Course, Curriculum, and Laboratory Improvement (CCLI)
Educational Materials Development (EMD)
Adaptation and Implementation (A&I)
National Dissemination (ND)
Assessment of Student Achievement (ASA) Tracks

National Science Foundation
Directorate for Education and Human Resources
   Division of Undergraduate Education

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

> June 16, 2004
> > ND Track

> June 17, 2004
> > EMD Track

> December 02, 2004
> > A&I Track

> December 08, 2004
> > ASA Track

REVISIONS AND UPDATES

- This single solicitation contains separate subsections for the four tracks in the CCLI program, Educational Materials Development (EMD), Adaptation and Implementation (A&I), National Dissemination (ND) and Assessment of Student Achievement (ASA).
- The anticipated total funding amount for all tracks in CCLI is $40 million.
- Page limits and format requirements have been changed.
- The deadline dates have been revised.
- An increased emphasis is placed on making use of the educational research that is the basis for all efforts proposed, and on encouraging projects to contribute to the educational research base, by highlighting this perspective in the Synopsis and adding a section to the Program Description.
- A proposer may serve as lead PI on one proposal in each track.
- Rather than a word limit, the Project Summary is now limited to one page, single-spaced. It must clearly address in separate statements (within the one-page summary): the intellectual merit of the proposed activity; and the broader impacts resulting from the proposed activity.
- Tuition and fees may be charged for workshops offered as a part of a dissemination effort.

Program Title:

> Course, Curriculum, and Laboratory Improvement (CCLI)
> Educational Materials Development (EMD);
> Adaptation and Implementation (A&I);
> National Dissemination(ND);
> Assessment of Student Achievement (ASA) Tracks

Synopsis of Program:

> The Course, Curriculum, and Laboratory Improvement (CCLI) program seeks to improve the quality of science, technology, engineering, and mathematics (STEM) education for all students, based on educational research and empirical data concerning needs and opportunities in undergraduate education and effective ways to address them. It targets activities affecting learning environments, course content, curricula, and educational practices, with the aim of improving learning contributing to the relevant knowledge base that will support future efforts to enhance STEM education.

> The CCLI program has four tracks that emphasize, respectively, the development of new educational materials and practices for a national audience (EMD); the local adaptation and implementation of previously developed exemplary materials and practices, including laboratory experiences and support for instrumentation (A&I); the national dissemination of exemplary materials and/or practices through faculty professional development (ND); and the assessment of student achievement, including research on assessment and the development of assessment tools and practices (ASA). Projects may address the needs of a single discipline or cut across disciplinary boundaries. Abstracts of previously funded projects can be found at http://www.ehr.nsf.gov/pirs_prs_web/search/.

Cognizant Program Officer(s):

- Please see the full text of this funding opportunity for contact information.

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

- 47.076 --- Education and Human Resources

- **Organization Limit:**

  Proposals are invited from the following types of organizations in the United States, its territories, and its possessions: two-year colleges, four-year colleges, universities, professional societies, consortia, and non-profit and for-profit organizations. See Section III ("ELIGIBILITY INFORMATION") for additional information.

  There is no limit on the number of proposals an organization may submit.

- **PI Eligibility Limit:** An individual may be the lead PI on only one CCLI proposal submitted for any track and may also be a co-PI on other proposals. There is no restriction on the number of proposals for which a person may serve as a co-PI.
- **Limit on Number of Proposals:** None Specified.

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 250 - including 115 EMD, 10 ND, 115 A&I, and 10 ASA awards
- **Anticipated Funding Amount:** $40,000,000 for new awards pending availability of funding

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is Specialized. Please see the full text of this solicitation for further information.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
  - June 16, 2004
    - ND Track
  - June 17, 2004
    - EMD Track
  - December 02, 2004
    - A&I Track
  - December 08, 2004
    - ASA Track

Proposal Review Information

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

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

TABLE OF CONTENTS

I. INTRODUCTION

Undergraduate science, technology, engineering and mathematics (STEM) education prepares students to participate as citizens in a technological society, to enter the workforce after obtaining a two- or four-year degree, to continue their formal education in graduate or professional school, or to further their education later in life in response to new career goals or workplace expectations.

The Course, Curriculum, and Laboratory Improvement (CCLI) program's major goal is to support efforts in colleges and universities to develop the capacity to meet the learning needs of all undergraduate students in STEM.

The CCLI program strengthens NSF's goal of ensuring access to a high quality STEM education for all students by focusing on the development, adaptation, implementation, dissemination, and assessment of exemplary educational materials, processes, and models. The focus includes introductory and upper level courses for majors and non-majors and disciplinary and interdisciplinary efforts in established and emerging fields. This program also supports the development of assessment tools and processes and the use of these to characterize undergraduate student learning.

The CCLI program reflects a cycle of discovery, innovation and application (adapted from the Rand Mathematics Study Panel (2002) Mathematical Proficiency for all Students: Towards a Strategic Development Program in Mathematics Education, Rand Corporation MR-1643.0-OERI) that includes:

- Developing and testing new theories and knowledge about teaching and learning;
- Designing and developing tools, materials and methods;
- Designing, implementing, and documenting interventions;
- Synthesizing and interpreting results and identifying new insights and questions; and
- Conducting research on problems of learning, teaching, and implementation.

The components of the CCLI program collectively encourage and nurture innovative improvements in undergraduate education through processes that reflect portions of this cycle of innovation. From the educational research base, innovations are developed, implemented, and evaluated. Outcomes of the CCLI program provide new data, ideas, and challenges to the educational research community to continue the cycle of innovation. Each of the four CCLI tracks contributes to this cycle in various ways.

The development of innovative instructional materials, processes, and models is supported by the Educational Materials Development (EMD) track of CCLI. EMD "Proof-of-Concept" projects test the scientific and educational feasibility of an innovation. Some of these will lead to "Full-Scale" EMD projects to develop final products and practices, to evaluate them in diverse institutions, to disseminate them nationally, and to commercialize these products when appropriate. That development process contributes to our understanding of what works and under what circumstances, so that others can build on this base of knowledge.

