Ethics Education in Science and Engineering (EESE)

Program Solicitation
NSF 05-532

National Science Foundation
Directorate for Social, Behavioral, and Economic Sciences
Division of Social and Economic Sciences
Directorate for Biological Sciences
Directorate for Computer and Information Science and Engineering
Directorate for Education and Human Resources
Directorate for Engineering

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

March 10, 2005

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Ethics Education in Science and Engineering (EESE)

Synopsis of Program:

The Ethics Education in Science and Engineering (EESE) program considers proposals for research and educational projects to improve ethics education in all of the fields of science and engineering that NSF supports. For this year, proposals must focus on improving ethics education for graduate students in those fields, and on ethical issues that arise in research or graduate research education in those fields, particularly in interdisciplinary or inter-institutional contexts.

Cognizant Program Officer(s):

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- Susan C. Kemnitzer, Deputy Division Director (Education), Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-5347, fax: (703) 292-9051, email: skemnitz@nsf.gov
- Barbara Olds, Division Director, Directorate for Education & Human Resources, Division of Research, Evaluation & Communication, 855 S, telephone: (703) 292-8650, fax: (703) 292-9046, email: bolds@nsf.gov
- Fred Stollnitz, Program Director for Cross-Directorate Activities, Directorate for Biological Sciences, Division of Integrative Organismal Biology, 685 S, telephone: (703) 292-7868, fax: (703) 292-9153, email: fstollni@nsf.gov
- Caroline E. Wardle, Senior Science Advisor, Directorate for Computer & Information Science & Engineering, Division of Computer and Network Systems, 1175 N, telephone: (703) 292-8950, fax: (703) 292-9010, email: cwardle@nsf.gov
- Ephraim P. Glinert, Program Director, Directorate for Computer & Information Science & Engineering, Division of Information and Intelligent Systems, 1125 S, telephone: (703) 292-8930, fax: (703) 292-9073, email: eglinert@nsf.gov

- Robert L. Norwood, Program Director, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-7079, email: rnorwood@nsf.gov

- John P. Perhonis, Associate Program Director, Directorate for Social, Behavioral & Economic Sciences, Division of Social and Economic Sciences, 995 N, telephone: (703) 292-7279, fax: (703) 292-9068, email: jperhoni@nsf.gov

- Matthew J. Bauer, Science Assistant, Directorate for Social, Behavioral & Economic Sciences, Division of Social and Economic Sciences, 995 N, telephone: (703) 292-7053, email: mbauer@nsf.gov

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

- 47.074 --- Biological Sciences
- 47.070 --- Computer and Information Science and Engineering
- 47.076 --- Education and Human Resources
- 47.041 --- Engineering
- 47.075 --- Social, Behavioral and Economic Sciences

Eligibility Information

- **Organization Limit:**

  Only accredited U.S. colleges and universities or U.S. professional associations are eligible to apply to this program. Other types of organizations can only be included as non-lead collaborators or sub-awardees. In addition, U.S. colleges and universities and U.S. professional associations can be non-lead collaborators or sub-awardees.

- **PI Eligibility Limit:**

  NSF expects project teams to include persons with appropriate expertise. This might include expertise in the domain or domains of science or engineering on which the project focuses, in ethics, in educational research, and in pedagogy.

- **Limit on Number of Proposals:** An eligible organization, as defined above, may submit only one proposal as the lead organization. Organizations submitting more than one proposal as the lead organization will be notified and given one week from notification to select one proposal for consideration. If one is not selected in that time period, all of those proposals will be returned without review. There is no limit on the number of proposals under which an organization may be included as a non-lead collaborator or sub-awardee.

Award Information

- **Anticipated Type of Award:** Standard Grant
- **Estimated Number of Awards:** 5 to 12
- **Anticipated Funding Amount:** $1,500,000 subject to the availability of funds

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 not required by NSF.
- **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):
  March 10, 2005

Proposal Review Information

- **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:** Standard NSF reporting requirements apply.

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I. INTRODUCTION

The 21st Century finds science and engineering facing increasingly complex and encompassing ethical and social issues. Science and engineering practices are increasingly interdisciplinary and operate in many organizational and institutional contexts. Many professional associations are involved in developing codes of ethics, hosting conferences on ethical problems in research practice, or exploring relationships among science, engineering, and society. This range of interests creates a need for connections among the gamut of fields, disciplines, organizations, and situations in which these ethical concerns arise.

