

# Innovative Technology Experiences for Students and Teachers (ITEST)

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## PROGRAM SOLICITATION

NSF 11-525

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### REPLACES DOCUMENT(S):

NSF 09-506

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National Science Foundation

Directorate for Education & Human Resources  
Research on Learning in Formal and Informal Settings

**Letter of Intent Due Date(s) (required)** (due by 5 p.m. proposer's local time):

March 11, 2011

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

May 13, 2011

## IMPORTANT INFORMATION AND REVISION NOTES

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A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in [NSF 11-1](#).

**Cost Sharing:** The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG) Chapter II.C.2.g(xi)* for further information about the implementation of these recommendations.

**Data Management Plan:** The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

**Postdoctoral Researcher Mentoring Plan:** As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

### Revision Summary

Proposals for the Innovation through Institutional Integration (I<sup>3</sup>) track are not being accepted for the 2011 competition and information about this track has been deleted. Emphasis on integration across NSF-funded awards at the applicant's institution is incorporated in this and other solicitations in the Directorate for Education and Human Resources.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Innovative Technology Experiences for Students and Teachers (ITEST)

#### Synopsis of Program:

The ITEST program responds to current concerns and projections about the growing demand for science, technology, engineering, and mathematics (STEM) professionals in the U.S. and seeks solutions to help ensure the

breadth and depth of the STEM workforce. ITEST supports the development, implementation, testing, and scale-up of implementation models. It also supports research studies to address questions that point to solutions for building a strong, competent STEM workforce. A variety of possible approaches to supporting the future STEM workforce and to building students' capacity to participate in that important workforce may be implemented and studied. ITEST projects must include students and may include teachers. The target audience is kindergarten through high school age, and projects may focus on any content area related to the STEM workforce. Projects that explore the impact of *robotics competitions* are of special interest; specifically, ITEST is placing emphasis on proposals to design and implement robotics competitions, and to study their effectiveness as a means of engaging students in learning STEM content and 21<sup>st</sup> Century skills.

The ITEST program is interested in addressing such questions as: What does it take to effectively interest and prepare students to participate in the STEM workforce of the future? How do students acquire the knowledge, skills, and dispositions they need in order to participate productively in the changing STEM workforce? How can we assess and predict students' inclination to participate in the STEM fields, and how can we measure the impact of various models that encourage that participation?

### Types of ITEST Projects

Three types of projects are invited:

**Scale-up** projects implement and test models that prepare students for the STEM and information and communications technology (ICT) workforce of the future in a large-scale setting, such as at state or national level. A scale-up project must be based on evidence of demonstrated success from an existing strategy targeting students or teachers.

**Strategies** projects are targeted at students and/or teachers. These projects design, implement, and evaluate models for classroom, after-school, summer, virtual, and/or year-round learning experiences. The strategies are intended to encourage students' readiness for, and their interest and participation in, the STEM and ICT-intensive workforce of the future. Strategies proposals must describe the anticipated contributions to the research knowledge base about STEM career preparation in addition to immediate impacts on participants.

**Research** projects enrich the understanding of issues related to growing the STEM workforce. Projects may conduct efficacy and effectiveness studies of intervention models; conduct longitudinal studies of efforts to engage students in the STEM areas; develop instruments to assess engagement, persistence, and other relevant constructs of student motivation; or conduct studies to identify predictors of student inclination to pursue STEM career trajectories. The program is especially interested in projects that target students from groups that are underserved and underrepresented in STEM and ICT-intensive careers, including those residing in rural and economically disadvantaged communities.

### Cognizant Program Officer(s):

- Address questions to, telephone: (703) 292-8628, email: [DRLITEST@nsf.gov](mailto:DRLITEST@nsf.gov)

### Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.076 --- Education and Human Resources

## Award Information

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**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 20 to 30 depending on the availability of funds for FY 2011.

**Anticipated Funding Amount:** \$20,000,000 for new Innovative Technology Experiences for Students and Teachers (ITEST) projects in FY 2011 pending availability of funds.

## Eligibility Information

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### Organization Limit:

None Specified

### PI Limit:

None Specified

### Limit on Number of Proposals per Organization:

None Specified

### Limit on Number of Proposals per PI:

An individual may serve as the Principal Investigator (PI) for no more than one Scale-up, Strategies, or Research proposal under this solicitation.

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.
- **Preliminary Proposal Submission:** Not Applicable

- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide))

## B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

## C. Due Dates

- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. proposer's local time):  
March 11, 2011
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):  
May 13, 2011

## Proposal Review Information Criteria

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**Merit Review Criteria:** National Science Board approved criteria apply.