Through the Adaptation and Implementation (A&I) track, the CCLI program supports and encourages the use of innovative materials and practices that have been demonstrated to be effective and the acquisition of instrumentation to achieve pedagogical change. Projects supported by this track speed the diffusion of innovation. A&I proposals are expected to provide evidence that the exemplary materials and practices have been effective on other campuses, to explain why they are expected to be effective in this new situation, and to provide a plan to evaluate them in this new environment. Through the subsequent synthesis of evaluation results, NSF seeks to continue building knowledge about effective educational practices and materials (what works under what circumstances), thereby strengthening the cycle of innovation. In addition, the A&I track, through Type II projects, is prepared to support those who have identified a challenge or barrier to curriculum reform and have a plan to explore strategies for overcoming these challenges.

The National Dissemination (ND) track provides STEM faculty with professional development opportunities, and is both a complement and stimulant to the EMD and A&I tracks of the CCLI program. ND projects must be offered at the national level; be open to all faculty; and be focused on sharing knowledge about new courses, educational materials, laboratory practices, instructional methods, and assessment practices and tools, that have been used and evaluated to the point where they are considered to be proven effective in many circumstances. The goal of the ND track is to provide faculty members with enough information about new effective materials and practices so that they can make informed decisions about their own courses and teaching activities and become part of a national network of faculty working to improve student learning. ND projects are encouraged to create and nurture these networks and thus become part of the cycle of innovation.

The Assessment of Student Achievement (ASA) track of the CCLI program invites proposals to develop tools and practices to measure student learning, the ultimate test of the effectiveness of innovations in educational materials and practices. This track contributes to the cycle of innovation by providing formative guidance to EMD, A&I, and ND projects and also by providing an important link to research on learning in the STEM disciplines. The ASA track supports assessment at a variety of levels, ranging from individual classroom assessment to broad program-level assessment.

The opportunity for faculty and their institutions to have a major impact on undergraduate education is greater than ever. Increased national recognition of the importance of STEM education, coupled with rapid growth in new teaching and learning technologies, innovations in preK-12 education, increased understanding of how students learn, and successful interdisciplinary approaches, create new opportunities for improving the undergraduate educational experience. These developments provide the foundation for efforts to achieve excellence in STEM undergraduate education for all students.

II. PROGRAM DESCRIPTION

The CCLI program aims to support the development, evaluation, and dissemination of educational and assessment materials and processes. These should be based on educational research that documents their effectiveness and impact on enhancing student learning. Thus, the most competitive proposals will be those that refer to existing educational literature or empirical data and provide a credible plan to add to this body of knowledge. One source of information about previously funded NSF Division of Undergraduate Education projects is the Project Information Resource System (PIRS), https://www.ehr.nsf.gov/pirs_prs_web/search/. Many of these previously funded projects are in progress, and proposers may wish to contact the projects' PIs for further information.

There are four subsections in this section, which describes each of the four tracks:

- Track 1 – Educational Materials Developments (CCLI-EMD)

- Track 2 – National Dissemination (CCLI-ND)

- Track 3 – Adaptation and Implementation (CCLI-A&I)

- Track 4 – Assessment of Student Achievement (CCLI-ASA)

Sections III through IX of this solicitation apply to all four tracks.

A. Track 1 - Educational Materials Development (CCLI-EMD)

The objective of the CCLI-EMD track is to support the development of educational materials that incorporate practices that are effective in improving learning of science, technology, engineering, or mathematics by undergraduates with diverse backgrounds and career aspirations. Projects are expected to address national needs and/or opportunities in undergraduate STEM education and to produce innovative materials of a quality and significance appropriate for national distribution, adoption, adaptation, and implementation. Projects to develop new materials may be particularly appropriate for incorporating technology, global perspectives, research, and innovative pedagogy to enhance learning of science, technology, engineering, and mathematics.

Because it is the aim of the EMD program track to foster development of materials that have the potential of being used by and impacting the largest number and diversity of students enrolled at different types of institutions, it is recommended that individuals involved in materials development demonstrate a knowledge of the needs and background of such students, and involve faculty, as appropriate, from diverse institutions.

The CCLI-EMD track invites two types of proposals that aim to achieve these goals:

- Those that intend to establish a "proof of concept" or a prototype that would be responsive to a national need, and

- Those that intend to fully develop a product or practice for national dissemination.

Proof-of-Concept

A "proof-of-concept" project is expected to demonstrate the scientific and educational feasibility of an idea.

The **outcomes expected** of a CCLI-EMD Proof-of-Concept project **include all** of the following:

- A prototype that addresses a nationally recognized need and is based upon sound, effective pedagogy;

- A pilot test that provides a credible evaluation of the impact of the prototype on student learning;

- A report of the results of the evaluation; and

- Dissemination to the professional community about the prototype.

The Project Description portion of the proposal should describe the plans to achieve these outcomes.

If development of the prototype proves successful, the project would be expected to move to full-scale development of the materials. In this case, the final report for the proof-of-concept project should include an outline of a plan for the following:

- Developing the prototype into a full-scale project, including beta testing and evaluation of the product at diverse types of institutions and with diverse student populations, and

- Commercial or other self-sustained distribution of a fully developed product or practice.

If the team developing a prototype involves collaboration between two-year colleges and four-year colleges/universities see the paragraph about collaborations below for potential budget implications.

Full-Scale Development

A full-scale development project is expected to produce and evaluate significant new educational materials and pedagogical practices, and to promote their dissemination and effective implementation nationally.

