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

Program Solicitation
09-512

Replaces Document(s):
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National Science Foundation

Directorate for Education & Human Resources
Division of Human Resource Development

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

January 25, 2009

Implementation, Education Research, and Targeted Infusion Projects; Planning Grants

Preliminary Proposal Due Date(s) ***(required)*** (due by 5 p.m. proposer's local time)***:***

February 17, 2009

ACE Implementation Projects

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

February 17, 2009

Implementation, Education Research, and Targeted Infusion Projects; Planning Grants

February 24, 2009

Innovation through Institutional Integration (I3)

April 17, 2009

ACE Implementation Projects

August 25, 2009

Innovation through Institutional Integration (I3)

REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), NSF 09-1, was issued on October 1, 2008 and is effective for proposals submitted on or after January 5, 2009. Please be advised that the guidelines contained in NSF 09-1 apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 5th, 2009, must also follow the guidelines contained in NSF 09-1.

One of the most significant changes to the PAPPG is implementation of the mentoring provisions of the America COMPETES Act. Each proposal that requests funding to support postdoctoral researchers must include, as a separate section within the 15-page project description, a description of the mentoring activities that will be provided for such individuals. Proposals that do not include a separate section on mentoring activities within the Project Description will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II.C.2. d for further information).

(1) Phase 3 Implementation grants – The new opportunity in the Implementation track is called “ACE” Implementation, that is, Achieving Competitive Excellence in Implementation. This highly competitive program element is for highly experienced and accomplished HBCU-UP institutions that are exemplars for their academic achievement in the HBCU STEM community. The proposals for this track are ambitious, transformative, and far-reaching; there should be promise of paradigm-shifting advances in STEM undergraduate education at the HBCU.

(2) Planning grants – The track for planning grants may be used by grantees in preparation for Implementation, Education Research, or Targeted Infusion proposal submittals. The goal is to provide proposers with some limited support for the developmental activities necessary to submit a high-quality proposal.

A track for *Innovation through Institutional Integration (I^3)* is included**.** I^3 challenges faculty, administrators and others in institutions to think strategically about the creative integration of NSF-funded awards and is itself an integrative, cross-cutting effort within the Directorate for Education and Human Resources (EHR). For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance I^3 goals:

Centers of Research Excellence in Science and Technology (CREST)

Research on Gender in Science and Engineering (GSE)

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

Innovative Technology Experiences for Students and Teachers (ITEST)

Alliances for Broadening Participation in STEM: Louis Stokes Alliances for Minority Participation (LSAMP)

Math and Science Partnership (MSP)

Robert Noyce Teacher Scholarship Program (Noyce)

Research in Disabilities Education (RDE)

Tribal Colleges and Universities Program (TCUP)

All proposals submitted to I^3 through these programs have a common due date and will be reviewed in competition with one another. Eligibility is limited to institutions of higher education (including two- and four-year colleges). If the proposal is exclusively for I^3 STEM educational or related research, then all categories of proposers identified in the NSF Grant Proposal Guide are eligible to submit. Given the focus on institutional integration, an institution may submit only one proposal to the I^3 competition for each deadline.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

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

Synopsis of Program:

This program provides awards to enhance the quality of undergraduate science, technology, engineering, and mathematics (STEM) education and research at Historically Black Colleges and Universities (HBCUs) as a means to broaden participation in the Nation's STEM workforce. Support is available for Implementation Projects (including Achieving Competitive Excellence), Planning Grants, Education Research Projects, and Targeted Infusion Projects.

Implementation Projects provide support to implement a comprehensive institutional project to strengthen STEM education and research. Proposed activities and strategies should: be the result of an institutional STEM self-analysis; address institutional and NSF goals; and have the potential to result in significant and sustainable improvements in STEM program offerings. Typical project implementation strategies include: curriculum enhancement, faculty professional development, undergraduate research, academic enrichment,

student support services, infusion of technology to enhance STEM instruction, collaborations with research institutions and industry, and other activities that enhance the quality of the undergraduate STEM education and STEM teacher preparation programs. Proposers are encouraged to analyze the strengths of the institution and design innovative educational strategies, based on proven best practices, to place the institution at the forefront of undergraduate STEM education. The **Achieving Competitive Excellence (ACE)** or **ACE Implementation Projects** track is intended for HBCUs pursuing additional rounds of funding, and it seeks ambitious, transformative, far-reaching proposals that promise paradigm-shifting advances in STEM undergraduate education at the institution.

Planning Grants provide support to undertake self-analysis of the institution's undergraduate STEM programs to identify components that need improvement or enhancement in order to provide a high quality undergraduate STEM education. Planning grants should also research existing activities and strategies that could be implemented in a proposed project to improve the quality of undergraduate STEM education at the institution. Typical activities include: data collection and analysis, stakeholder consultation, research of potential activities and strategies, site visits to model programs, and writing a proposal for Implementation Projects (including ACE), Education Research Projects, and Targeted Infusion Projects.

Education Research Projects provide support to undertake a three-year education research project that has the potential to strengthen the STEM education and research programs at HBCUs. Education Research Projects must be based on sound education research methodologies and theories. Potential education research topics include: retention, diffusion of innovations, curricula enhancements, technology in education, STEM teacher education, and the identification of successful models. This is not a supplemental program - HBCUs do not need to have an Implementation Project in order to submit ERP proposals.

Targeted Infusion Projects provide support to achieve a short-term, well-defined goal to improve the quality of undergraduate STEM education. Typically, projects are focused on one activity within a single STEM department however interdisciplinary and cross disciplinary projects are encouraged. Potential goals include: specialized accreditation or certifications, establishing new programs or concentrations, establishing collaborations between STEM disciplines and teacher education programs, and updating programs to reflect advances in the field and workforce requirements. This is not a supplemental program. HBCUs do not need to have an Implementation Project in order to submit a TIP proposal.

Innovation through Institutional Integration (I^3) projects enable faculty, administrators and others in institutions to think and act strategically about the creative integration of NSF-funded awards, with particular emphasis on awards managed through programs in the Directorate for Education and Human Resources (EHR), but not limited to those awards. For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance I^3 goals: CREST, GSE, HBCU-UP, ITEST, LSAMP, MSP, Noyce, RDE, and TCUP.

Cognizant Program Officer(s):

- Marilyn Suiter, Program Director, 815N, telephone: (703) 292-5121, fax: (703) 292-9018, email: msuiter@nsf.gov
- Claudia Rankins, Program Director, 815N, telephone: (703) 292-8109, fax: (703) 292-9018, email: crankins@nsf.gov
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Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 20 in FY 2009 - approximately 6 Implementation Projects (including 2 Achieving Competitive Excellence projects), 4 Planning Grants, 2 Education Research Projects, and 8 Targeted Infusion Projects. Up to 12 continuing awards will be made in the Innovation through Institutional Integration activity for the February 24, 2009, competition, pending availability of funds. Up to 12 continuing Innovations through Institutional Integration awards will also be made in Fiscal Year 2010 for the August 25, 2009, competition, pending availability of funds.

Anticipated Funding Amount: $10,000,000 - Approximately $10 million in FY 2009 for HBCU-UP pending the availability of funds. $10,000,000 for Innovation through Institutional Integration projects across multiple EHR programs for each of Fiscal Years 2009 and 2010 pending the availability of funds.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Historically Black Colleges and Universities (HBCUs) that are accredited and offer undergraduate educational programs in science, technology, engineering and mathematics (STEM).

  Eligibility for Innovations through Institutional Integration (I^3) is limited to institutions of higher education (including two- and four-year colleges) accredited in, and having a campus located in the US. If the proposal is exclusively for I^3 STEM educational or related research, then all categories of proposers identified in the NSF Grant Proposal Guide are eligible to submit.

