ideas
- Can serve as basis for Type 2 project
- Often motivated by an interest to apply for Type 2 later
Integrate new instrumentation or equipment into undergraduate laboratories or field work

Develop materials that use a new instructional approach embodying current understanding of how students learn

Introduce content from new research into existing course
Explore the practical aspects of using remote laboratories

Develop an instrument to assess students’ knowledge
Provide courses needed for efficient, seamless transfer from 2-yr to 4-yr colleges in partnership with other instn

Explore or pilot internet-based approaches for faculty professional development
Develop interdisciplinary SENCER courses on public issues
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Cyclic Model for Creating Knowledge and Improving Practices in STEM Education

1. New Materials and Strategies
2. Increase Faculty Expertise
3. Implement Innovations
4. Assess And Evaluate
5. Research on Teaching and Learning
Five Components from the Cyclic Model

Include one or more of these components:

- Create learning materials and teaching strategies
- Develop faculty expertise
- Implement educational innovations (not adoption)
- Assess learning and evaluate innovation
- Conduct research on STEM teaching and learning
Create Learning Materials and Teaching Strategies

- New materials and tools
- New methods and strategies
- Revised materials and strategies
- Adapt and implement
Building on and contributing to the literature on effective STEM education

Building a community of scholars in STEM education reform

Identifying project-specific measurable outcomes
  ▪ Project management and evaluation
Deadline For Type 1
- May 21, 22, 2010 (check website for days)

Deadline For Type 2 and 3
- January 13, 2009
Cyber-infrastructure Training, Education, Advancement, and Mentoring for Our 21st Century Workforce

- Prepare current and future generations of scientists, engineers, and educators to design and develop as well as adopt and deploy, cyber-based tools and environments for research and learning, both formal and informal.

- Expand and enhance participation in cyber-infrastructure science and engineering activities of diverse groups of people and organizations, with particular emphasis on the inclusion of traditionally underrepresented individuals, institutions, and communities as both creators and users of cyber-infrastructure.
Research & Evaluation on Education in Sci and Eng program
REESE seeks to advance research at the frontiers of STEM learning, education, and evaluation, and to provide the foundational knowledge necessary to improve STEM teaching and learning at all educational levels and in all settings. This solicitation calls for four types of proposals—Pathways, Knowledge Diffusion, Empirical Research, and Large Empirical Research.

» Catalyze discovery and innovation at the frontiers of STEM learning, education, and evaluation;
» Coordinate and transform advances in education, learning research, and evaluation.
REESE (NSF09-601)

30 to 50 awards for the competition in FY 2010:
Approximately 5-10 Pathways, 5-10 Knowledge Diffusion,
10-15 Empirical, and 5-10 Large Empirical awards

Expected: $27,000,000 for awards in FY 2010;
the award size ceiling is:
• $250K for pathway and diffusion studies
• $1,500 for empirical studies
• $2,500 for large empirical studies

Proposal deadline = Nov 12, 2009
STEP

STEM Talent Expansion Program

[STEM = Science, Technology, Engineering, and Mathematics]
Basic Goals

• Increase the number of students (U.S. citizens or permanent residents) in STEM

• Increase associate’s / bachelor’s degs in established or emerging STEM fields

• Community colleges get credit for transfers to 4-year STEM programs

NSF 08-569, Letter of Intent due August 18, 2009
Full Proposal September 29, 2009
**Maximum Support Levels – Enrollment based**

- $500 K for 5 years for 1-5,000 FTE undergrads
- $1.0 M for 5 years for 5,001-15,000 undergrads
- $2.0 M for 5 years for >15,000 undergrads

**One proposal per institution**
(can be a partner on only one proposal)

**STEP Budget**

- $28 million expected in FY 2010
- 20-24 awards expected
Focus on Recruitment and Retention

- Set up numerical targets for each; pipeline model

Usually more than one STEM discipline included

- avoid reducing majors in other STEM majors

STEM Faculty are PIs

Strong administrative support plus buy-in from key departments.
Successful projects might provide:

- Bridge programs that enable additional preparation for students from HS or community colleges
- Programs to improve the quality of student learning
  - Peer tutoring, learning communities
  - New pedagogical approaches (e.g. mastery learning, active learning, SENCER courses)
- Programs to encourage undergraduate research
- Student support mechanisms
STEP

Outcomes expected:

✓ Description of activities that will be institutionalized from the project

✓ Plan for continuing efforts to increase number of STEM students & graduates

✓ Formative assessment of progress towards goals

✓ Dissemination of project results to broader community
S-STEM NSF Scholarships in Science, Technology, Engineering, & Math

Goal: Provides funds to institutions to provide scholarships to academically talented, but financially needy, students.

- Students can be pursuing associate, baccalaureate, or graduate degrees.

- Scholarships can be up to $10,000/yr - up to 4 yrs within the limits of students official level of need. (They can be less than $10K and less than 4 yrs)
S-STEM Deadlines

- Optional Letter of Intent: Aug 11, 2009
- Proposal Deadline: Sept 14, 2009

- Letter of Intent Deadline Date: July 14, 2010 (for the August 12, 2010, competition)
S-STEM  Major Features of Program

- Most STEM disciplines are eligible - except Social & Behavioral sciences
- Grant size - max $600,000 (4 s-ship yrs), (up to 7% can be spent for admin costs and up to 8% for student support services)
- One proposal per constituent school or college that awards STEM degrees (e.g. school of eng, college of arts & sciences)
- Est: $50 to $70 million available in FY’09
• PI must be member of STEM faculty
• S-ships to “natural” cohorts of students
• S-STEM students are full time & are US Citizens, Residents, Nationals, or refugees
• Institution must provide some student support structures
• Optional enhancements: research opportunities, tutoring, internships, etc.
Goal: encourage talented undergraduates STEM majors and professionals to become K-12 mathematics & science teachers

Awards to institutions of higher education to support scholarships (UGs) or stipends (professionals) for students who commit to teaching in high-need K-12 school districts

Undergraduates must be juniors or seniors
Optional letter of intent due: Feb 10, 2009
Full proposals deadline: March 10, 2009
At least $10K per student per year (but not to exceed the cost of education)
Max period: 2 years for UGs; 1 year for Post baccalaureate students
$55 million in FY09! Maybe a lot more in FY 2010; A new program dimension added
New: Creating master teachers with salary supplements of at least $10,000 per year
Phase 1 awards to first time grantees: up to $900K over up to 5 years.

Phase 2 awards to experienced PIs: up to $600K up to 4 years.

Grants may ask up to 20% for program costs.

Program completers have up to 6 years to serve their two years in a high need district.

Completers must serve 2 years in high need school for each 1 year of support.
Projects collecting data from or on students or faculty members are considered to involve human subjects & require IRB review!!

Proposal should indicate IRB status on cover

- Exempt, Approved, Pending
- Grants will require official statement from IRB declaring the research exempt or approved

See “Human Subjects” section in GPG

(NSF Grant Proposal Guide)