The **outcomes expected** of funded projects **include all** of the following:

- The full-scale development of innovative materials that incorporate effective teaching and learning strategies, and that are based upon prior experience with a prototype;

- A credible evaluation of the effectiveness of the materials or practices on student learning at different types of institutions serving students with diverse backgrounds and career goals;

- Faculty at test sites and other potential users who are prepared to use the materials or practice;

- Dissemination of information about the developed materials; and

- Self-sustaining national distribution (for example, distribution through a commercial publisher or discipline-based professional society).

The Project Description portion of the proposal should describe the plans to achieve these outcomes.

Budget Considerations: Full-scale development proposals may include a request for funds to conduct workshops or other forms of faculty development to enhance the impact of materials and products developed by the project. Alternatively, when a project is at a stage where materials are ready for use and their effectiveness has been demonstrated, the project PI may submit a request for a supplement to the grant to fund such activities. The request for the supplement must be justified on the basis of the quality of materials developed and the potential value of the proposed activities. PIs interested in supplemental funds should contact the NSF Program Director assigned to the project.

Collaborations between Two-Year Colleges and Four-Year Colleges/Universities: In addition to individual submissions by colleges and universities, the Educational Materials Development track also encourages proposals from two-year colleges in collaboration with four-year colleges/universities. The goal is to encourage faculty members from different institutions to jointly design, develop, and test innovative educational materials for the lower-division undergraduate courses, particularly those for which students seek transfer credit. It is hoped that meeting this goal will foster sustainable relationships by leveraging the strengths of all involved institutions. These proposals may be submitted by either a two- or a four-year institution but must involve both two- and four-year faculty in the design, development, and testing of materials. If appropriate, activities leading to seamless articulation between two- and four-year institutions may be included. To encourage jointly developed proposals in the "proof-of-concept" category, an additional $25,000 may be requested. NSF also encourages submission of Full-Scale Development proposals developed jointly by two- and four-year institutions that build on either "proof-of-concept" collaborative activities or other prior work.

Additional Proposal Information: Sections III through IX of this solicitation discuss other important aspects of CCLI-EMD proposals.

B. Track 2 –- National Dissemination (CCLI-ND)

This track supports the national dissemination of exemplary materials and practices by providing current and future faculty with professional development activities with the ultimate goal of improving undergraduate STEM learning. (Eligible activities are not restricted to the dissemination of results from NSF-funded projects). Proposals are invited from organizations that aim to provide faculty professional development opportunities on a national scale. Such organizations should be able to provide administrative support capable of managing the logistics of these activities at multiple sites. Although it is expected that the primary dissemination mechanism will be workshops or short courses, distance learning opportunities or other innovative means of dissemination are also encouraged.

These professional development opportunities are expected to enable a large diverse group of faculty to 1) introduce new content into undergraduate courses and laboratories and 2) to explore effective educational practices, thereby improving the effectiveness of their teaching. The new content may be scientific and technical knowledge, laboratory practices, or reformatted and synthesized content that supports new modes of learning. It is expected that the format will provide interaction with experts at a level deep enough to promote and achieve significant sustainable gains by participating faculty.

Successful proposals must aim to provide faculty professional development in a variety of disciplines, such as the following: behavioral sciences, biological sciences, chemistry, computer and information sciences, engineering, earth sciences, mathematical sciences, physics and astronomy, or social sciences.

Scientific societies may submit proposals to the national dissemination track. Proposals from scientific societies should clearly identify the value that would be added to the current set of activities sponsored by their organization(s) in support of faculty professional development. Scientific societies in the same discipline are urged to work together rather than separately in developing proposals.

The **outcomes expected** of funded CCLI-ND projects **include all** of the following:

- Sets of materials for use by attending faculty that are appropriate for their needs.

- Participation by faculty who are representative of the national demographic and institutional diversity within the included disciplines. [This may require proactive recruitment.]

- Follow-up activities to sustain faculty who participated in the professional development activities.

- A network of faculty actively using the disseminated best practices in their courses and classrooms.

- Evaluation protocols to assess the effectiveness of professional development activities and to improve their effectiveness. [Mature projects are expected to include an assessment of the success of efforts by participating faculty to deploy these exemplary materials and practices in their teaching.]

The following outcomes, although not required, would represent outstanding achievement:

- A cadre of faculty who participated in professional development activities who have subsequently become actively involved in further efforts to disseminate information about these practices to others.

- Success in attracting other sponsors or co-sponsors to sustain further professional development and dissemination activities.

Additional Proposal Information: Sections III through IX of this solicitation discuss other important aspects of CCLI-ND proposals.

C. Track 3 –- Adaptation and Implementation (CCLI-A&I)

The Adaptation and Implementation (A&I) track of the CCLI program promotes the improvement of STEM education in the funded organization(s) through the adaptation and implementation of specific exemplary materials, laboratory experiences, and/or educational practices that have been developed and proven successful at other institutions. CCLI-A&I projects should effect change within or across departments or other institutional units by having broad faculty and administrative support. The ultimate goal is the improvement of undergraduate STEM learning.

This track invites proposals for two types of projects that aim to achieve these goals: those that intend to undertake direct curriculum improvement (Type I projects), and those that enable a group of faculty to explore strategies for overcoming identified challenges and barriers to educational reform (Type II projects).

Type I Projects

Type I projects are expected to adapt and implement high-quality STEM curricula, materials, and/or techniques in order to achieve specific curricular changes. The acquisition of instrumentation and its integration into the curriculum is appropriate as part of a Type I project. When possible, projects are expected to include students in meaningful ways in the activities so that they are able to provide input to the planning and decisions. Proposers are encouraged to consider including developers of the model(s) being adapted as consultants for the adaptation and evaluation efforts and to include a plan to provide feedback to these developers as the adaptation and implementation evolve.

Projects might include, for example, one or more of the following:

- The incorporation of laboratory experiments or field experiences that effectively engage students in scientific processes and exploration of scientific concepts.

- The adaptation and testing of exemplary materials for use by a student population significantly different from the one for which they were originally developed.