PI Limit:

- The Principal Investigator for Implementation Projects (including ACE) and Planning Grant proposals should be the chief academic officer of the institution or other senior academic official. Potential co-Principal Investigators include the key personnel that will be involved in the implementation of the project activities.
- The Principal Investigator for Targeted Infusion Projects should be a STEM department head or equivalent. Potential co-Principal Investigators include the key personnel that will be involved in the implementation of the project activities.
- The Principal Investigator for Education Research Projects should be the individual who will perform the research project. Other potential co-Principal Investigators include collaborators on the research project. At least one of the Principal Investigators must have formal training in education research or significant professional experience doing education research.

The Principal Investigator for an Innovation through Institutional Integration (I^3) proposal must be the university provost or equivalent chief academic officer, unless the proposal is exclusively for I^3 STEM educational or related research.

Limit on Number of Proposals per Organization:

- Eligible institutions can submit either an Implementation Project proposal or a Planning Grant proposal in any year. Please note that an eligible institution can only have one active Implementation Project or Planning Grant.
- Eligible institutions can submit one Targeted Infusion Project in any year. This may be in addition to either an Implementation Project or Planning Grant proposal if applicable.
- There is no limit to the number of Education Research Project proposals that can be submitted from an eligible institution.

For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance the goals of Innovation through Institutional Integration (I^3): CREST, GSE, HBCU-UP, ITEST, LSAMP, MSP, Noyce, RDE, and TCUP. Given the focus on institutional integration, an institution may submit only one proposal to the I^3 competition for each deadline.

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is optional. Please see the full text of this solicitation for further information.
- **Preliminary Proposals:** Submission of Preliminary Proposals is required for ACE Implementation Projects. Please see the full text of this solicitation for further information.
- **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.

- 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/pubs/policydocs/grantsgovguide607.pdf)

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **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)** ***(optional)*** (due by 5 p.m. proposer's local time)***:***

  January 25, 2009

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  April 17, 2009

  ACE Implementation Projects

  August 25, 2009

  Innovation through Institutional Integration (I3)

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Additional award conditions apply. Please see the full text of this solicitation for further information.

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

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I. INTRODUCTION

The Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) is committed to enhancing the quality of undergraduate science, technology, engineering, and mathematics (STEM) education and research at Historically Black Colleges and Universities (HBCUs). HBCU-UP is one of the National Science Foundation's programs designed to "Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the science literacy of all citizens." (NSF Strategic Plan 2006-2011). HBCU-UP is managed by the Division of Human Resource Development (HRD), located in the NSF Directorate for Education and Human Resources. Programs within HRD have a strong focus on maximizing the preparation of a well-trained scientific and instructional workforce for the new millennium.

HBCU-UP recognizes and supports the important role that HBCUs play in increasing the numbers of underrepresented ethnic minorities that are well prepared for participation and leadership at every level of education and research in STEM. HBCU-UP provides awards to enhance the quality of undergraduate STEM education and research at Historically Black Colleges and Universities as a means to broaden participation in the nation's STEM workforce. HBCU-UP seeks development of STEM education initiatives that support the preparation of a globally-engaged science and engineering workforce that is "broadly inclusive" and capable of performing in an international research and development environment in order for the U.S. to remain at the forefront of world science and technology.

STEM Teacher Preparation. HBCUs currently produce about 40 percent of the African American mathematics and science teachers (*Educating the Emerging Majority,* IHEP, Sept. 2000). A recent report from the National Academy of Sciences, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future," recommends increasing the nation's talent pool through the annual recruitment of science and mathematics teachers and improving K-12 science and mathematics education. We encourage HBCU-UP project leaders to include STEM teacher preparation in the targets addressed in their programs to support increasing the numbers and the high-quality preparation of future STEM teachers. HBCU-UP grantees can be significant partners in NSF's efforts to build increased capacity in the STEM teaching workforce through recruitment, retention, early and frequent teaching and research experiences.

International research experiences and workforce globalization. In support of this aim, HBCU-UP will consider the inclusion of high quality international research experiences for U.S. students and faculty who are conducting STEM research abroad in collaboration with foreign investigators, incorporated within proposals.

Motivated by challenges across the nation's science and engineering enterprise, NSF HBCU-UP has been making investments in HBCU undergraduate STEM education, research, and infrastructure for several years. The **Achieving Competitive Excellence (ACE)** or **ACE Implementation Projects** track is intended for HBCUs pursuing additional rounds of

funding, and it seeks ambitious, transformative, far-reaching proposals that promise paradigm-shifting advances in STEM undergraduate education at the institution.

For Fiscal Year (FY) 2009, HBCU-UP will support awards for Implementation Projects, ACE Implementation Projects, Planning Grants, Education Research Projects, and Targeted Infusion Projects.

In addition, proposals submitted to the Innovation through Institutional Integration (I^3) track would request support for projects that enable faculty, administrators and others in institutions to think and act strategically about the creative integration of NSF-funded awards, with particular emphasis on awards managed through programs in the Directorate for Education and Human Resources (EHR), but not limited to those awards. For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance I^3 goals: CREST, GSE, HBCU-UP, ITEST, LSAMP, MSP, Noyce, RDE, and TCUP.

II. PROGRAM DESCRIPTION

1. **IMPLEMENTATION PROJECTS**: Projects of up to five-years on institution-wide, undergraduate STEM education and research capacity building and improvement. **ACE IMPLEMENTATION PROJECTS**: Five-year, institution-wide, undergraduate STEM education and research growth and expansion projects.

HBCU-UP Implementation Projects support comprehensive institutional reform and transformational strategies to strengthen and enhance STEM teaching and learning and to improve student access and retention in STEM areas. NSF expects that the activities and strategies included in Implementation Project proposals will be consistent and complementary with the institution's STEM needs, long-term goals, and mission, and will reflect well-documented successful practices. Therefore NSF allows maximum flexibility in the design of Implementation Projects under HBCU-UP. The activities should be designed to produce significant improvements in the quality and productivity of undergraduate STEM education and research program, with some evidence of strategies for the institution's for sustainability by the end of the five year project period.

Institutions that have not already identified activities and strategies for an Implementation Project are encouraged to consider applying for a Planning Grant to perform an institutional self-analysis of its STEM enterprise before submitting an Implementation Project proposal.

If an institution has previously received an HBCU-UP Implementation Project grant, it is critical that the proposal for a second Implementation project provides complete information on the outcomes and impact of that HBCU-UP project, including a description of how successful activities are being sustained by the institution and what was learned from the previous activities. Second HBCU-UP Implementation proposals must not simply continue previous HBCU-UP activities. The activities in the new proposal should be based on a thorough evaluation of the previous HBCU-UP project and assessment of the current state of the institution to build on that achievement and move the institution to the next level of STEM program quality.

The project scope will depend on the size and number of STEM programs at the institution and the complexity of the current and proposed activities in the project design. Ideally all the STEM programs, students and faculty would be affected by the HBCU-UP activities. The scope of the project should be clearly defined and described numerically, outlining the impact on students and faculty of the proposed HBCU-UP activities. Activities may include, but are not limited to: Course and curriculum development, revision, and enhancement; undergraduate student development, academic success, and educational enrichment services; as well as faculty professional development, and other systemic educational development strategies documented as successful practices. (Note: student financial support may only be provided to students who are United States citizens, nationals, or permanent residents the United States. Graduate student research is not supported under the HBCU-UP program.).

Competitive HBCU-UP Implementation proposals will give attention to:

- Support of new STEM activities or enhancements, not support maintaining existing activities.
- Coordination/bridging of all institutional STEM strengthening activities (new and existing) in order to create a comprehensive STEM program that will result in significant and sustainable improvements.
- Raising the quality of STEM education and student learning, including increasing opportunities for high quality research experiences for students and faculty.
- Establishing and developing partnerships with other minority-serving institutions, other institutions of higher education, other NSF projects (e.g., the Alliances for Graduate Education and the Professoriate (AGEP), the Centers of Research Excellence in Science and Technology (CREST), the Integrative Graduate Education and Research Traineeship Program (IGERT), and with S&E industries and laboratories, national laboratories) and other research centers to enhance and support HBCU-UP activities.