Prior research and educational activities related to ethics, supported through the National Science Foundation and other Federal and private agencies and organizations, provide a background from which to develop relevant theory and methods to improve ethics education in science and engineering, and to provide better resources for organizations concerned with ethics in these fields. Building on the Foundation's prior support for ethics-related research and program development, the NSF Directorates for Biological Sciences, Computer and Information Science and Engineering, Education and Human Resources, Engineering, and Social, Behavioral and Economic Sciences have joined together to initiate the Ethics Education in Science and Engineering (EESE) program.

II. PROGRAM DESCRIPTION

Ethics education in science and engineering encompasses many issues and many constituencies, including precollege, undergraduate, graduate and postdoctoral students; junior and tenured faculty; technicians and administrators, and practicing scientists and engineers outside academe. Ethics education has implications for the institutions in which all of these individuals and groups study and work, as well as for other organizations and associations. Ethics issues arise in the practice of science and engineering as well as in the complex relationships among science, engineering, technology and society. To address this variety of issues and constituencies, educational practice needs to draw from relevant research, including work in practical and professional ethics and theory of action, pedagogical theory, and appropriate theory from social and behavioral sciences.

The Ethics Education in Science and Engineering (EESE) program considers proposals for research and educational projects to improve ethics education in any of the fields of science and engineering that NSF supports. To limit this competition to a reasonable size in this fiscal year, EESE requires proposals to focus on improving ethics education for graduate students in one or more of those fields. Proposals must focus also on ethical issues that arise in research or graduate research education, particularly in interdisciplinary or inter-institutional contexts.

In these contexts, faculty and graduate students may find that they lack applicable standards or that the standards they are accustomed to do not match those of others with whom they interact. Public concerns or challenges may also raise questions that need careful consideration.

There are numerous candidates for issues or themes on which to focus. A good example is concern for privacy. Researchers in the natural and physical sciences, the social and behavioral sciences, and engineering all grapple with this issue in their research. The issue of privacy arises in field studies of populations and laboratory studies of individuals. It arises in the design of computer systems and engineering artifacts. How has graduate education incorporated, or how might it better incorporate, attention to privacy concerns? How do graduate students, postdoctoral fellows, and faculty identify the relevant questions and address them? Are there examples of best practices?

Another example might involve a focus on new developments in science and engineering. In emerging areas of nanotechnology, for instance, can relevant ethical questions be identified and examined in an intellectually engaging and broadly adaptable fashion? How do attention to ethical questions and standards for practice diffuse through graduate curricula? Can the diffusion be improved?

EESE will consider proposals for research projects, education projects, and combinations of the two. It is interested in encouraging innovative education and research projects likely to create long-term improvement in ethics education for graduate students in science and engineering. It encourages applicants who are thinking creatively about ethics education, going well beyond standard approaches like providing students with a series of scenarios and having a discussion about them, or holding workshops and seminars with invited speakers, and then asking students to rate the activities on a survey form.

Education projects must be based on research findings that indicate successful ways to enhance ethics education for graduate students. They may include a wide range of activities such as mentoring programs, infrastructure-development activities, faculty capacity-building activities, training of postdoctoral fellows to implement programs, and graduate-student involvement in program development. Programs to develop and test new materials or teaching techniques are also eligible.

A common, often-effective approach in educational projects is to develop graduate-student programs. Another approach may focus on improving the ability of faculty to mentor students or create ethics-education programs and materials in conjunction with graduate students. A national training activity for graduate students or development and testing of a national interactive electronic resource would be yet another appropriate strategy.

EESE education projects should test the feasibility and effectiveness of their activities or programs in more than one institution, incorporate ways to diffuse project activities even further, and evaluate project effectiveness, including assessment of expected student outcomes. Strong proposals will include persuasive information about how this will be done. Proposals should specify plans to disseminate findings widely. Collaborations with appropriate professional associations are encouraged in this regard.

Research projects that examine ethics education for graduate students in science and engineering are also eligible for consideration in EESE. Proposals should build on earlier research and add to the research base. Projects can include qualitative and/or quantitative approaches. The expectation is that project results will help in developing better ethics-education programs for graduate students; thus, proposals should specify plans to deliver findings to appropriate research and educational communities and assist them to implement projects or programs based on the findings. Research projects may also include a focus on ethical issues arising in educational research or in ethics education for graduate students.

Proposals may also combine research and education components. For instance, the first year of a project might examine ethics education for graduate students in a scientific or engineering field. The second year might implement programs on several campuses based on what was discovered. Repetition and modification, evaluation and diffusion might occur during the third year.