- The enhancement of teaching and learning through the use of resources, particularly instructional and information technologies, demonstrated to be of high quality.

- The development and use of collaborative learning, learning communities, peer-led teaching, just-in-time teaching and other innovations that aim to improve pedagogy in courses.

- The integration of the study of pedagogy and content in STEM core courses for prospective preK-12 teachers.

- The integration of significant advances or techniques from research fields into the undergraduate curriculum.

Project scope may range from improvements in an individual course or laboratory to a more comprehensive effort that impacts entire curricula or programs. Funds may be requested in any budget category supported by NSF or may be entirely for equipment or instrumentation.

Proposals must specifically identify the materials and/or practices developed elsewhere that are being adapted, including references to the literature or to other institutions using the materials and/or practices, and must describe the modifications to be effected and the potential value added. Materials and/or practices for adaptation may be drawn from more than one source.

The **outcomes expected** of funded Type I projects **include all** of the following:

- Adaptation and implementation of exemplary practices and/or materials for course, curriculum, or laboratory improvements in innovative ways.

- An evaluation that informs the institution and others of the effectiveness of the implemented materials and practices in improving student learning, and also guides development of the project.

- Faculty professional development, as needed, in support of curricular adaptation and implementation.

- Efforts to build on the project and to broaden its impact at the institution, within the discipline or across disciplines.

- Effective dissemination of project results to the broader community.

Type II Projects

Type II projects provide support for a group of faculty who have identified challenges or barriers that are currently preventing curriculum reform, to pursue a plan that details their strategies for overcoming these problems. In order to begin significant curriculum reform, projects are expected to explore exemplary STEM curricula, materials, and/or practices.

The projects also are expected to include students in meaningful ways in the activities so that they are able to provide input to the planning and decisions. Projects might include, for example, one or more of the following:

- A combination of intensive faculty enhancement activities (such as attendance at workshops, seminars, or discussion groups that bring in outside experts; visits to exemplary programs; or other activities) to prepare a group of faculty to implement new curricula or practices.

- A series of pilot efforts within a department or program to determine which of several reform methods is most effective within that environment.

- A modification of the curriculum in ways that will broaden student participation by determining student opinions and perceptions that restrict student participation in courses, programs, and/or majors.

- An investigation of important curricular changes that can be implemented to take advantage of new technologies or facilities that have become available at the institution(s).

- A combination of faculty enhancement efforts and retreats in which faculty explore together how to incorporate a theme (e.g., writing, communications, greater quantitative ability, international perspectives, undergraduate research) across a number of courses.

- A multi-institutional effort that allows a group of faculty to prepare for the implementation of joint or parallel curricula among the institutions, or for the implementation of coordinated curricula that ensure a seamless articulation for students moving among the institutions.

The proposing group may be an entire department or larger unit, or a logical subset of a department, cross-departmental group, or cross-institutional group. The proposal must provide evidence that the proposed effort is a priority for all of those involved. The proposal must describe the ultimate long-term curricular goals that are to be achieved, the challenges or barriers to be overcome, the steps to be undertaken during the grant period, and the benchmarks that will be used to measure progress as the project moves forward. Funds may be requested in any budget category supported by NSF.

The **outcomes expected** of funded Type II projects **include all** of the following:

- Lowering of the challenges or barriers that were defined in the proposal.

- A description of the exemplary curricula, materials, and/or practices that were explored by the group and the progress that has been made toward implementation of curricular reform.

- A summary of student contributions to the project.

- An evaluation, using the benchmarks defined in the proposal, that informs the institution and others of the progress made toward the goals defined in the proposal.

- Effective dissemination of project processes and results to other members of the proposer's academic community.

- A specific plan, including a timeline, for continuing the reform that was initiated at the participating institution(s) as a result of the project.

- Submittal to the appropriate academic officer at the institution(s) of the evaluation results and the specific plan for continuing the reform.

Additional Information for Both Types of A&I Projects

In the CCLI program, the word "laboratory" includes experiences ranging from those fully integrated within a course to those forming separate components in the curriculum. The setting may involve, for example, a field site, an observatory, a computer room, or an integrated laboratory/classroom, as well as the traditional laboratory, and may involve a redesign of instructional approaches using technology to enhance student learning.

Institutional commitment and plans to build upon the project are critical to the success of CCLI-A&I projects. The CCLI-A&I track discourages proposals that:

- Are justified solely on the basis of financial need or increased enrollments.

- Seek replacement instrumentation without a well-conceived plan for enhancing learning.

- Provide only the basic level of support for STEM instruction needed to maintain a viable program.

- Replicate an existing program without further adaptation.

- Describe a project that will not serve as a basis for further change at the institution.

Information about the results of projects funded through DUE programs can be obtained through DUE's Project Information Resource System (http://www.ehr.nsf.gov/pirs_prs_web/search/). Many of these previously funded projects are in progress, and proposers may wish to contact the projects' PIs for further information.

Additional Proposal Information: Sections III through IX of this solicitation discuss other important aspects of CCLI-A&I proposals.

D. Track 4 – Assessment Of Student Achievement (CCLI-ASA)

Assessment can promote student learning or provide evidence for accountability requirements through an evaluation of a program's strengths and weaknesses. The CCLI–ASA track supports both of these purposes. In broad terms the CCLI-ASA track is intended to serve faculty, departments, administrators, and education officials interested in the measurement of student achievement in courses, curricula, programs of study, and the cumulative undergraduate experience.

Applicants may propose a project that emphasizes one of the following types of activities:

Type I – New Development Projects:

Type I projects will develop new assessment materials (tools) and processes for use in single or multiple undergraduate disciplines. Proposed projects may include:

- Exploratory efforts experimenting with new tools and practices.

- Broader efforts to develop new assessment materials and measures for formative use by disciplinary faculty in

improving course design and instructional practices.