Institutions having had two previous HBCU-UP Implementation Project grants should be able to exhibit an established foundation and to evidence institutionalized achievements toward the HBCU-UP goals and objectives. As a result, growth in competitiveness and excellence of these institutions should be clearly represented by readiness in faculty, staff, infrastructure, fiscal and operations management, and institutional leadership. The **ACE Implementation Projects** track is intended for institutions seeking additional rounds of funding. The proposals desired for this track are ambitious, transformative, and far-reaching, and promise paradigm-shifting advances in STEM undergraduate education at the HBCU.

2. **PLANNING GRANTS**: Projects of up to twelve to eighteen months to perform an institutional STEM program self-analysis in preparation for an HBCU-UP submittal.

The proposed activities should include an institutional STEM self-analysis and the development of an action plan with activities and strategies to enhance the institution's STEM programs. The activities should result in the institution's submission of a strong Implementation Project (including Achieving Competitive Excellence), Education Research Project, or Targeted Infusion proposal to the HBCU-UP program.

Activities may include, but are not limited to:

- Faculty release time to manage and participate in planning activities,
- Involving visiting faculty or consultants in the planning process,
- Consultation with stakeholders (for example students, faculty, administrators, as well as STEM industry and K-12 representatives) and/or exemplars,
- Data collection,
- STEM program assessment and evaluation,
- Review of STEM education research findings and effective implementation strategies, and adaptation to needs of the participating institution,
- Travel for site visits to exemplar institutions including existing HBCU-UP project sites or other institutions utilizing documented successful practices,
- Professional travel and professional development directly associated with improving the planning grant activities.

3. **EDUCATION RESEARCH PROJECTS**: Projects of up to three years to perform an education research investigation.

Education Research Project proposals should be designed to add to the knowledge base of STEM education in the HBCU context. Education Research Project proposals are desired that define evidence-based research studies that contribute understanding in broadening the participation of and in producing successful outcomes for underrepresented groups in the STEM enterprise. Research investigations may include but are not limited to:

- Factors contributing to improved student retention and graduation in STEM degree programs, and successful placement in STEM careers;
- Development of definitions of what constitutes successful STEM outcomes and development of valid measures for these outcomes;
- Revealing and verifying causality or theory of change associated with STEM-oriented intervention programs; and
- Identification and validation of successful education models across STEM fields.

Proposals should reflect relevant advances in quantitative, qualitative, and mixed-methods research and evaluation methodologies and provide a compelling argument about how the methodologies proposed are appropriately matched with the strategic research questions of the project. Additionally, proposals should demonstrate how the methods chosen would result in rigorous, cumulative, reproducible, and usable findings to merit peer-review and publication. According to a recent National Research Council report on scientific research in education, educational research projects should:

- Pose significant questions that can be investigated empirically,
- Link relevant research to theory,
- Use methods that permit direct investigation of the questions posed,
- Provide a coherent and explicit chain of reasoning,
- Replicate and generalize across studies, and
- Disclose research to encourage professional scrutiny and critique.

(National Research Council. (2002). Scientific research in education. Committee on Scientific Principles for Education Research. Shavelson, RJ; Towne, L, (Eds.). Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press)

Education Research Project proposals must include PIs with demonstrable expertise in education research and/or social science research methods in addition to PIs with knowledge about STEM programs at HBCUs. Proposers are encouraged to establish collaborations to strengthen the education research project and to describe in the proposal the nature of the collaboration and the anticipated benefits. Proposers should discuss how the work would contribute to productive public or scholarly debate. As appropriate, proposals should describe mechanisms to effectively and efficiently transfer findings into educational practice or use by other researchers and policymakers.

4. **TARGETED INFUSION PROJECTS**: Projects of one- to two-years targeted to meet a short term, well-defined goal to improve the quality of undergraduate STEM education.

Project activities must be extremely focused in order to meet a very well defined short term goal to build the quality of undergraduate education. Typically, projects are focused on one activity within a single STEM department. However, interdisciplinary and cross-disciplinary projects are also encouraged. Please note that the social, behavioral, and economic sciences are eligible to be included in an Implementation Project proposal. Projects aligned with the NSF-wide investment

areas are highly encouraged (see http://www.nsf.gov/news/priority areas/).

Do not submit proposals to Targeted Infusion Projects (TIP) that singularly support scientific or engineering research and not STEM education, even if undergraduates are involved in the research. These activities do not fit into the goal of the TIP initiative and can be supported by research grant programs within the NSF science and engineering Directorates (http://www.nsf.gov/funding/).

TIP goals include, but are not limited to establishing a new STEM degree program or concentration or earning a new specialized accreditation or certification for a STEM degree program to improve the competitiveness of graduating students and recruit more students to the program; enhancing the teaching and research infrastructure to improve the preparedness and competitiveness of graduating students for graduate school and to recruit qualified STEM faculty, or other targeted STEM education improvements.

Competitive projects will describe clearly how the activities will result in an overall enhancement of the current STEM programs. Appropriate short term goals should be easily measurable and attainable within the project time frame, and appropriate metrics should be identified. Activities could include but are not limited to curriculum enhancement and/or new course development, training related to the project, and equipment acquisitions associated with HBCU-UP objectives. The activities must clearly lead to the stated specific short term goal of the project. Proposals that include normal operating activities such as salaries to teach existing classes, and normal recruitment and outreach activities, will not be funded. HBCUs that currently have a five-year Implementation Project will need to explain how the Targeted Infusion Project is unique from the Implementation Project activities, but connected with the systemic institutional improvement in STEM.

Proposers are encouraged to contact the discipline appropriate NSF contact person listed in the Contacts for Additional Information section of this solicitation to discuss proposed project activities and goals of a potential TIP. Proposers interested in establishing collaborations between STEM disciplines and STEM teacher education programs are encouraged to contact the Division of Undergraduate Education (DUE) and/or Division of Research on Learning in Formal and Informal Settings (DRL) contact listed. For general questions and proposal process questions please contact one of the Cognizant Program Officers listed at the beginning of this solicitation. TIP proposals are not supplements to existing HBCU-UP projects. HBCUs do not need to have an Implementation Project in order to submit TIP proposals.

5. **Innovation through Institutional Integration (I^3)** Creativity, connectivity, integration, and synergy are keys to innovation and to developing human and institutional capacity to full potential. In both research and education, it is the forging of new links between ideas or methodologies that were previously disparate that frequently paves the way for innovation. When institutions optimize the benefits to be derived from the creative integration of intellectual perspectives or related domains of work, they create important opportunities for making progress on some of the most important scientific, technological, and educational challenges of our time. On individual campuses across the nation, for example, significant synergistic potential can be ignited when scholars and educators in related disciplines to work together. Similarly, NSF awardees can harness new synergies by working together with other NSF-funded projects on their own campus or in close geographic proximity. When the results of these synergies are both compatible with and beneficial for the institution(s) involved, successful innovation can be created[i]. Past efforts at integration have shown that opportunities for synergy can be created most successfully when collaborative projects include:

- Clear support from senior administrators;
- A cogent plan of action that includes expectations and staff development;
- Open cross-institutional dialogue that is supported and encouraged;
- A common campus-wide vision and value system that stresses the importance of synergistic efforts;
- The formation of a campus network with a set of individuals who take ownership and provide leadership for the initiative[ii].

The campus network is an important aspect of successful collaboration at every stage of development and is critical to the sustainability and enhancement of created partnerships as well as the institutionalization of new innovations. This network can (a) foster communication across the campus to encourage the formation and dissemination of new ideas, values, and learning; (b) serve as a source of leadership to promote and carry out integrative activities; and (c) develop and sustain existing connections while continually expanding collaborative efforts[iii].