NSF does not consider proposals for medical research. The EESE program will not consider proposals focused on ethics for medical students or in medical education. EESE will not consider proposals that will start or provide incremental improvements to formal or informal educational activities responsive to Federal mandates for research integrity or human-subjects training requirements.

Participants

Projects may involve diverse sets of participants. Project teams will usually include faculty with disciplinary or transdisciplinary content expertise, ethics expertise, and expertise in educational methodologies or pedagogy. Graduate students should be involved as project participants as well as recipients of programs or subjects of research. Projects that develop activities involving underrepresented groups in science and engineering are particularly encouraged.

Project Management

A description, table, or diagram should outline project tasks, completion dates, and identify the responsible personnel. A monthly schedule helps to demonstrate that the plan is well thought out.

Project Dissemination

All projects must have a dissemination plan to deliver findings to professional peers and appropriate research and educational communities. Applicants should provide detailed information about how models or findings from the projects will be diffused and assistance in their adoption or adaptation provided, as appropriate.

Human Subjects

Research involving human subjects must either have approval from the organization's Institutional Review Board (IRB) before issuance of an NSF award, or identify the applicable subsection exempting the proposal from IRB review. This requirement is in the Common Rule (Federal Policy for the Protection of Human Subjects, 45 CFR Section 690). See the NSF *Grant Proposal Guide* for more details.

General Information

Investigators wishing to apply for support are encouraged to discuss their ideas with one of the contacts listed in the announcement.

III. ELIGIBILITY INFORMATION

- **Organization Limit:**

  Only accredited U.S. colleges and universities or U.S. professional associations are eligible to apply to this program. Other types of organizations can only be included as non-lead collaborators or sub-awardees. In addition, U.S. colleges and universities and U.S. professional associations can be non-lead collaborators or sub-awardees.

- **PI Eligibility Limit:**

  NSF expects project teams to include persons with appropriate expertise. This might include expertise in the domain or domains of science or engineering on which the project focuses, in ethics, in educational research, and in pedagogy.

- **Limit on Number of Proposals:** An eligible organization, as defined above, may submit only one proposal as the lead organization. Organizations submitting more than one proposal as the lead organization will be notified and given one week from notification to select one proposal for consideration. If one is not selected in that time period, all of those proposals will be returned without review. There is no limit on the number of proposals under which an

organization may be included as a non-lead collaborator or sub-awardee.

IV. AWARD INFORMATION

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds. The maximum award amount is expected to be $300,000. Anticipated funding amount is $1.5 million for an estimated 5-12 Standard Grants. The maximum award duration is expected to be 36 months.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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/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.

Applicants should read the Introduction, Program Description, and Additional Review Criteria sections of this Solicitation carefully, to ensure that their proposals are responsive to program requirements. In addition, they should attend to the following instructions:

The brief **proposal summary** must describe the goals and methods of the project. It should indicate at the beginning whether the proposal is for an education project or a research project, or a combination of the two. It should contain specific paragraphs with headings on the Intellectual Merit and Broader Impacts of the project. National Science Board policy demands that proposals that do not discuss these two criteria explicitly be returned without review.

In the **project description**, all proposals must include

1) a description of the research literature or findings on which the project will draw, or which it will test;

2) a project plan. For education projects, this would include the overall project methods and strategies and activities, including plans to assure participation, if needed. For research projects, this would include a description of the research question(s) to be investigated and the possible impact of findings on ethics education for graduate students in science or engineering, and a research plan describing methods and activities appropriate to answering the research question(s);

3) descriptions of the duties and responsibilities of senior personnel and any others critical to project success. As needed, descriptions of the roles of any cooperating organizations or institutions would be provided; and

4) appropriate plans for dissemination of results and for assistance to relevant research and educational communities in their adoption and adaptation.

Education proposals should also include plans for testing project results at more than one institution and for evaluation and assessment.

All proposals should include discussion of prior related work, including results of previous funding. They should provide assurances from project partners or cooperating organizations, and from research or educational program sites, as needed. Notifications of these agreements should be provided in the Supplementary Documentation section of the proposals.

EESE will not accept videotapes, diskettes, textbooks, CD-ROMs, or any other materials as part of proposal packages.

Proposers are reminded to identify the program announcement/solicitation number (05-532) 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:

Cost sharing is not required by NSF in proposals submitted under this Program Solicitation.