- Development and refinement of assessment tools to assist in program and institutional accreditation activities or performance reviews.

Proposals should specify explicitly the planned levels of assessment in terms of student achievement (e.g., basic knowledge, deeper comprehension, application skills, the ability to analyze complex ideas) and scope (e.g., within a single course, a course sequence, core STEM general education courses, a STEM major, or an entire degree program). They should also include an explicit statement of the proposed interpretation of the assessment results and a rationale for its use, a plan to evaluate the effectiveness of the materials and practices, and a plan to disseminate information about project results.

Type II – Adaptation Projects:

Type II projects will adapt assessment materials and practices that have been shown to be effective for one setting or student population for use in a new setting or with a different population. Proposals should review what is known about the effectiveness of the assessment materials and practices that are to be adapted. They should also include an explicit statement of the proposed interpretation of the assessment results and a rationale for its use in the new setting or with a different population, a plan to evaluate the success of the adapted materials and practices, and a plan to disseminate information about project results.

Type III – Dissemination Projects:

Type III projects will spread the use of effective assessment practices through workshops or web-based materials that have been validated and that are thoroughly documented with detailed instructions. For example, workshops for faculty may be proposed to deepen their understanding and strengthen their skills in using existing assessment tools and practices in their discipline. A second example is workshops for disciplinary faculty, educational researchers, and employers to define areas where assessment needs and opportunities exist.

Applicants are requested to identify on the project data form (NSF Form 1295) which type (I, II, or III) most closely fits their project.

Desired Characteristics

In order to make the assessment tools and processes credible and portable, they need to be valid and reliable.

- **Validity:** Validity is defined as the degree to which evidence and theory support the interpretations and use of information gathered by assessment tools and procedures. Validity involves the soundness and appropriateness of inferences, decisions, or descriptions made about individuals, groups, or institutions from the information gathered through the use of assessment instruments. (See "Standards for Educational and Psychological Testing", American Educational Research Association, 1999 and "Joint Committee on Standards for Education Evaluation, The Program Evaluation Standards", Sage Publications, 1994.)

- **Reliability:** Reliability is defined as the degree to which a set of items consistently measures the same thing across respondents and institutional settings. The American Educational Research Association further notes reliability includes two concepts, either or both of which should be relevant to a particular instrument: 1) the consistency of respondents' answers across items at one time, and 2) the stability of respondents' answers at different times. (See "Standards for Educational and Psychological Testing", American Educational Research Association, 1999.)

The **outcomes expected** of funded ASA projects **include all** of the following:

- Validated, reliable assessment tools that are able to document student learning.

- Documentation of the validity and reliability of the developed assessment tools.

- Documentation that prepares others to use the product or procedures in a responsible manner.

- Contributions to the literature on assessment practices and tools in their application.

- Activities to sustain faculty who participated in the assessment development activities.

- A network of faculty actively using the disseminated assessment tools in their courses and classrooms.

Additional Proposal Information: Sections III through IX of this solicitation discuss other important aspects of CCLI-ASA proposals.

III. ELIGIBILITY INFORMATION

Eligible Fields: Proposals may be submitted for support of projects in any field ordinarily supported by the NSF. You may find more information on the broad program areas that NSF typically supports here: http://www.nsf.gov/home/programs. Specifically excluded are projects that address clinical fields such as medicine, nursing, clinical psychology, and physical education, and those that primarily involve social work, home economics, the arts, and the humanities.

Eligible Organizations and Individuals: Proposals are invited from the following types of organizations in the United States, its territories, and its possessions: two-year colleges, four-year colleges, universities, professional societies, consortia, and non-profit and for-profit organizations. Proposals from a formal consortium should be submitted by the consortium; proposals from an informal consortium or coalition may be submitted by one of the member organizations. Proposed projects may involve a single organization, collaboration with business and industrial partners, or collaboration among several organizations.

An individual may be the lead PI on only one submitted proposal in each track and may also be a co-PI on other proposals. There is no restriction on the number of proposals for which a person may serve as a co-PI.

There is no limit on the number of proposals an organization may submit.

IV. AWARD INFORMATION

NSF anticipates having $40 million for all four CCLI tracks, pending the availability of funds. The awards will be made as standard or continuing grants. The number and size of awards will depend on the quality of the proposals received and the availability of funds. The expected duration and range of total NSF/DUE support over the lifetime of a CCLI project, including indirect costs, are as follows:

EMD:
Proof-of-Concept: (up to 3 years) with a budget up to $75,000. An additional $25,000 may be requested for projects that involve faculty from two-year institutions collaborating with faculty from four-year institutions, for a total of $100,000.
Full Development: (typically 2-3 years but up to 5 years) with a budget up to $500,000.

ND: (up to 5 years) with a total budget up to of $5,000,000 and an annual budget up to $1,000,000.

A&I:
Type I projects: (up to 3 years) with a budget up to $100,000 for a single course and $200,000 for comprehensive projects involving more than one course.
Type II projects: (up to 3 years) with a budget up to $75,000.

ASA: (up to 3 years) with a budget up to $500,000.

Estimated Number of Awards: 250 - including 115 EMD, 10 ND, 115 A&I, and 10 ASA awards.

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/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/cgi-bin/getpub?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.

Except as modified by this solicitation (in particular, EMD Proof of Concept and A&I page limit requirements for the Project Description and the cost sharing requirement for the A&I Track), standard NSF guidelines contained in the GPG apply.

Advice to Proposal Writers: DUE staff often provide informal guidance to proposers about potential projects. The advice most frequently sought about proposal writing in general has been collected in A Guide for Proposal Writing (NSF 04-016). For examples of DUE-funded projects, refer to DUE's Project Information Resource System at http://www.ehr.nsf.gov/pirs_prs_web/search/. See the Supplemental Information for Principal Investigators and Applicants to NSF's Course, Curriculum, and Laboratory Improvement Program (NSF 00-117), http://www.nsf.gov/pubs/2000/nsf00117/nsf00117.htm, for information that will assist proposers in developing proposals that are responsive to the CCLI program, in describing the objectives of proposed projects, and in managing projects to achieve the objectives and to enable reporting consistent with the program's and NSF's goals.