## Award Administration Information

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**Award Conditions:** Standard NSF award conditions apply.

**Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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## I. INTRODUCTION

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About the National Science Foundation and the Directorate for Education and Human Resources

The National Science Foundation (NSF) is charged with promoting the vitality of the nation's science, technology, engineering and mathematics (STEM) research and education enterprises. As part of this mission, the Directorate for Education and Human Resources (EHR) has primary responsibility for providing national and research-based leadership in STEM education. EHR emphasizes six themes in fulfilling this responsibility:

1. Furthering public understanding of science and advancing STEM literacy;
2. Broadening participation to improve workforce development;
3. Promoting learning through research and evaluation;
4. Promoting cyberlearning strategies to enhance STEM education;
5. Enriching the education of STEM teachers; and
6. Preparing scientists and engineers for tomorrow.

To address these themes, the Directorate sponsors programs in the Divisions of Research on Learning in Formal and Informal Settings (DRL), Undergraduate Education (DUE), Graduate Education (DGE), and Human Resource Development (HRD). The ITEST program is managed in DRL.

### **The Division of Research on Learning in Formal and Informal Settings**

DRL invests in projects to enhance STEM learning for people of all ages in both formal and informal learning settings. Its mission includes promoting innovative and transformative research and development, and evaluation of learning and teaching in all STEM disciplines. New and emerging areas of STEM must play prominent roles in efforts to improve STEM education. The integration of cutting-edge STEM content and the engagement of scientists, engineers, and educators from the range of disciplines represented at NSF is encouraged in all DRL initiatives. DRL's role is to be a catalyst for change by advancing theory, method, measurement, development, evaluation, and application in STEM education. The Division seeks to support both development of promising new ideas and large-scale implementation of proven educational innovations.

The Division's programs offer a set of complementary approaches for advancing research, development, and improvement of practice.

- The Discovery Research K-12 (DR K-12) program enables significant advances in preK-12 and teacher learning of the STEM disciplines through research and development on innovative resources, models, and technologies for use by students, teachers, administrators and policy makers.
- The Informal Science Education (ISE) program supports innovation in anywhere, anytime, lifelong learning, through investments in research, development, infrastructure and capacity-building for STEM learning outside formal school settings.
- The Innovative Technology Experiences for Students and Teachers (ITEST) program invests in projects designed to address the 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.
- The Research and Evaluation on Education in Science and Engineering (REESE) program advances research at the frontiers of STEM learning, education, and evaluation, in order to provide foundational knowledge for improving STEM teaching and learning at all educational levels and in all settings.
- The Promoting Research and Innovation in Methodologies for Evaluation (PRIME) program supported research with special emphasis on innovative approaches for determining the impacts of STEM education projects and programs; expanding the theoretical foundations for evaluating STEM education and workforce development initiatives; and growing the capacity and infrastructure of the evaluation field.
- The Transforming STEM Learning (TSL) program explores the opportunities and challenges implied by radically innovative visions of the future for STEM learning.

Each of these programs is intended to improve their field's capacity to further STEM learning. They are central to NSF's strategic goals of Learning and Discovery, helping to cultivate a world-class, broadly inclusive STEM workforce, expanding the scientific literacy of all citizens, and promoting research that advances the frontiers of knowledge (NSF, 2006).

### **DRL and Innovation**

All research and development activities within DRL aim at generating knowledge and transforming practice in STEM education. DRL's programs are designed to complement each other within a cycle of research and development (see Figure 1) that forms the conceptual framework for its programs (adapted from American Statistical Association, 2007; NSF, 2005; RAND, 2003). All DRL programs are concerned with all five components of the cycle, to different degrees.