Innovation through Institutional Integration (I^3) challenges faculty, administrators and others in institutions to think strategically about the creative integration of NSF-funded awards towards a whole that exceeds the sum of its parts. Although there is particular emphasis in I^3 on awards managed by programs in the Directorate for Education and Human Resources (EHR), institutional integration is not limited only to EHR awards but can include other NSF awards with a STEM educational focus. Two or more institutions in geographic proximity might, for example, partner to bridge existing NSF-funded awards on their campuses (e.g., RDE, IGERT, LSAMP, ATE, CREST, REU) to broaden participation in STEM fields and enhance undergraduate research opportunities. Additional connections might be made internationally with faculty or students outside the United States who would add their considerable intellectual and cultural perspectives. As another example, an

institution might implement new policies, procedures, or mechanisms that encourage and value synergistic efforts among existing NSF-funded awards (e.g., GK-12, MSP, Noyce, REESE, DRK-12) and with other institutional units to better understand and enhance seamlessness across critical educational junctures, perhaps infusing innovative approaches to cyber-learning.

This effort has the following interrelated goals:

- Increase synergy and collaboration across NSF-funded projects and within/between institutions, towards an educational environment where artificial boundaries are significantly reduced and the student experience is more fully integrated;
- Expand and deepen the impact of NSF-funded projects and enhance their sustainability;
- Provide additional avenues to broaden participation through workforce development, especially for those underrepresented in STEM research and education; attend to seamless transitions across critical educational junctures; and/or provide more effectively for a globally engaged workforce;
- Promote innovative programming, policies, and practices to encourage the integration of STEM research and education; and
- Encourage STEM educational or related research in domains that hold promise for promoting intra- or inter-institutional integration and broader impacts.

Proposals that facilitate either (a) inter-institutional or (b) intra-institutional efforts are encouraged. Proposals may be submitted by (a) a single institution to address intra-institutional goals only or (b) an institution acting on behalf of an institutional partnership to address inter-institutional goals.

Proposals are expected to incorporate a depth and quality of creative, coherent, and strategic actions that extend beyond commonplace approaches to normal institutional operations. Proposals may also be submitted for research on institutional integration or other closely related themes articulated in the goals above.

I^3 is a cross-divisional effort in the Directorate for Education and Human Resources (EHR). For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance I^3 goals: CREST, GSE, HBCU-UP, ITEST, LSAMP, MSP, Noyce, RDE, and TCUP. All proposals submitted to I^3 through these programs have a common due date and will be reviewed in competition with one another.

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[i] Levine, A. (1980). Why Innovation Fails. New York: State University of New York Press. Pg. 160.

[ii] Kezar, A. (2003). Enhancing Innovative Partnerships: Creating a Change Model for Academic and Student Affairs Collaboration. *Innovative Higher Education* 28(2): 137-156.

[iii] Kezar, A. (2005). Redesigning for Collaboration within Higher Education Institutions: An Exploration into the Developmental Process. *Research in Higher Education* 46(7): 831-860.

III. AWARD INFORMATION

1) Implementation Projects

- Number of awards: Approximately 6 in FY 2009
- Average Award: $1.75 million ($350,000 per year) for Implementation projects; up to $3 million ($600,000 per year) for ACE Implementation projects
- Project Length: Up to five years
- Cost Share Requirement: None
- Restrictions: Equipment costs may not exceed 30% of the total budget request
- Grant Administration: Implementation projects will be managed by NSF as continuing grants

2) Planning Grants

- Number of awards: Approximately 4 in FY 2009
- Average Award: Up to $50,000 for Implementation (including ACE) and Education Research projects; up to $25,000

for Targeted Infusion Projects
- Project Length: Twelve to eighteen months
- Cost Share Requirement: None
- Restrictions: Equipment costs are not normally allowed under planning grants
- Grant Administration: Planning grants will be managed by NSF as standard grants

3) Education Research Projects

- Number of awards: Approximately 2 in FY 2009
- Average Award: Up to $500,000 ($150,000 to $167,000 per year)
- Project Length: Three years
- Cost Share Requirement: None
- Restrictions: Equipment costs are not normally allowed under Education Research Projects
- Grant Administration: Education Research Projects will be managed by NSF as continuing grants

4) Targeted Infusion Projects

- Number of awards: Approximately 8 in FY 2009
- Award Range: $75,000 to $150,000
- Project Length: Up to two years
- Cost Share Requirement: None
- Restrictions: There are no equipment cost restrictions
- Grant Administration: Targeted Infusion Projects will be managed by NSF as continuing or standard grants

5) Innovation through Institutional Integration Projects

Awards for Innovation through Institutional Integration projects will be made for durations of up to five years, with years four and five dependent on performance, in amounts of up to $250,000 per year, for a total of up to $1.25 million over 5 years. Innovation through Institutional Integration awards will be made as continuing grants.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Historically Black Colleges and Universities (HBCUs) that are accredited and offer undergraduate educational programs in science, technology, engineering and mathematics (STEM).

  Eligibility for Innovations through Institutional Integration (I^3) is limited to institutions of higher education (including two- and four-year colleges) accredited in, and having a campus located in the US. If the proposal is exclusively for I^3 STEM educational or related research, then all categories of proposers identified in the NSF Grant Proposal Guide are eligible to submit.

PI Limit:

- The Principal Investigator for Implementation Projects (including ACE) and Planning Grant proposals should be the chief academic officer of the institution or other senior academic official. Potential co-Principal Investigators include the key personnel that will be involved in the implementation of the project activities.
- The Principal Investigator for Targeted Infusion Projects should be a STEM department head or equivalent. Potential co-Principal Investigators include the key personnel that will be involved in the implementation of the project activities.
- The Principal Investigator for Education Research Projects should be the individual who will perform the research project. Other potential co-Principal Investigators include collaborators on the research project. At least one of the Principal Investigators must have formal training in education research or significant professional experience doing education research.

The Principal Investigator for an Innovation through Institutional Integration (I^3) proposal must be the university provost or equivalent chief academic officer, unless the proposal is exclusively for I^3 STEM educational or related research.

Limit on Number of Proposals per Organization:

- Eligible institutions can submit either an Implementation Project proposal or a Planning Grant proposal in any year. Please note that an eligible institution can only have one active Implementation Project or Planning Grant.
- Eligible institutions can submit one Targeted Infusion Project in any year. This may be in addition to either an Implementation Project or Planning Grant proposal if applicable.
- There is no limit to the number of Education Research Project proposals that can be submitted from an eligible institution.

For Fiscal Year 2009, proposals are being solicited in nine EHR programs that advance the goals of Innovation through Institutional Integration (I^3): CREST, GSE, HBCU-UP, ITEST, LSAMP, MSP, Noyce, RDE, and TCUP. Given the focus on institutional integration, an institution may submit only one proposal to the I^3 competition for each deadline.

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent*(optional):*

All letters of intent must be submitted via FastLane. A separate letter of intent is requested for each type of HBCU-UP proposal (Implementation, Planning Grant, Targeted Infusion, or Education Research) that will be submitted from an eligible institution.

Letters of intent must contain the following information:

- Project title
- PI name and Co-PI names, department, institution, phone, fax and email
- Point of contact if different than the PI (phone, fax, email)
- Submitting institution name
- Project synopsis: Provide a brief description of the proposed activities. Education Research Projects should include the research question(s) to be addressed and the population(s) to be examined.
- The type of proposal that will be submitted (Implementation, Planning, Targeted Infusion, or Education Research)

Education Research Project proposers are encouraged to submit a letter of intent with significant detail on the proposed education research project. Technical assistance for Education Research Projects will be provided by the HBCU-UP program office to proposers who submit an ERP letter of intent by the due date, and to proposers who contact the HBCU-UP program office within two weeks of the LOI due date.

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
- A Minimum of 1 and Maximum of 4 Other Senior Project Personnel are allowed
- Proposal Type (Implementation, Planning, Targeted Infusion, Education Research) is required when submitting Letters of Intent
- Submission of multiple Letters of Intent is allowed

Preliminary Proposals *(required):* Preliminary proposals are required for ACE Implementation Projects and must be submitted via the NSF FastLane system, even if full proposals will be submitted via Grants.gov.