Competitive CCLI proposals will provide convincing discussion on how the project will achieve the outcomes listed for the selected Track (see Section II) and on how it will satisfy the two National Science Board merit review criteria (see Section VI). In accomplishing this they do the following:

- Present a project that is based on first-rate science, technology, engineering, or mathematics.
- Involve highly qualified faculty and other professionals.
- Present a plan that incorporates high quality teaching methods or methods with potential to engage students and facilitate learning.
- Refer to an existing educational research base in describing the goals, rationale, and teaching methods.
- Provide a credible evaluation plan that is guided by questions linked to appropriate assessment and research methods, to document the effects of innovative educational practices and materials on student learning.
- Describe proactive approaches for sharing materials, practices, and evidence of effectiveness with peers.

Formal Proposal Preparation

Cover Sheet: The proposal title should include informative key words that indicate, for example, the discipline, the target population, and the nature of the problem or innovative solution. After selecting the CCLI program solicitation number shown at the top of this solicitation, the proposer should also choose the specific CCLI track (i.e., EMD, ND, A&I, or ASA). Correctly identifying the CCLI program and track on the Cover Sheet is important for processing at NSF.

Project Summary: Text in this section should fit on one page and use a standard font no smaller than 10 point. The Project Summary should be a clear, concise, self-contained description of the project. It should be informative to other persons working in the same or related fields, and insofar as possible, be understandable to a scientifically literate reader. The summary should describe:

- The problem(s) being addressed by the proposal.

- The objectives, expected outcomes, and procedures for accomplishing these.
- How or why this approach will solve the problem.
- Special populations of students that are substantively targeted by the project.
- Notable collaborations with other organizations.

All Project Summaries must explicitly and clearly address in separate statements the National Science Board approved review criteria of intellectual merit and broader impacts. (These criteria are outlined below in Section VI.A "NSF Proposal Review Process.") The discussion of the intellectual merit of the proposed activity and the broader impacts resulting from the proposed activity must be included in the one-page limit, and should include the phrases "intellectual merit" and "broader impacts." **Proposals that do not separately address both merit review criteria within the one-page project summary will be returned without review.**

Project Description: Text in this section of the proposal must be no more than 6 lines per 2.5 cm and use no less than 2.5-cm margins and a standard font with size no smaller than 10 point. The following page limits apply:

EMD:
Proof-of-Concept: 7 pages
Full-Scale Development: 15 pages

ND: 15 pages

A&I: 7 pages

ASA: 15 pages

DUE will not accept proposals in which the Project Description (including Results from Prior NSF Support) exceeds these page limits. Proposals that are not in compliance will not be considered for funding and will be returned without review. Proposers should number the pages in the Project Description.

Write the proposal to demonstrate how the project responds to the track-specific program objectives defined in Section II and how it meets the two National Science Board approved review criteria on intellectual merit and broader impacts described in Section VI.A.

The Project Description should include the following:

- **Results from Prior NSF Support (if applicable):** If the prospective PI or co-PI(s) has received support from NSF pertaining to undergraduate education in the past five years, briefly describe the earlier project(s) and outcomes or ongoing progress. Do not include information on research projects unless those projects have a direct bearing on the new proposal. For each project, include the NSF award number, the amount and period of support, the project title, a summary of the results of the completed work, and a list of publications and formal presentations that acknowledged the NSF award (but do not submit copies with the proposal). Provide sufficient detail to permit a reviewer to reach an informed conclusion regarding the value of the results achieved. (Note that the PI and all co-PIs must submit a Final Project Report for any completed NSF-funded project before a new grant can be awarded.)
- **Goals and Objectives:** Describe the goals clearly and concisely, relating them, as appropriate, to local or national needs and recent trends.
- **Detailed Project Plan:** This should be the longest section of the Project Description. Describe the project's features, clearly delineating the need or problem you will address, what you plan to do, how you plan to achieve the outcomes expected from the project, the timetable for executing the project, and the facilities and resources available for realizing the project's objectives. Where appropriate, include evidence of past successes that support the methods you plan to use; such evidence may come from the current literature or from pilot programs. You may specify a URL for your materials if you think that providing a URL would enhance the reviewers' ability to appreciate how you plan to achieve your objectives. However, the reviewers are not required to visit the URL, and they may not have access to the Internet during the review process. All essential material must be included in the Project Description.
- **Experience and Capability of the Principal Investigator and Co-PI(s):** Briefly describe the experience and capability of the PI and co-PI(s). Include a brief description of the rationale for including the specific project members

and organizational units within the project. State the role of each and cite the expertise that each will contribute to the project.

- **Equipment and Instrumentation:** Briefly describe how all requested devices (e.g., equipment, instrumentation, computers) will be used and why the particular device was chosen, what alternatives were considered and rejected, and why. Specifically explain requests for (1) apparatus of a quality or cost not usually encountered in undergraduate instruction, (2) instrumentation that is to be fabricated rather than purchased as a unit, and (3) purchases that might appear to be at variance with the academic setting in which the project would operate. Justification of these items must be related to the improvement of undergraduate education. Arguments based on enhancement of graduate-level courses, improvement of faculty research capabilities, or other activities outside the scope of undergraduate education are inappropriate. Briefly, but explicitly, outline the proposing organization's plan for maintaining the equipment or instrumentation beyond the duration of the grant.