Budget Preparation Instructions:

The maximum award amount is expected to be $300,000 inclusive of indirect costs; maximum duration is expected to be 36 months. Funds for the principal investigator or an appropriate designee to attend one meeting, at NSF or another appropriate venue, for discussion and interaction with other awardees, must be included.

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):

March 10, 2005

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: 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 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.

Additional Review Criteria:

Reviewers will be asked to apply several special criteria to all proposals in this program:

1. Is this an innovative effort likely to create long-term improvement in ethics education for graduate students in science or engineering?

2. Does the project include adequate grounding in the relevant research literatures? Does it use appropriate methodology? Does it include relevant interdisciplinary collaboration?

3. Do potential results have promise for broad utility, and is there a feasible plan for widespread dissemination and adoption or adaptation?

For education proposals, and those combining research and education, additional special criteria are:

1. Does the proposal include appropriate plans to test results beyond one institution?

2. Does the proposal include well-formulated, feasible plans for evaluation of effectiveness?

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.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. 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/awards/managing/. 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/publications/pub_summ.jsp?ods_key=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.

Special Award Conditions:

Funds for the principal investigator or an appropriate designee to attend one meeting, at NSF or another appropriate venue, for discussion and interaction with other awardees, must be included in the project budget.

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.

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:

- Rachelle D. Hollander, Senior Science Advisor, Directorate for Social, Behavioral & Economic Sciences, 905 N, telephone: (703) 292-7272, fax: (703) 292-9083, email: rholland@nsf.gov
- Susan C. Kemnitzer, Deputy Division Director (Education), Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-5347, fax: (703) 292-9051, email: skemnitz@nsf.gov
- Barbara Olds, Division Director, Directorate for Education & Human Resources, Division of Research, Evaluation & Communication, 855 S, telephone: (703) 292-8650, fax: (703) 292-9046, email: bolds@nsf.gov
- Fred Stollnitz, Program Director for Cross-Directorate Activities, Directorate for Biological Sciences, Division of Integrative Organismal Biology, 685 S, telephone: (703) 292-7868, fax: (703) 292-9153, email: fstollni@nsf.gov
- Caroline E. Wardle, Senior Science Advisor, Directorate for Computer & Information Science & Engineering, Division of Computer and Network Systems, 1175 N, telephone: (703) 292-8950, fax: (703) 292-9010, email: cwardle@nsf.gov
- Ephraim P. Glinert, Program Director, Directorate for Computer & Information Science & Engineering, Division of Information and Intelligent Systems, 1125 S, telephone: (703) 292-8930, fax: (703) 292-9073, email: eglinert@nsf.gov
- Robert L. Norwood, Program Director, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-7079, email: rnorwood@nsf.gov
- John P. Perhonis, Associate Program Director, Directorate for Social, Behavioral & Economic Sciences, Division of Social and Economic Sciences, 995 N, telephone: (703) 292-7279, fax: (703) 292-9068, email: jperhoni@nsf.gov
- Matthew J. Bauer, Science Assistant, Directorate for Social, Behavioral & Economic Sciences, Division of Social and Economic Sciences, 995 N, telephone: (703) 292-7053, email: mbauer@nsf.gov

For questions related to the use of FastLane, contact:

- Geri Farves, Program and Technology Specialist, Directorate for Social, Behavioral & Economic Sciences, Division of Social and Economic Sciences, 995 N, telephone: (703) 292-7309, fax: (703) 292-9068, email: gfarves@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 MyNSF News Service (http://www.nsf.gov/mynsf/) to be notified of new funding opportunities that become available.

Other NSF programs that may be of interest to applicants to EESE are the NSF Research Experience for Undergraduates (REU) Sites program; the Integrative Graduate Education and Research Training (IGERT) program, the Societal Dimensions of Engineering, Science, and Technology (SDEST) program, and the Developing Global Scientists and Engineers program.

Information about SDEST can be found at http://www.nsf.gov/sbe/ses/sdest/start.htm.

The IGERT program information is at http://www.nsf.gov/home/crssprgm/igert/start.htm.

Information about REU Sites is at http://www.nsf.gov/home/crssprgm/reu/start.htm.

In the Directorate for Education and Human Resources, there is a new opportunity within the Research on Learning and Education (ROLE) program for support for research on graduate education. More information is found at: http://www.nsf.gov/pubs/2004/nsf04030/nsf04030.htm.

Opportunities for International Research Experiences for Students (IRES) are included in the announcement, "Developing Global Scientists and Engineers," offered by NSF's Office of International Science and Engineering: http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf04036.

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