Preliminary proposal submittals to ACE Implementation

HBCU-UP ACE Implementation Projects proposers are required to submit a preliminary proposal, which will be reviewed and will determine the PI's eligibility to submit a full proposal to this program track. The purpose is twofold: we expect this process to

- Reduce the proposers' unnecessary effort in proposal preparation when the chance of success is very small; this track currently offers two awards annually; and
- Increase the overall quality of the full submission.

Preliminary proposals are prepared by the PI using the Proposal Preparation Module in FastLane. On the Cover Sheet, the PI clicks on the "Preliminary Proposal" check box. The PI completes only the sections appropriate to the preliminary proposal. The PI then forwards the proposal to his/her Sponsored Projects Office, which then submits the preliminary proposal to NSF.

In the preliminary proposal, the submitter should evidence sustained and institutionalized achievements toward the HBCU-UP goals and objective -- a foundation on which this proposal will build. The proposals for this track will be ambitious, transformative, and far-reaching; there should be promise of paradigm-shifting advances in STEM undergraduate education at the HBCU. Areas in which a submitter could reflect suitable achievement include

• Documented measurable success in enhancing the quality of undergraduate STEM education and research at specific HBCUs, with documented outcomes,

• Significant increase documented in enrollment, retention and degrees of under-represented minority students in undergraduate STEM education and research at grantee HBCU,

• Established program of student professional development with documented successful outcomes (preparation for workplace and/or continued academic development and/or graduate school in STEM),

• Other elements that may be supportive: a portfolio of suitable of STEM research activity, STEM research and education staff ; STEM and STEM education faculty retention, promotion, success.

The review of the preliminary proposal will result in an “invite/not invite” decision, which determines the PI's eligibility to submit a full proposal. Only submitters of favorably reviewed preliminary proposals are invited and eligible to submit full proposals.

The PI and the organization's Sponsored Projects Office will be notified of NSF's decision to either encourage or discourage submission of a full proposal.

Project Summary: The one-page Project Summary should clearly indicate, in the first few sentences, the disciplinary or interdisciplinary focus (or foci) of the proposed project, the kinds of activities to be undertaken and the primary audience to be affected by those activities. This information is used to assign the proposal to a panel for review. Proposers are reminded that the Project Summary must explicitly address, in separate statements, both NSB-approved merit review criteria; the statements should contain the phrases "intellectual merit" and "broader impacts." Preliminary or full proposals that do not separately address both merit review criteria within the one-page Project Summary will be returned without review.

Project Description (including Results from Prior NSF Support): While the minimum font size allowed is 10 point (no more than 15 characters per 2.5 cm), HBCU-UP strongly recommends that proposers use 11 or 12-point, standard font (e.g., Times New Roman, Times, or Arial) to ensure readability. In preliminary proposals, the length of the Project Description is limited to 6 pages (single-spaced). The Project Description should explain the project's motivating rationale, goals, objectives, deliverables, and activities; the timetable; the management plan; the roles and responsibilities of the PI, co-PI(s), and other senior personnel; the plan for sustainability after the period of NSF funding; the evaluation plan; the dissemination plan; and results from evaluations of prior NSF support. The subsection on Results from Prior NSF Support should only cover awards pertaining to education; describe research awards only if they have a direct bearing on the new proposal. If the proposed project is based on previously funded work, the proposal must thoroughly describe the results of the prior project, demonstrate that the project achieved its objectives, and provide evidence of the quality and effectiveness of the project's deliverables. (Supplementary documents may also be used, subject to the constraints indicated below, to illustrate prior work.)

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. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@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/pubs/policydocs/grantsgovguide607.pdf). 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 pubs@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.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

The GPG and the NSF Grants.gov Application Guide provide general instructions for each section required in the full proposal. Please note that proposers are required to address prior NSF support received within the last five years by any of the co-PIs on the current proposal. Additional program specific guidance is provided below.

HBCU-UP PROJECTS

- Cover Sheet -
  - For all HBCU-UP proposals under "NSF Unit Consideration" please select:
    - "HRD-Division of Human Resource Development" as the division
    - "Hist Black Colleges and Univ" as the program
  - Implementation proposals:
    - Please begin the project title with "Implementation Grant:"
    - The “proposal duration” should be 60 months
  - Planning Grant proposals:
    - Please begin the project title with "Planning Grant:"
    - The “proposal duration” should be between 12 and 18 months
  - Education Research proposals:
    - Please begin the project title with "Education Research Grant:"
    - The “proposal duration” should be 36 months
  - Targeted Infusion proposals:
    - Please begin the project title with "Targeted Infusion Grant:"
    - The “proposal duration” should be between 12 and 24 months
  - You must review the regulations regarding Human Subjects (45 CFR 690.101-124 http://www.nsf.gov/bfa/dga/policy/docs/45cfr690.pdf). This is particularly important for Education Research Projects. Please note that Human Subjects regulations also govern activities that have to do with safe guarding individually identifiable information such as student and faculty surveys and data, therefore many Implementation Projects, Planning Grants, and possibly Targeted Infusion Projects, may also need to be reviewed by your Human Subjects Internal Review Board (IRB). If your project will be reviewed by your IRB once the project is considered for funding please check the box on the cover sheet and indicate that the review is pending. If the proposal has already been reviewed by your IRB and found to be exempt please cite the applicable subsection for the exemption on the cover sheet. If the IRB has already given approval of the activities include a letter from the IRB and indicate the expiration date of the IRB approval on the cover sheet.
- Project Summary - The Project Summary is a self-contained one-page description of the activities that would be implemented if the proposal were funded.
  - IMPORTANT NOTE: Both NSF merit selection review criteria must be addressed separately in the one-page project summary in all proposals submitted under this solicitation: What is the intellectual merit of the proposed activity? and What are the broader impacts of the proposed activity? Proposals will be returned, without review, if they do not address both merit selection review criteria separately.
- Project Description - 15 page limit. Refer to the "Project Description" section below for more information on each type of HBCU-UP proposal: 1) Implementation Projects, 2) Planning Grants, 3) Education Research Projects, and 4) Targeted Infusion Projects.
- References Cited - Provide the references cited in the proposal.
- Biographical Sketches - Outline the experiences of the PI and co-PIs (two-page limit each person). Include a two-page position description with minimum qualifications and percent time commitment for any project staff position that will be filled if the proposal is funded (for example a project coordinator or data manager).
- Budget -

  - Implementation Projects should budget for the PI and the co-PI who has the most day-to-day contact with the project, to attend a three-day grantee meeting in the Washington, DC area each year of the project. Implementation Projects should also budget for the institution's financial officer assigned to the HBCU-UP project to attend a one day workshop on financial management of NSF grants in the Washington, DC area each year of the project.
  - Education Research Projects should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Targeted Infusion Projects should budget for the PI with the most day-to-day contact with the project to attend a three-day grantee meeting in the Washington, DC area each year of the project.