- **Evaluation Plan:** Describe the criteria that will be used to evaluate the quality and impact of the project, how the project's impact on student learning will be assessed, and the process for collecting and analyzing information at the proposer's organization or from others involved in testing developed materials. Provide a timeline for the evaluation activities. Describe the qualifications of the individuals who will perform the evaluation tasks. The objectivity and credibility of the evaluation team should be evident. The breadth of the evaluation plan and the composition of an advisory committee should be appropriate to the size and complexity of the project. The following references may be helpful in designing the evaluation plan:
  - The 2002 User-Friendly Handbook for Project Evaluation (NSF02-057)
  - User Friendly Handbook for Mixed Method Evaluations (NSF 97-153)
  - Online Evaluation Resource Library, http://oerl.sri.com
  - Field-tested Learning Assessment Guide (FLAG), http://flaguide.org

- **Dissemination Plan:** Describe plans to communicate the results of the project to other professionals in the STEM and education communities, both during and after the project. Identify the audience to be reached and describe information or materials to be disseminated (e.g., textbooks, laboratory manuals, software, multimedia materials, assessment tools and processes), how materials will be made available to other organizations, means of dissemination (e.g., faculty development workshops, journal articles, conference presentations, electronic networks and media), and procedures for determining the success of the dissemination effort. For projects involving development of instructional or assessment materials, describe procedures to be used to maintain quality and currency of this material, to provide support for faculty users, and to publicize its availability. For EMD full-scale development projects, provide plans for involving a commercial publisher in the production, marketing, and distributions of all appropriate products. Web-based project products and materials should be described using standard metadata elements and tags, to ensure the resources can be indexed and cataloged within the appropriate collections of the National Science Digital Library (NSDL); see www.nsdl.org. This is particularly important for materials that are originally in digital form and web-based. However, for non-web-based materials (e.g. print or CD), it is important that all web pages providing information about these resources are suitably tagged with descriptive metadata. For further information about metadata standards please see the Dublin Core Metadata Initiative at http://dublincore.org and the NSDL Metadata Primer at http://metamanagement.comm.nsdlib.org/outline.html.

References Cited: A list of all references should be submitted in a separate section with no page limit. The literature cited in the Project Description should reflect an understanding of the knowledge base in the field in which the problem or question is posed. Appropriate literature on research in teaching and learning should be cited. Any literature cited should be clearly and specifically related to the proposed project, and the Project Description should make it clear how information in a reference has played a role in the project design.

Budget Justification: The text of the Budget Justification is limited to 3 pages. The Budget Justification should indicate the role of all supported personnel and justify amounts listed in the budget. It also should list all individual instruments, computers, software packages, measuring devices, or recording devices by a descriptive name and the probable brand, model, and price. Such selections may be changed to equivalent items after an award.

For a proposal involving multiple organizations, the Budget Justification should describe the involvement or participation of each organization and the amount each will receive from the grant.

Current and Pending Support: All current and pending external support to the PI(s) – including the current proposal – must be listed.

Project Data Form: The information requested on DUE's Project Data Form is used to direct the proposal to appropriate reviewers and to provide statistics on the nature of NSF-supported projects. In FastLane, this form will show up in the list of

forms for your proposal only after you have (1) selected the correct Program Announcement/Solicitation No. on the Cover Sheet and (2) saved the Cover Sheet.

Special Information and Supplementary Documents: Appendices are allowed but must be relevant and concise. For materials development proposals, a sample of prior work or work in progress is recommended. Appendices should be uploaded in the "Supplementary Docs" section of the proposal in FastLane.

Proposers are reminded to identify the program announcement/solicitation number (04-565) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

EMD, ND, and ASA track proposals require no cost sharing. For EMD, ND, and ASA projects, all of the "Equipment" costs should be included on Line D.

Except for certain organizations described below (see the section on Cost Sharing Exemption below), **A&I track proposals require a 1:1 match on all equipment.**

In the context of an A&I track proposal, "Equipment" is defined as any single instrument, computer, software package, measuring device, or recording device that costs $5000 or more. In the Budget page for A&I Projects, one-half of the total equipment cost should be included on Line D (the "Equipment" category) and the other on Line M (the "Cost Sharing" category). Only the required amount of cost sharing should be listed on Line M. Any instrument, computer, software package, measuring device, or recording device that costs less than $5000 is **not** considered "Equipment," and should be included in Line G-1 (the "Materials and Supplies" category) of the Budget. If a proposal requests more than one of a single device (e.g., five computers for a student lab), then the cost of a single item (e.g., one computer) and not the aggregated cost is used to determine if the item is "Equipment." If a PI proposes to buy a group of different items that will become part of a system and the individual items are designed or marketed to fit together as a single system, then the aggregated cost is used to determine if the item is "Equipment."

For A&I track budgets that request funds for "Equipment," the Budget Justification should include a five-column table. The first column should list each piece of equipment supported under the project. The next four columns should show, respectively, the manufacturer's list price for educational institutions, the standard discounted price for educational institutions, the amount requested from the NSF, and the amount that will come from non-federal sources as matching funds. If the applicant can negotiate a special discount that exceeds the one that is routinely available to educational institutions, the amount by which the special discount exceeds the standard educational discount may be counted as matching funds for equipment.

Cost sharing funds must be used specifically for the equipment listed in the budget approved for the project.

Cost Sharing Exemption: Consistent with the objectives of Executive Orders 12876, 12900, and 13021, NSF will waive the above cost sharing requirement for Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges and Universities that do not offer STEM degrees beyond the master's level, and for Minority Postsecondary Institutions that do not offer STEM degrees beyond the bachelor's level. (For additional information on this exemption, see http://www.ehr.nsf.gov/due/programs/general/msi.asp.) Eligible organizations must mention their eligibility for the waiver in the Budget Justification.

The proposed cost sharing must be shown on Line M on the proposal budget. Documentation of the availability of cost sharing must be included in the proposal. Only items which would be allowable under the applicable cost principles, if charged to the project, may be included as the awardee's contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as cost-sharing toward projects of another Federal agency may not be counted towards meeting the specific cost-sharing requirements of the NSF award. All cost-sharing amounts are subject to

audit. Failure to provide the level of cost-sharing reflected in the approved award budget may result in termination of the NSF award, disallowance of award costs and/or refund of award funds to NSF.