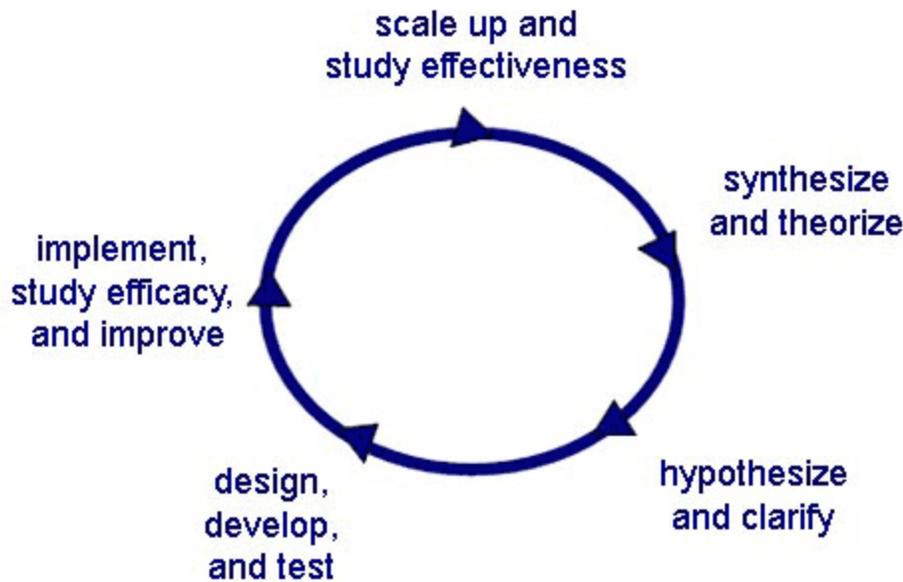


Figure 1. Cycle of Innovation

Each part of the cycle forms the vital and compelling foundation for transition to the next part of the cycle. The research, development, implementation and evaluation activities need to be appropriately rigorous. Projects funded by DRL are providing the ideas, resources, and human capacity to advance STEM learning and education in the 21st century:

- Challenging the STEM education and research communities with transformative ideas
- Conducting the pioneering and pragmatic research necessary to advance STEM learning
- Developing and studying world-class learning resources for teachers, students, and the public
- Addressing workforce needs through the design and study of technology-intensive educational experiences.

## II. PROGRAM DESCRIPTION

The ITEST program is funded by H-1B visa revenues in direct response to the need to ensure a high-quality future STEM and ICT workforce that can meet U.S. technology needs. The goals of the ITEST program are as follows:

- To develop, implement, study, and evaluate strategies that encourage K-12 students to develop interest in and to be prepared for careers in the STEM and ICT workforce of the future.
- To produce research findings that build knowledge about approaches, models, and interventions with K-12-aged children and teachers that are most likely to increase the nation's capacity and innovation in the STEM and ICT workforce of the future.
- To equip teachers with the resources to ensure that their students consider choosing and are prepared to enter the STEM and ICT workforce of the future.

For the purposes of this program, the "STEM workforce of the future" is defined broadly to include scientists, technologists, engineers, and mathematicians. The STEM workforce of the future is likely to require knowledge and experience with information and communication technologies (ICT) especially in fields such as nanotechnology, biotechnology, and computational biology (NRC, 2006). Therefore, ITEST proposals may focus on any STEM or ICT-intensive area, provided the project addresses specific needs of K-12-aged students or teachers preparing for the future U.S. workforce. Investigators may identify established or emerging STEM or ICT areas of focus and create new strategies, scale-ups, or research projects within those areas that may yield further development of innovation or capacity within the STEM workforce of the future. In addition to technical and STEM content, projects may also provide the opportunity for students to learn and practice essential skills (e.g., conflict management, leadership, knowledge of workplace ethics, negotiation, or self-direction) (<http://www.p21.org>).

The ITEST program is aligned with the recommendations of several recent reports, including *Fostering Learning in the Networked World: The Cyberlearning Opportunity and Challenge*, the President's Council of Advisors on Science and Technology (PCAST), the National Science Board's (NSB) report entitled *Preparing the Next Generation of STEM Innovators: Identifying and Developing Our Nation's Human Capital*, The U.S. Department of Education's National Education Technology Plan 2010, *Transforming American Education: Learning, Powered by Technology*, and the National Research Council's (NRC) report entitled *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads* (2010). The ability of the Nation to meet the demand for individuals with the knowledge, skills, curiosity, and creativity necessary to enter the STEM workforce and ICT-intensive careers is hindered by the limited involvement of segments of the population that are severely underrepresented and underserved in STEM occupations. The demand for skilled, knowledgeable professionals can be met only if the STEM workforce is broad and diverse, and taps the potential of all students able to pursue careers in STEM fields. NSF is especially interested in projects that focus on students from groups underserved and underrepresented in STEM and ICT-intensive careers, including but not limited to those residing in rural and economically disadvantaged communities.

Since ITEST projects are to prepare students for the STEM workforce, collaboration with business and industry is strongly encouraged to expand and deepen the impact of NSF-funded projects and enhance their sustainability. This may provide additional avenues to broaden participation through the sharing of resources and models in an effort to further project development and implementation. From a research perspective, collaborations might promote innovative programming, policies, and practices to

encourage the integration of STEM research and education while encouraging STEM educational or related research in domains that hold promise for promoting intra- or inter-institutional integration and broader impacts.