1) Implementation Projects - The project description should include the following information:

Background and Context

- Provide information on the institution's current STEM education and research capability (your baseline data). Examples of information and data include: a description of your STEM degree programs, student enrollment, retention, graduation rates, graduate school going rates, gatekeeper course performance, STEM faculty demographics, and STEM infrastructure resources at the institution and collaborating organizations.
    - This information should help the reviewers understand your current STEM programs and provide context to determine reasonable goals and objectives for your proposed activities. The information should highlight some of the areas that need improvement and that will be addressed with the proposed project activities. In addition, the baseline data can be referenced in your evaluation plan to measure your project's outcomes.
    - Proposers are highly encouraged to review the Self Evaluation Indicator System (SEIS), which is part of the reporting requirements for HBCU-UP Implementation Project awardees, as a guide for the types of data that could be included in the proposal. You can download a copy of the SEIS questions at http://www.systemic.com/pdfs/Sample_Cohort_6_SEIS05.pdf.
- Provide information on STEM related programs that have been implemented or are currently active. Include other NSF programs (for example the Louis Stokes Alliances for Minority Participation (LSAMP) or the Course, Curriculum, and Laboratory Improvement (CCLI) program), other Federal programs (for example the Minority Science and Engineering Improvement Program (MSEIP) or the Minority Access to Research Careers (MARC) program), State programs, and institution programs.
    - For institutions that have previously received an HBCU-UP Implementation Project award you must discuss the goals and outcomes of that project. You should at least address the following questions concerning your previous HBCU-UP project:
        - What were the objectives and goals of the project (numerical when possible)?
        - What activities were implemented?
        - What were the results of the activities (numerical when possible)?
        - Have the activities been institutionalized? If not, why not?
    - For institutions that have received an HBCU-UP Planning Grant, you must describe the planning grant activities and the findings of those activities.
- Describe how the proposed Implementation Project goals and objectives fit the institution's mission and reflect the institution's long-term STEM goals and plans.
- Provide evidence of the commitment to the proposed Implementation Project activities of the institutional administration, partners and collaborators if applicable, and the STEM faculty and leadership. Letters of commitment to the proposed project activities can be included as supplementary documents. Do not include general letters of support from individuals not involved in the implementation of project activities.

ACE Implementation proposals. This highly competitive program element is for highly experienced and accomplished HBCU-UP institutions that are exemplars for their academic achievement in the HBCU STEM community. The proposals for this track are ambitious, transformative, and far-reaching; there should be promise of paradigm-shifting advances in STEM undergraduate education at the HBCU. The interest is in moving the HBCU-UP portfolio forward, offering more rigorous objectives in innovation through innovative activities based on documented effective practices in STEM education.

Proposed Implementation Activities

- Describe the proposed activities that will be implemented. Competitive proposals will provide answers to following questions for each proposed activity:
    - WHAT: What are the goals and objectives? Include the number of STEM students and faculty that will be impacted by the activity each year of the project. Describe whether the proposed activity addresses the needs of other underrepresented groups, such as women and persons with disabilities, in addition to minority populations .
    - HOW: Describe the activity that will be implemented in order to achieve these goals and objectives. Include enough details so that the scope of your proposed activity is clear. What are the strategies and methods that will be used? How will the activity be sustained after NSF funding ends?
    - WHY: Provide evidence that the proposed activity is based on research and/or other projects that have been shown to be effective in achieving similar goals and objectives. What are the expected outcomes and impacts of the activity at your institution?
    - WHEN and WHO: Outline the five-year timeline for the proposed activity with measurable milestones. Include the project staff, administrators, and/or partners that are responsible for the activity and milestones.
- Describe plans to disseminate the outcomes of the project to appropriate audiences.
- Institutions that have previously received an HBCU-UP implementation award will also need to explain:
    - How the proposed activities will build on the previous project and not just continue previous activities.
    - How the proposed activities will move the institution to the next level of STEM program quality.

Project Management and Evaluation

- Provide a management plan and timeline for the project that will ensure that the activities will be implemented on time, within budget, and the required reporting will be accurately completed and submitted. Include your plans for collecting and submitting SEIS data annually and at the end of the project. The timeline should include the project's

major activities and milestones and identify who will be responsible for completing each activity.
    - You should review SEIS to determine whether your institution has the infrastructure and personnel to collect and submit the required data. If your institution does not currently have the infrastructure and personnel you can budget for data collection in your proposal. You can download a copy of the SEIS questions at http://www.systemic.com/pdfs/Sample_Cohort_6_SEIS05.pdf.
- The project staff and organization will depend on the design, scope, and disciplines involved. It is helpful to include a project organizational chart showing how the project fits into the institution's hierarchy
    - The Principal Investigator (PI) should be the chief academic officer of the institution since many proposed project activities will require this level of stewardship in order for them to be implemented.
    - The Project Manager should be the co-PI who will have the most day-to-day contact with the project.
    - Most projects should have an Internal Steering Committee or Internal Advisory Committee to help manage the project implementation, resolve project issues, and ensure that the project is on track for meeting project goals. The size and composition will depend on the design of the project - members could include STEM faculty, institutional staff who provide student and faculty services that are included in the project, and representatives from related STEM projects. This committee should meet frequently throughout the project. Include a description of the membership, schedule of meetings, and the responsibilities and duties of the committee.
    - HBCU-UP requires that Implementation projects have an External Advisory Committee that meets at least once a year, chaired by the chief executive officer of the institution. The External Advisory Committee should have representatives equivalent to the chief executive officer that can advise the project management team on the implementation of the project and progress toward project goals. Members could include leaders from other institutions of higher education, industry representatives, and representatives from feeder school districts and community colleges. The PI, co-PIs, and project staff involved in the implementation of the project activities should not serve on the External Advisory Committee. Include a description of the proposed membership, schedule of meetings, and the responsibilities and duties of the committee.
- Evaluation and assessment: It is expected that each project will include a formative and summative evaluation plan. The evaluation plan should refer to the objectives, goals, and baseline data already presented within the description of the proposed project activities. The formative evaluation should include benchmarks and indicators of progress that demonstrate the proposers' understanding of the essential quantitative and qualitative indicators for assessing the project's implementation processes. The summative evaluation should assess whether the project achieved the overall project goals as well as identify any unexpected results. The collection and reporting of SEIS data alone are not sufficient for project evaluation.

2) Planning Grants - The project description should include the following information:

Background and Context

- Provide information on the institution's current STEM education and research capability. Examples of information and data include: a description of your STEM degree programs, student enrollment, retention, graduation rates, graduate school going rates, gatekeeper course performance, STEM faculty demographics, and STEM infrastructure resources at the institution and collaborating organizations.
    - This background information and data should be designed to help the reviewers understand the potential impact of a full HBCU-UP Implementation Project on the quality of your STEM programs.
    - Proposers are encouraged to review the Self Evaluation Indicator System (SEIS), which is part of the reporting requirements for HBCU-UP Implementation Project awardees, as a guide for the types of data that could be included. You can download a copy of the SEIS questions at http://www.systemic.com/pdfs/Sample_Cohort_6_SEIS05.pdf.
- Describe how the proposed Planning Grant goals and objectives fit the institution’s mission and reflect the institution's long-term STEM related goals and plans.
- Provide evidence of the commitment to the proposed Planning Grant activities of the institutional administration, partners and collaborators if applicable, and the STEM faculty and leadership. Letters of commitment to the proposed project activities can be included as supplementary documents. Do not include general letters of support from individuals not involved in the implementation of project activities.

Proposed Planning Activities

- Describe the proposed planning process:
    - How will the institution's STEM programs be comprehensively evaluated and assessed in order to identify the areas that need strengthening and that will improve the quality of undergraduate STEM education?
        - Who will be involved in the STEM program evaluation and assessment process?
        - What data still needs to be collected and analyzed? Who will do this additional data collection and analysis?
        - You should describe any previous work that has been done, such as surveys of students and faculty or previous accreditation activities, which will be used as part of the proposed Planning Grant assessment.
    - How will research on potential implementation strategies be carried out? How will existing implementation strategies be adopted at your institution or adapted to your institution?
    - How will a full Implementation Project be developed? How will priorities be set?
- In general, implementation activities are not allowed under planning grants. In some cases, pilot activities may be appropriate if an innovative strategy is proposed which needs to be tested before full implementation. If you are not sure, please call one of the Cognizant Program Officers before submitting your proposal.