Budget Preparation Instructions:

The amounts indicated on the Proposal Budget should include only the amounts requested of NSF and any required cost sharing. NSF funds may not be used to support expenditures that would have been undertaken in the absence of an award, such as cost of activities that are considered part of a faculty member's normal duties.

Ineligible items: In any DUE project, neither NSF funds nor institutional matching funds may be used to purchase:

- Teaching aids (e.g., films, slides, projectors, "drill and practice" software), word-processors, or library reference materials.
- Equipment or instrumentation that is not mainly for undergraduate use.
- Vehicles, laboratory furnishings, or general utility items such as office equipment, benches, tables, desks, chairs, storage cases, routine supplies, general consumables, and items that are considered a routine part of a laboratory setting.
- Maintenance items and maintenance or service contracts–even when these are for items procured through a DUE program.
- Building or laboratory modifications or construction required for installation of the equipment or instrumentation (as distinct from simply integrating multiple computational resources or interfacing computers to instruments).
- Replacement equipment and instrumentation that does not significantly improve instructional capability.

Multi-organization Projects: Multi-organization proposals may be submitted either as a single proposal from the lead organization that includes subcontracts for the other collaborators or as a formal collaborative proposal by linked, but separate, submission of proposals from each organization. Organizations intending to submit collaborative proposals must follow the instructions for electronic submission specified in GPG, Chapter II, Section D.3.b. The project titles of the linked proposals must be identical and must begin with the words "Collaborative Project." The combined budgets of all proposals should conform to the maximum award sizes specified in Section IV ("AWARD INFORMATION") above. These collaborative proposals will be treated as a single proposal (with a single Project Summary, Project Description, and References Cited) during the review process.

Workshops: In proposals that involve professional development workshops, it is generally expected that the home institutions of the faculty participants will bear at least the cost of travel to and from the workshop unless a compelling reason can be offered to request NSF support for this travel.

The budget request may include participant support costs for subsistence (lodging and meals) during the workshop, except lodging for participants who reside in the local area where the workshop is being held. In addition, funds may be requested for a stipend of up to $60 per workshop day for each workshop participant. Requests for such stipends must be specific to the target audience and fully justified–for example, to assure participation by faculty who have few professional development opportunities or who come from resource-poor institutions. Note that indirect costs may not be charged on participant support costs. The host organization is expected to provide the facilities, equipment, and instrumentation necessary to conduct the workshop; therefore NSF will ordinarily support no permanent facilities, equipment, or instrumentation for such workshops. The host organization is also expected to cover the expenses incurred by its own faculty participants.

C. Due Dates

Proposals must be submitted by the following date(s):

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

    June 16, 2004
        ND Track

    June 17, 2004

EMD Track

December 02, 2004
A&I Track

December 08, 2004
ASA Track

Proposers are strongly urged to prepare and submit their proposals well before the deadline in order to allow for unexpected delays in processing the proposal through their organization and to provide time for correcting errors that may occur in up-loading the proposal in FastLane. Proposals that arrive after the deadline will not be accepted and corrections or changes to a submitted proposal will not be allowed after the deadline.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: http://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 announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

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. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: http://www.fastlane.nsf.gov

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 (NSB 97-72). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued Important Notice 127, Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-

page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the Grant Proposal Guide Chapter III.A for further information). 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 he/she is qualified to make judgments.

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 and original 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?

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

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

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

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/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.

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 Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In most cases, proposers will be contacted by the Program Officer after his or her recommendation to award or decline funding has been approved by the Division Director. This informal notification is not a guarantee of an eventual 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 date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

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 Division 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.A. 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 (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. 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 is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/cgi-bin/getpub?gpm. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at http://www.gpo.gov.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

The Division of Undergraduate Education maintains the *Project Information Resource System* (PIRS), http://www.ehr.nsf.gov/

pirs_prs_web/search/, to provide the public with current information about funded projects. Some of the information provided by PIs in interim, annual, and final project reports will be available through PIRS. Proposers are encouraged to review the information that PIRS now provides about projects that NSF has funded in undergraduate education. When preparing a project report in FastLane, PIs are encouraged to make use of PIRS to provide additional descriptive information about their project by accessing the "DUE Information" link in the menu under "Prepare Report" on the "Project System Control Screen." For example, PIs may enter information about the curricular targets of their project (disciplines, subjects, courses), the pedagogical approaches used, and additional funding sources.

PIs of CCLI grants will also be asked to complete a Web-based survey each spring about their project's plans and accomplishments to date. A response to the survey is requested even if the grant has been active for only a short time. This survey asks PIs to indicate the tasks they plan to accomplish during the project (e.g., product development, assessment, dissemination, faculty development) and the progress that has been made in accomplishing these tasks. This information is used by DUE to indicate the success of the CCLI program in meeting its objectives, and is reported in aggregate form to Committees of Visitors, NSF's management, and Congress to meet the requirements of the Government Performance and Results Act (GPRA).

The Final Project Report for a Type II CCLI-A&I project must describe a specific plan, including a timeline, for continuing the reform that was initiated at the participating organization(s) as a result of the project.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. 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. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, 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.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

A Program Director in the appropriate discipline – the names, email addresses, and phone numbers of the Program Directors in each discipline are listed on the web site at http://www.ehr.nsf.gov/ehr/due/staff/pd.asp

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188, email: fastlane@nsf.gov

- Ms. Antoinette Allen, Division of Undergraduate Education, telephone: 703-292-4646, email: duefl@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF E-Bulletin, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's Custom News Service (http://www.nsf.gov/home/cns/start.htm) to be notified of new funding opportunities that become available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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 or (800) 281-8749

- **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

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