ITEST invests in three types of projects: **Scale-up** projects, **Strategies** projects, and **Research** projects are described below.

## 1. ITEST Scale-up projects

The goal of ITEST *Scale-up* projects is to apply proven strategies to enhance student or teacher knowledge of, or disposition toward, STEM and ICT careers to a broader audience for the purpose of learning effective steps in expanding the adoption of successful innovations in school and out-of-school settings. *Scale-up* projects can include expanding existing designs, implementations, and tests of research and theory-based models or models based in best practice and professional expertise, to interest and prepare students to be participants in the STEM workforce of the future.

Scale-up has been defined as "the enactment of interventions whose efficacy has already been established in new contexts with the goal of producing similar positive impacts in larger, frequently more diverse populations" (Schneider & McDonald, 2007). Dede and colleagues have provided additional guidance about the definition of a scale-up innovation in education that clarifies steps that lead toward adoption of strategies in education. Before attempting to conduct a strategy in a new setting, the education innovation must have been shown to produce "deep and consequential changes in practice" in one setting (Dede, Honan, & Peters, 2005; Dede & Rockman, 2007).

Any *scale-up* proposal must directly impact K-12-aged students or teachers of K-12 students and must involve a partnership among different types of institutions.

Projects in this category are guided by the following questions

- Can innovative strategies that have been shown to be effective for supporting K-12 students' development for productive participation in the STEM and ICT workforce of the future be applied to new settings?
- What evidence can be generated to clearly demonstrate that innovations applied in some settings can be expanded to new settings to increase the knowledge, skills, and dispositions that students need in order to participate productively in the changing workforce in STEM, especially ICT-intensive workforce?
- How can innovations be expanded to cover additional scope within STEM workforce preparation?

### Scale-up project proposals must:

1. Identify the program, model, strategy, or intervention that will be scaled-up and explain the nature of the scale-up (e.g., size of affected population, variety of contexts). The proposal should make an argument for why the strategy is ready for scale-up, and provide detailed empirical or theoretical evidence for the viability of the scale-up. Provide any scientifically based theory (cognitive, developmental, or other learning science theory) that strongly suggests that the proposed innovation will be successful in a larger scale.
2. Describe the plan for implementing the scaled-up version, including the population, the participants and any planned adaptations of the earlier model. The interventions may be school-based or based outside of school and should use modern forms of technology or networking (see *Cyberlearning* report) in the intervention. They should involve partnerships between student or teacher-based organizations, community or industry organizations, universities, or educational research organizations.
3. Provide details about the evidentiary base that will be established to demonstrate, through rigorous, well-controlled, large-scale empirical studies, the impact of the proposed intervention on practice. Explain how plausible cause-and-effect assertions (between interventions and student learning, motivation, and achievement) will be tested. There must be a plausible set of studies capable of demonstrating whether or not the intervention had the intended effects.

*Scale-up* projects will range in duration from three to five years with a total award size of up to \$2 million. The size and duration of the request should be appropriate to the scope of the project.

## 2. ITEST strategies projects

The goal of ITEST *Strategies* projects is to develop, implement and study strategies that encourage K-12 students to consider and be prepared for careers in the STEM and ICT fields, or that equip teachers with the resources to ensure that their students consider and are prepared for choosing to enter the STEM workforce of the future. *Every strategies project is regarded as a learning laboratory in the sense that other STEM educators should be able to gain knowledge provided by the project in other, future activities. Strategies projects should describe the anticipated contribution the project will make to the knowledge base about STEM education, in addition to short-term impacts on participants.* ITEST is particularly interested in new and innovative ideas, so projects seeking funding in this strand are strongly encouraged to connect with the ITEST Learning Resource Center (<http://itestlrc.edc.org/>) for information about current and previously funded strategies projects so as to develop and implement strategies that will advance the field.

Projects in this category are guided by the following questions:

- What strategies will best support student development for productive participation in the STEM and ICT workforce of the future?
- What are the knowledge, skills, and dispositions that students need in order to participate productively in the changing workforce in STEM and ICT, and how can we prepare teachers to help students acquire such knowledge, skills, and dispositions?
- How can the burgeoning cyberinfrastructure be harnessed as a tool for STEM and ICT learning in classrooms and informal learning environments?
- What strategies can parents and caregivers adopt in the modern digital and computer age that develop student understanding of and appreciation for the scientific, mathematical, and engineering basis of technological developments?