Project Management and Evaluation

- Provide a management plan and timeline for the project that will ensure that the activities will be implemented on time, within budget, and the required reporting will be accurately completed and submitted. The timeline should include the Planning Grant's major activities and milestones and identify who will be responsible for completing each activity.
- Project staff organization - staffing requirements will depend on the design and scope of the Planning Grant.
    - The Principal Investigator (PI) is normally the chief academic officer of the institution.
    - The Project Manager should be the co-PI who will have the most day-to-day contact with the planning grant.
    - Most Planning Grants should have an Internal Steering Committee or Internal Advisory Committee to advise on the Planning Grant implementation, resolve any issues, and ensure that the Planning Grant is on track. The size and composition can vary - members could include institutional leadership, STEM faculty not already involved in the planning activities, institutional staff who provide student and faculty services that may be included in an Implementation project, and representatives from related STEM projects. This committee should meet frequently throughout the project. Include a description of the membership, schedule of meetings, and the responsibilities and duties of the committee.
- Evaluation and assessment: It is expected that each Planning Grant will include a evaluation plan. The evaluation plan should assess the planning process and whether the Planning Grant achieved the overall planning grant goals as well as identify any unexpected results. This requirement refers to the evaluation of the Planning Grant as opposed to an evaluation and assessment of your STEM programs that you may have done as an activity within your Planning Grant.

3) Education Research Projects - The project description should include the following information:

Background and Context

- Describe the education research question(s) to be investigated and explain the significance and importance of answering the proposed education research question(s).
- Explain how the research will contribute to the knowledge base of STEM education research and how it has the potential to improve STEM education at HBCUs.

Proposed Education Research Activities

- Describe the research plan that will be undertaken in order to answer the education research question(s).
- Provide the theoretical basis for the proposed research methods and strategies.
- Provide a timeline for the research plan - include measurable objectives and outcomes and identify who will be responsible for completing each task.
- Describe how the research results will be disseminated to the education research and HBCU communities.
- In general, implementation activities are not allowed under Education Research Projects. In some cases, implementation activities may be appropriate but these activities must clearly be required in order to answer the proposed education research question(s) and must be significantly different from other education research studies. If you are including implementation activities you will need to clearly explain why the activities are needed to answer the education research question(s).

Project Management and Evaluation

- Provide a management plan for the project that will ensure that the activities and the required reporting will be implemented on time and within budget.
    - At least one of the PIs on the project must have formal training in education research or significant professional experience doing education research.
- Evaluation and assessment: It is expected that each Education Research proposal will include an evaluation plan that includes benchmarks, and quantitative and qualitative indicators of progress of the education research project. The plan should address the assessment of project outcomes and contributions to the STEM knowledge base and/or educational practice.

4) Targeted Infusion Projects - The project description should include the following information:

Background and Context

- Describe the overall goal of the project. The goal must be clearly stated, measurable, and achievable within the proposed time line.
- Describe the benefits of achieving the goal to the STEM education and research enterprise at the institution. For example, implementing the project will make your graduates more competitive in the workforce and graduate school, or better prepare them for success in the workforce and graduate school, or recruit more students to STEM, or retain students in STEM, or meet a local workforce need.
- Baseline data should be included in order to provide context for the impact of the Targeted Infusion Project. For example, include the names of the courses and the student enrollment in those courses that will be impacted with

the requested equipment.

Proposed Activities

- Describe the activities that will be undertaken in order to achieve the goal. The activities must clearly be related to achieving the goal. Proposals that include normal operating activities (salaries to teach existing courses, normal accrediting activities) or on-going costs (lab supplies for existing courses, undergraduate research support, tutoring, faculty travel and professional development not directly related to the project goal) will not be funded. Do not attempt to do a little bit of everything in your proposal - focused proposals are more competitive.
- Describe the plans to disseminate the outcomes of the project as appropriate. Dissemination is particularly important for innovative projects and projects that produce educational materials.
- Since all institution's have different policies and procedures, such as for new degree program approval, you should explain how your timeline reflects all institutional requirements. If appropriate, you should include evidence (such as letters of support or minutes from governance committees) that indicate that institutionally required procedures have been followed and preliminary approvals have been secured.
- Equipment and supplies:
    - Please explain how recurring costs, such as lab supplies for a newly created laboratory course, will be supported after the project ends.
    - Quotes or estimates for major equipment purchases should be included in the supplementary documents section.
    - Please explain how long-term maintenance of new equipment will be supported after the project ends.

Project Management and Evaluation

- Provide a management plan for the project that will ensure that the activities and the required reporting will be implemented on time and within budget.
- Provide a timeline for the activities to be implemented - include measurable objectives and outcomes and the staff that are responsible for doing the activities.
- Evaluation and assessment: It is expected that each Targeted Infusion proposal will include a formative and summative evaluation plan. The evaluation plan should refer to the objectives, goals and baseline data presented within the description of the proposed Targeted Infusion Project activities. The formative evaluation should include benchmarks and indicators of progress that demonstrate the proposers' understanding of the essential quantitative and qualitative indicators for assessing the implementation processes of the Targeted Infusion Project. The summative evaluation should assess whether the Targeted Infusion Project achieved the overall goals as well as identify any unexpected results.

INNOVATION THROUGH INSTITUTIONAL INTEGRATION (I^3) PROJECTS

The proposal should articulate the project's vision, goals, and anticipated outcomes and describe how the project will achieve them. The proposal should draw on the existing, relevant base of literature and articulate how the plan of work is so informed. It is expected that implementation of the plan of work will impact participating NSF awards, as well as other relevant parts of the institution(s). The proposal should, therefore, address how the goals of the overall project are compatible with the goals of the individual integrated components, as well as how the project is both compatible with and beneficial for the host institution(s). The proposal should include a management/governance plan that describes who is responsible for what, a timeline, and an evaluation plan. All proposals must clearly demonstrate that the submitting team has the capability to manage the project, organize the work, and meet deadlines.

Each proposed implementation project in the Innovation through Institutional Integration (I^3) should have an evaluation plan to assess progress and success in meeting project goals and objectives. An independent, external project-level evaluation is to be conducted to inform the institution and others of the progress and findings of the grant activities, especially those that address the project's synergistic activity (i.e., the value added by I^3). I^3 projects are expected to have baseline data, establish measurable targets, and collect evidence to determine annual progress and long-term outcomes. If applicable, it is highly desirable to establish a systematic plan to track student participants beyond their involvement in the project. Project-level evaluation should be designed to offer feedback for strengthening implementation over the course of the project, provide credible evidence to justify continued investment in the project, and report results (and describe models/paradigms) of institutional and/or disciplinary changes associated with the investment strategy.

Each I^3 project, as part of a national effort, is expected to cooperate in the monitoring and independent portfolio evaluation efforts conducted by NSF's contracted evaluators. While each project will propose its own types of specific qualitative and quantitative measures, some later standardization of performance monitoring is anticipated so that NSF can conduct a summative/impact evaluation. The I^3 portfolio (summative/impact) evaluation will be designed to determine how effectively I^3 is contributing to the knowledge base, building a community of innovators, strengthening/advancing the higher education STEM infrastructure, and promoting collaborations that advance the goals of I^3.

Proposals for research must address one or more I^3 goals and discuss the current state of knowledge relevant to the project. This brief literature review should clearly inform the proposed research. The project description should identify the methods the project will use and explain why those methods are appropriate to the questions that the proposal addresses. Methodologies must be matched with strategic research questions, and the logic among research question, method, analysis, inference, and evidence should be well articulated.