*Strategies* projects include the design, implementation, and testing of research and theory-based models, or models based in best practice and professional expertise, to interest and to prepare students to be participants in the STEM and ICT workforce of the future. Investigators should articulate a strategy for engaging students in the STEM workforce of the future, and for identifying and building knowledge, skills, and dispositions that are essential for participation in that workforce. The project should include a clear connection between the STEM content to be addressed with the STEM or ICT career that it supports. Although a range of types of strategies and models are expected, any strategy proposal *must* directly impact K-12 students and may impact K-12 teachers.

The ITEST program strongly encourages innovative strategies with the potential to transform STEM learning in support of workforce development. Investigators are encouraged to create partnerships with K-12 schools, colleges, universities, informal science education organizations, government laboratories, and community-based organizations to address the needs of the target audiences as appropriate. Projects are also strongly encouraged to create industry partnerships to support career awareness and cultivate interest among student participants. These partnerships can provide opportunities for career exploration and mentoring, interactions

with technology and STEM professionals, and workplace applications of technology skills.

In FY2011, ITEST has allocated funds to specifically address understanding the role that robotics competitions play in student learning of STEM content and increasing their motivation, engagement, and pursuit of STEM career pathways. *Strategies* projects that include *design and implementation of robotics competitions, along with research on their impacts on student engagement, motivation to learn STEM content, and STEM career motivation* may increase their total budget by an amount up to \$150,000.

**Strategies project proposals must:**

1. Make a case for the potential of the strategy on the basis of research about workforce development, teaching and learning, and STEM and ICT workplace demands; or make a case on the basis of evidence from experience, professional judgment, and/or other relevant theory or arguments that support the strategy.
2. Clearly explain and describe the strategy for creating a linkage between the STEM content and workforce preparedness.
3. Describe the plans for implementation of the strategy. Include plans for sustainability as appropriate that clearly show what parts of the project are sustainable and how they will be supported.
4. Include educational researchers as part of the project team or advisory committee to ensure that appropriate connections are made to the literature on related studies, models, and impacts.
5. Explain the intended immediate participant impacts and longer-term outcomes (e.g., contributions to the knowledge base) that are anticipated and describe how these outcomes are related to the strategy. Provide sufficient detail about how the progress toward the goals will be measured, including what instruments and research or evaluation design will be used.

*Strategies* projects must have an implementation or direct services component for students, parents, teachers, STEM professionals, and/or the public. The implementation and direct services part of the project enables building the knowledge base about what it takes to enhance the STEM and ICT workforce of the future. A major contribution of strategies projects should be to provide evidence for this knowledge base through a systematic research or evaluation component.

*Strategies* projects can be up to three years in duration with award sizes at most \$1,200,000. Projects with robotics competition components may increase their budget up to an additional \$150,000. The size and duration of the request should be appropriate to the scope of the project.

**3. ITEST Research projects**

The goal of ITEST *Research* projects is to produce empirical findings and research tools that contribute to knowledge about which approaches, models, and interventions with K-12 students and teachers are most likely to increase capacity in the STEM and ICT-intensive workforce of the future.

Effective strategies must be developed and studied for engaging American youth of the 21<sup>st</sup> century in ICT and STEM learning in a manner that leads them to pursue career trajectories that focus on technology-intensive STEM fields. Research in this area has the potential to transform policy and education in STEM. To that end, the ITEST program is seeking projects that bring together researchers in STEM education, career development, psychology, sociology, anthropology, science fields, and other critical areas that heavily invest in STEM and ICT careers. Projects in this category are guided by the following questions:

- What educational activities would increase the nation's capacity to participate in transformative, innovative discoveries in STEM?
- How can we assess and predict inclination to participate in STEM or ICT-intensive careers?
- How can we measure and study the impact of various models to encourage participation in STEM or ICT-intensive careers?
- Does K-12 student participation in activities outside of the formal school setting (e.g. robotics competitions or at nature centers) significantly contribute to students choosing STEM or ICT-intensive careers?

These general questions signal areas where ITEST will support systematic, rigorous studies to enlarge and solidify the knowledge base upon which efforts to improve and expand the STEM and ICT-intensive workforce can build. Research studies to examine the effectiveness of currently active or previously developed interventions and strategies for ICT workforce growth are encouraged.

*Research* projects are expected to identify critical questions that relate to student STEM learning and engagement in STEM careers, teacher knowledge about STEM career issues and workplace demands, and the characteristics of effective STEM education that foster sustained interest and entry into STEM career paths.

Because of the pressing need to understand how to build a larger and more effective STEM workforce, and particularly the ICT-intensive workforce, the ITEST program is interested in studies that will produce causal claims about the relative impact of different strategies or approaches to interest students in STEM careers. ITEST supports projects in a variety of learning settings. The ITEST program is especially interested in understanding the process of transferring skills and knowledge gained in out-of-school and classroom settings to the workforce. Also, the program is concerned with understanding how career trajectories within particular STEM fields are developed, particularly in emphasis areas such as ICT. In addition, the ITEST Program invites longitudinal follow up of ITEST participants and nonparticipants, and studies that advance methodology or theoretical constructs on career choice.

**Research project proposals must:**

1. State the research questions and issues that will be addressed in the study, and provide a rationale based in previous literature or theory for why investigation of the questions and issues will help to build knowledge about how K-12 students and teachers can become engaged in building the STEM and ICT intensive workforce capacity.
2. Identify gaps in the knowledge base on the STEM and ICT workforce and propose areas of research to address key issues.
3. Describe the research design to be employed, and make a case that the methodology to be employed is suitably appropriate to the particular questions being pursued. Describe any instruments or measures that will be used or developed, the data to be gathered, and plans for analysis.
4. Indicate plans for publication and dissemination, including interaction with implementation communities that are positioned to provide programs for teachers and students that will increase STEM and ICT participation as well as for interaction with policy makers who can use research results as a basis for improving the STEM workforce of the future.
5. Describe the nature of expertise needed to conduct the research and how the research team has that expertise.

*Research* projects may be up to three years in duration and be awarded up to \$900,000. The size and duration of the request

should be appropriate to the scope of the project.

### Expectations for All ITEST projects

Because the ITEST program will be involved in a set of interrelated program evaluations, all projects must include project-level evaluation plans. These plans should be for formative and summative evaluations that assess the impact of the project's activities, progress, and success in meeting goals. An external evaluator who conducts at least the summative evaluation is required.

Evaluations of **strategies** and **scale-up** projects must (1) include a clear presentation of the questions that will guide the evaluation, (2) specify indicators of impact on participants, (3) describe how the data will be collected, (4) explain the methods of analysis, (5) describe any basis for comparisons, and (6) provide the timeline for the evaluation process. If materials are developed as part of the intervention, appropriate plans for expert review and field-testing of materials should be included. In some cases the evaluation plans for **strategies** projects will be closely intertwined with plans to conduct research about the effects of the strategy on desired outcomes.

**Research** projects also must include evaluation plans appropriate to the goals of the research activity. These plans might include expert review at key stages of the project, development of indicators to assess the levels of rigor with which the research is implemented, or assessment of the scope and impact of the products of the research by an independent advisory committee.

An external evaluation conducted by an evaluation firm contracted by NSF will track the entire ITEST program's progress in meeting overall goals, as well as assess the overall impact on students, teachers, and the field, and potential effect on the STEM and ICT pipelines. All projects are expected to collaborate with the program evaluation team and provide data and responses as requested.

The ITEST Resource Center (<http://www2.edc.org/itesttrc/>) provides technical assistance to ITEST grantees and collects project data to contribute to the existing repository of data on ITEST projects. All projects are expected to support the ITEST Resource Center's monitoring efforts to gather data, build models and disseminate findings.

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## III. AWARD INFORMATION

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Duration and Funding Level are all pending availability of funds for FY2011: Scale-up projects will range from three to five years in duration, with award sizes at most \$2 million. Strategies projects will be for up to three years in duration, with award sizes at most \$1.2 million. Research projects will be for up to three years in duration, with award sizes up to \$900,000. The requests should be appropriate to the duration and scope of the Scale-up, Strategies, or Research project. Projects that include design, implementation, and study of robotics competitions may increase their total Strategies budget by an amount up to \$150,000.

## IV. ELIGIBILITY INFORMATION

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**Organization Limit:**

None Specified

**PI Limit:**

None Specified

**Limit on Number of Proposals per Organization:**

None Specified

**Limit on Number of Proposals per PI:**

An individual may serve as the Principal Investigator (PI) for no more than one Scale-up, Strategies, or Research proposal under this solicitation.

**Additional Eligibility Info:**

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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**Letters of Intent (required):**

Letters of Intent must be submitted via the NSF FastLane system, using the Letter of Intent module in FastLane, for ITEST **Scale-up, Strategies, and Research** projects.