The results of prior, relevant NSF investment(s), ***especially projects on which the proposed institutional integration is based***, are to be described and supported by data, along with a discussion of both successes and failures. The proposal should also clearly indicate how the intended work differs from, builds on, or is otherwise informed by prior efforts.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

Other Budgetary Limitations:

- Equipment Limitations:
  - Implementation Projects (including ACE) - Equipment costs cannot exceed 30% of the total NSF budget requested.
  - Planning Grants - Minimal equipment costs are allowed if required to implement the planning grant process.
  - Targeted Infusion Projects - There is no limit on the percent of the budget that can be used for equipment.
  - Education Research Projects - Minimal equipment costs are allowed if required to implement the education research activities. Education Research Projects are not intended to support implementation activities, therefore major equipment is not normally included in Education Research Projects. However, equipment may be justified in some cases. Please contact one of the Cognizant Program Officers before submitting the proposal.
- Required Meeting Travel:
  - Implementation Projects (including ACE) should budget for the PI and the co-PI or a staff person responsible for the most day-to-day management of the project to attend a three-day grantee meeting in the Washington, DC area each year of the project. Implementation Projects should also budget for the institution's financial officer assigned to the HBCU-UP project to attend a one-day workshop on financial management of NSF grants in the Washington, DC area each year of the project.
  - Targeted Infusion Projects should budget for the PI with the most day-to-day contact with the project to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Education Research Projects should budget for the PI(s) to attend a three-day grantee meeting in the Washington, DC area each year of the project.
- Financial support may be provided to student participants under HBCU-UP Implementation Projects. However, financial support may only be provided to students that are U.S. citizens, nationals, or permanent residents of the U. S. Student support should be included on the "Stipends" line under the "Participant Support Costs" section of the budget. Stipends to undergraduate students should not replace other need based grants and scholarships already awarded to the students.

C. Due Dates

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

  January 25, 2009

  Implementation, Education Research, and Targeted Infusion Projects; Planning Grants

- **Preliminary Proposal Due Date(s) *(required)*** (due by 5 p.m. proposer's local time)***:***

  February 17, 2009

  ACE Implementation Projects

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

  February 17, 2009

  Implementation, Education Research, and Targeted Infusion Projects; Planning Grants

  February 24, 2009

  Innovation through Institutional Integration (I3)

  April 17, 2009

D. FastLane / Grants.gov Requirements

- **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. 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://www.grants.gov/CustomerSupport. 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. 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

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

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.

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.

Additional Review Criteria:

In addition to the two NSF criteria for Intellectual Merit and Broader Impacts, special review criteria for Innovation through Institutional Integration (I^3) implementation projects are:

- The extent to which the proposed project addresses the interrelated goals for institutional integration and adds value to existing NSF awards.
- The extent to which there is a demonstrated track record of success for the existing NSF awards on which the proposed institutional integration is based.
- The degree of innovation in the proposed project as evidenced by a depth and quality of creative, coherent, and strategic actions that extend beyond commonplace approaches to normal institutional operations.
- The extent to which the proposed project addresses programming, policies, and practices commensurate with the sustained institutional change needed to seed and nurture appropriate, synergistic relationships among discrete NSF awards.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by 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

A. Notification of the Award

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

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. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@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.

Special Award Conditions:

Reverse Site Visits: Participation in a Reverse Site Visit (RSV) can be requested by NSF at anytime during the grant period. The RSV is a presentation on the outcomes and progress of the grant activities at NSF in front of a peer review panel. Participation in the RSV is required by the appropriate grant management team and institutional administration.

Site Visits: NSF staff may visit the site of the grant project at anytime during the grant period. Reasonable accommodation of the site visit by NSF program staff is required by the grantee.

Cooperation with NSF evaluation projects and special projects: NSF, an NSF contractor, or a grantee on behalf of NSF, may from time to time conduct program evaluations or special projects of HBCU-UP projects. These may occur at anytime during the grant period and sometimes after the grant period has ended. Reasonable cooperation with these efforts is required by the grantee.

C. Reporting Requirements

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.

Failure to provide the required annual or final project reports 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.

HBCU-UP Implementation Project awardees are required to submit data via the SEIS each year of the award and after the award is over. This is in addition to the annual project reports and the final project report submitted to the cognizant Program Officer via FastLane. The SEIS data is used by NSF to assess project progress as well as for HBCU-UP outcomes at the program level for Government Performance and Results Act (GPRA) reporting and other reporting requirements. SEIS data will only be published outside of normal NSF reporting requirements as aggregate data unless permission from the institution is received to publish the data individually.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Marilyn Suiter, Program Director, 815N, telephone: (703) 292-5121, fax: (703) 292-9018, email: msuiter@nsf.gov
- Claudia Rankins, Program Director, 815N, telephone: (703) 292-8109, fax: (703) 292-9018, email: crankins@nsf.gov
- April Boyd-Melvin, Science Assistant, 815N, telephone: (703) 292-4616, fax: (703) 292-9018, email: abmelvin@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.
- Toni Edquist, Program Specialist, telephone: (703) 292-4649, email: tedquist@nsf.gov
- Victoria Smoot, Financial Operations Specialist, 815N, telephone: (703) 292--9018, email: vsmoot@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.

Education Research Project proposers can contact the following person for technical assistance on education research design, theory, and methods:

- Janice Earle, Senior Program Director, Division of Research, Evaluation and Communication Education Research, Directorate for Education & Human Resources, telephone: (703) 292-5097, email: jearle@nsf.gov
- James Dietz, Program Director, Division of Research, Evaluation and Communication Education Research, Directorate for Education & Human Resources, telephone: (703) 292-5156, email: jdietz@nsf.gov

Any proposal that includes STEM teacher preparation components can contact the following person for technical assistance:

- Sharon Lynch, Program Director, Division of Research, Evaluation and Communication Education Research, Directorate for Education & Human Resources, telephone: (703) 292-8465, email: slynch@nsf.gov

Biological Science related Targeted Infusion Project proposers can contact the following person for technical assistance with the discipline specific content of their proposal:

- Judith A. Verbeke, Division Director (Acting), Division of Integrative Organismal Systems, Directorate for Biological Sciences, telephone: (703) 292-8420, email: jverbeke@nsf.gov

Computer and Information Science related Targeted Infusion Project proposers can contact the following person for technical assistance with the discipline specific content of their proposal:

- Janice Cuny, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computer

and Network Systems, telephone: (703) 292-8950, email: jcuny@nsf.gov

Engineering related Targeted Infusion Project proposers can contact the following person for technical assistance with the discipline specific content of their proposal:

- Susan Kemnitzer, Deputy Division Director, Directorate for Engineering, Division of Education & Centers, telephone: (703) 292-5347, email: skemnitz@nsf.gov

Geoscience related Targeted Infusion Project proposers can contact the following person for technical assistance with the discipline specific content of their proposal:

- Jill Karsten, Program Director for Diversity and Education, Directorate for Geosciences, telephone: (703) 292-7718, email: jkarsten@nsf.gov

International Science and Engineering associated proposers can contact the following person for technical assistance with the non-U.S.-specific content of their proposal:

- *Mark Suskin, Deputy Director (Acting), Office of International Science and Engineering, telephone: (703) 292-7254, email: msuskin@nsf.gov*

Mathematical and Physical Science related Targeted Infusion Project proposers can contact the following person for technical assistance with the discipline specific content of their proposal:

- Peter March, Division Director, Division of Mathematical Sciences, Directorate for Mathematical & Physical Sciences, telephone: (703) 292-5301, email: pmarch@nsf.gov
- Uma D. Venkateswaran, Program Director, Division of Materials Research, Directorate for Mathematical & Physical Sciences, telephone: (703) 292-7732, email: uvenkate@nsf.gov

Polar Science related Targeted Infusion Projects can contact the following person for technical assistance with the discipline specific content of their proposal:

- Renee Crain, Program Director, Arctic Sciences Section, Office of Polar Programs, telephone: (703) 292-4482, email: rcrain@nsf.gov

Social, Behavioral and Economic Science related Targeted Infusion Projects can contact the following person for technical assistance with the discipline specific content of their proposal:

- Fahmida Chowdhury, Program Director, Cross Disciplinary Activities, Directorate for Social, Behavioral and Economic Sciences, telephone: (703) 292-4672, email: FChowdhu@nsf.gov

International research related projects can contact the following person for technical assistance with the specific international research component of their proposal:

- Wayne Patterson, Program Manager, Office of International Science and Engineering (OISE), Office of the Director, telephone: (703) 292-8189, email: wpatters@nsf.gov.

IX. OTHER INFORMATION

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, MyNSF (formerly the Custom News Service) is an information-delivery system 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 or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at http://www.nsf.gov/mynsf/.

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

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: pubs@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