Letters of Intent are limited to 2,500 characters, including spaces (approximately 350 words). Your Letter of Intent should contain a brief narrative that describes the project and provides the following information: (1) a project title; (2) clear identification of the proposal component and the proposal category within that component-- Scale-up, Strategies, or Research; (3) a list of proposed Principal Investigators and Co-Principal Investigators, including organizational affiliations and departments; (4) partnering institutions; (5) STEM disciplines represented and relationship to the STEM or ICT workforce; and (6) grade band, if applicable.

**Letter of Intent Preparation Instructions:**

When submitting a Letter of Intent through FastLane in response to this Program Solicitation please note the conditions outlined below:

- Sponsored Projects Office (SPO) Submission is not required when submitting Letters of Intent
- Submission of multiple Letters of Intent is not allowed

**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

**Collaborative Proposals.** All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

The following information supplements the standard GPG or NSF Grants.gov Application Guide proposal preparation guidelines:

**Cover Sheet:** The Cover Sheet must contain all requested information. Complete this form with the appropriate information and make sure to check the human subjects box when appropriate. If project funds are requested from another Federal agency or another NSF program, it must be indicated on the cover sheet. If such funds are requested subsequent to proposal submission, a letter should be sent to the attention of the ITEST program, identifying the proposal by its NSF number. In the title section on the cover sheet, begin each title with the type of ITEST proposal being submitted (e.g., Scale-up, Strategies, or Research proposals).

To avoid delays in processing, it is also suggested that PIs begin the process of obtaining appropriate Institutional Review Board (IRB) approvals or exemptions as needed for projects involving human subjects.

**Project Summary:** A one-page Project Summary should be prepared, suitable for public release, which presents a self-contained description of the activity that would result if the proposal were funded. The initial sentences must describe the ITEST program

component to which the proposal is submitted (*Scale-up, Strategies, or Research*). *Scale-up* projects must discuss the evidence collected from previous efforts with an innovation that justifies an expansion of the effort. *Strategies* projects must describe the STEM or ICT content emphases, the strategy to be designed, implemented, and tested, and the audiences to be involved. *Research* projects must state the research questions to be explored, the design and instruments to be used, and plans for analysis and dissemination. For *Scale-up, Strategies, and Research* projects, the summary should indicate the STEM or ICT-intensive workforce need being addressed, a statement of objectives, methods to be employed, and potential contribution to the understanding of STEM or ICT-intensive workforce issues or the outcomes resulting from the project.

All summaries **must** specifically address the project's *intellectual merit* and *broader impacts*. If the Summary does **not** specifically address **both** review criteria in separate statements, the proposal **will be returned without review**.

**Project Description** (maximum of 15 pages; including results from prior NSF support): The Project Description contains most of the information that determines whether a grant will be awarded. Competitive proposals respond fully to the ITEST program description in this solicitation. Reviewers will judge the merit of each proposal based on the content of the Project Description.

The narrative section of a competitive ITEST ***Scale-up, Strategies, or Research*** project should include the following:

- project overview
- project goals and objectives
- summary of results from prior support
- explanation of principles that guided the project design, informed by the literature
- detailed project description with a timeline
- qualifications of key personnel who will be coordinating the project
- anticipated results
- evaluation plan
- dissemination plan
- sustainability plan

Include a description of the responsibilities, qualifications, and level of effort of the key personnel involved in the project, including the role of consultants and advisors at each stage of the project. Provide documentation of collaborative relationships and partnerships that are essential to the project, such as letters of support.

**Results from Prior Support:** If the prospective PI or Co-PIs received support for related NSF activities within the past five years, a description of the project(s) and outcomes must be provided in sufficient detail to enable reviewers to assess the value of results achieved. Past projects should be identified by NSF award number, funding amount, period of support, title, summary of results, and a list of publications and formal presentations that acknowledge the NSF award (do not submit copies of the latter). Evaluation data should be clearly described. Details regarding evaluation data from past projects should be included in the Supplementary Documentation. PIs and co-PIs with overdue Final Reports on previous NSF awards (not submitted within 90 days after previous NSF awards expired) may not receive any new grants until those Final Reports have been submitted.

**Evaluation:** It is expected that ITEST projects will include, at a minimum, two stages of evaluation (formative and summative) at a level commensurate with the nature and scope of the propose project. Elements to be addressed in the Evaluation Plan of a proposal:

- The evaluation questions
- Strategies used for the various phases of the project
- General information about the evaluation processes including sample sizes, instruments used, nature of the data (quantitative and qualitative), and analytical methods
- Timeline: When, during the various phases of the project, evaluation work will take place; be sure to allot adequate time for all phases including an adequate and thorough summative evaluation
- Budget: The budget should be adequate to enable the evaluator to conduct a thorough project evaluation
- Name, credentials, and responsibilities of the evaluator(s)

**Dissemination:** Describe, as appropriate, how information about the project and any knowledge gained in developing the project will be shared with the field.

**Timeline:** Provide a detailed (e.g., quarterly) schedule for each year of the project that indicates the major developmental steps for all the aspects of the project.

**Sustainability:** Describe the plans to sustain the project efforts beyond the period of the grant, as appropriate.

**Other sections** (in addition to the 15 page narrative):

**References Cited:** Any literature cited should be specifically related to the proposed project, and the Project Description should make clear how each reference has played a role in the motivation for, or design of, the project.

**Biographical Sketches:** Biographical information (no more than two pages each) must be provided for each senior person listed on the budget forms, including consultants, and advisors. Include career and academic credentials, as well as e-mail and mailing address.

**Special Information/Supplementary Documentation:** The only items permitted in the Supplementary information section are the LOI confirmation receipt, letters of commitment from project partners, evaluation results from prior support as appropriate, the postdoctoral researcher mentoring plan (if applicable) and the data management plan. The first page should be your LOI confirmation receipt from FastLane which shows the LOI ID, title, PI name, and submission date.

**Appendix:** Not permitted. The 15 page Project Description should contain all of the information needed to describe the projects. Proposals submitted with an Appendix will be returned without review.

## B. Budgetary Information

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**Cost Sharing:** Inclusion of voluntary committed cost sharing is prohibited

**Other Budgetary Limitations:**

Additional limitations to consider include the following:

- Major research equipment purchases are not supported. The ITEST program limits the purchase of equipment to software, probes, and general equipment needed to implement a given project.
- Projects that include design, implementation, and the study of robotics competitions may increase their total Strategies budget by an amount up to \$150,000. These projects are subject to the same budgetary limitations as all ITEST projects as noted above. We consider incentives such as T-shirts, gift cards, lotteries, BBQs, banquets, and pizza parties costs of entertainment. Costs of entertainment, amusement, diversion and social activities, and any expenses directly associated (such as meals, lodging, rentals, transportation, and gratuities) are unallowable. When certain meals are an integral and necessary part of a conference or meeting (i.e., working meals where business is transacted), grant funds may be used for such meals. Grant funds may also be used to furnish a reasonable amount of coffee or soft drinks for conference or meeting participants and attendees during coffee breaks.

## C. Due Dates

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- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. proposer's local time):  
March 11, 2011
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):  
May 13, 2011

## D. FastLane/Grants.gov Requirements

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- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](mailto:fastlane@nsf.gov). The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

**Submission of Electronically Signed Cover Sheets.** The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: [http://www07.grants.gov/applicants/app\\_help\\_reso.jsp](http://www07.grants.gov/applicants/app_help_reso.jsp). In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

### A. NSF Merit Review Criteria

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All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

**What is the intellectual merit of the proposed activity?**

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

**What are the broader impacts of the proposed activity?**

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also will give careful consideration to the following in making funding decisions:

***Integration of Research and Education***

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

***Integrating Diversity into NSF Programs, Projects, and Activities***

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

## B. Review and Selection Process

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Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

## VII. AWARD ADMINISTRATION INFORMATION

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### A. Notification of the Award

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Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

### B. Award Conditions

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An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the

award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); \* or Research Terms and Conditions \* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

\*These documents may be accessed electronically on NSF's Website at [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide (AAG) Chapter II*, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

## C. Reporting Requirements

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For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

Additional reporting requirements may be included, e.g., to support program evaluation, as required.

## VIII. AGENCY CONTACTS

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General inquiries regarding this program should be made to:

- Address questions to, telephone: (703) 292-8628, email: [DRLITEST@nsf.gov](mailto:DRLITEST@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

## IX. OTHER INFORMATION

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The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

*Facilitation Awards for Scientists and Engineers with Disabilities* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
  - Send an e-mail to: [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov)
  - or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton  
Reports Clearance Officer  
Division of Administrative Services  
National Science Foundation  
Arlington, VA 22230

[Policies and Important Links](#) | [Privacy](#) | [FOIA](#) | [Help](#) | [Contact NSF](#) | [Contact Web Master](#) | [SiteMap](#)



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