

SOCIETAL DIMENSIONS OF ENGINEERING, SCIENCE, AND TECHNOLOGY: Ethics and Values Studies Research on Science and Technology

Program Announcement

Directorate for Social, Behavioral and Economic Sciences

Proposal Target Dates: *February 1 and August 1*

National Science Foundation

Introduction

The Societal Dimensions of Engineering, Science, and Technology (SDEST) program folds together two former NSF programs, Ethics and Values Studies, and Research on Science and Technology, in the Division of Social, Behavioral and Economic Research of the National Science Foundation.

In SDEST, the Ethics and Values Studies (EVS) component focuses on developing and transmitting knowledge about ethical and value dimensions associated with the conduct and impacts of science, engineering, and technology. The Research on Science and Technology (RST) component supports research to improve approaches and information for decision making concerning management and direction of research, science and technology./1

1/A third program in the Division, called Science and Technology Studies, is related to these two. It supports historical, philosophical, and social research about the character and development of science and technology, the nature of theory and evidence in different fields, and the social and intellectual construction of science and technology.

Over the past few years, NSF has made approximately 40 new awards each year in these areas, with a budget of about \$2.3 million. The overarching goals are: to improve approaches to research and information for and from research in these fields and to make research results of broad use in educational, policy and other settings; and to consider the implications of research results for the actions of a wide range of individuals and groups, as well as for theories and methods in all scientific and engineering fields.

Description

Besides historical and philosophical modes of analysis, research on ethics and the conduct and impacts of science and engineering involves theories and methods from science and technology studies, applied ethics, and other areas of the social sciences and humanities. Research for decision making concerning science and technology takes an empirical approach to data collection and analysis. Information and analysis from the natural and physical sciences and engineering may also play a role in these research areas.

Proposals might address the following kinds of questions. These descriptions are suggestive, not exhaustive.

In Ethics and Values Studies (EVS), projects might address such issues as:

- scientific or professional ethics, including research ethics;
- the role of social or organizational values in scientific or engineering practice;
- equity issues in the development, use and effects of science or technology;
- controversy and the resolution of controversy involving science or technology;
- normative issues in decisions involving science or technology, and
- ethical and value issues for organizational policy and practice involving science or technology.

--Within these topics can fall a wide range of subjects,

- from ethical issues for research on vulnerable populations to ethics, values, and the relationship of expertise to democratic decision making;
- from values, value conflicts, and decision-making involving scientists and engineers in industry, government or non-profit organizations, to those concerning scientists, engineers and science and engineering students in academia;
- from ethics and biotechnology to ethics and the information superhighway.

SDEST also supports educational projects on ethics, values, and the conduct and impacts of science and engineering. The program works closely with programs in the Directorate for Education and Human Resources (EHR) at NSF in the consideration of these proposals. Educational projects use results from research on ethics and the conduct and impacts of science and engineering to develop programs or materials for formal or informal educational settings. Proposals for educational projects should satisfy the criteria in the EHR program announcements, when relevant, and indicate how their efforts will have impacts beyond improving a course or curriculum at a single institution. SDEST also provides small supplemental awards for ethics activities in NSF-supported Research Experiences for Undergraduate sites projects.

In Research on Science and Technology (RST), projects could address such topics as

- factors influencing the directions and impacts of scientific and engineering research and technological change, both domestic and international;
 - issues of human resources in science and technology; and
 - the relationships between individual, organizational and political adaptation or change and scientific and technological innovation or change.
- Under these headings can fall research on such questions as:
- What are the implications of changing sources and modes of support for academic research and science and engineering education?
 - What measures can be used to gauge social or quality-of-life returns to public or private investment in research and science and engineering education?
 - How do legal or political institutions interact with developments in research and innovation?

SDEST is also interested in considering proposals for research on the implications of different national strategies towards science and technology questions, on development of models and other approaches with which to gather and interpret information, and on improvement of data resources. Projects to summarize and assess the knowledge base about an important issue can also be considered. The program welcomes inquiries from researchers who are uncertain about whether the topic or method they have in mind is appropriate for consideration.

In general, SDEST does not consider proposals from individual academic institutions to support lectureships or conference activities. It does consider proposals where conferences or workshops are part of a research or education project plan, and proposals for workshops to develop research agendas on topics important to program goals. It will consider proposals from national organizations such as professional societies, for small amounts of assistance for conference activities on ethical issues. Research focused primarily on ethical, value or policy issues for clinical research or practice or resource allocation in health care is not normally supported by the NSF or considered in SDEST.

Additional Considerations

To assist in the evaluation of how proposed projects contribute to the SDEST program goal of making results of broad use to other researchers and, where relevant, in educational, policy and other settings, proposals can include up to two pages in a supplemental documentation section titled "Dissemination Plan." As appropriate, investigators should identify the individuals or groups with whom they intend to communicate, and specify how they will do so. They

should specify the significance their findings will have for these entities. In addition, if the projects will produce data and information of value to the broader research community, proposals can also include a discussion of up to two pages, describing the data and information products and the management and dissemination plans and costs for making them available to interested parties. Proposals involving interviews or surveys can include up to three pages in this supplementary section, titled "Protocols." These pages belong in Proposal Section I, described on page 10 of the NSF Grant Proposal Guide 95-27.

Target Dates and Program Procedures

All applicants to the program must follow the requirements listed in the NSF Grant Proposal Guide (NSF95-27), which contains the forms needed for submission. The GPG is available from Forms and Publications Unit, NSF, 4201 Wilson Blvd., Arlington VA 22230, 703-306-1130; and also electronically through Internet: pubs@nsf.gov and in the NSF Home Page: <http://www.nsf.gov/>

Nineteen copies of each proposal, including one copy bearing original signatures, should be mailed to:

Announcement No 97-28
National Science Foundation PPU
4201 Wilson Blvd. Room P60
Arlington VA 22230

Only 1 copy of NSF Form 1225, Information about Principal Investigator/Project Director, should be sent, attached to the original signed proposal.

One additional copy of the proposal should be sent directly to the SDEST Program in Room 995.

Proposals are reviewed in accordance with established Foundation procedures. Extramural reviewers as well as a panel of experts generally evaluate proposals. They use the criteria in the NSF Grant Proposal Guide. These criteria concern the perceived intellectual quality and significance of the proposed activity and its potential societal value and impact; they are delineated further in the GPG.

Further delineation of these criteria for SDEST include:

- fit of subject with theoretical and empirical issues of importance in the field;
- grounding in theory and literature;
- well-conceived methodologies, including, as applicable, reliable methods of empirical research;
- relevance to policy, practice, or action; and
- utility and dissemination to decision makers or an important spectrum of audiences.

SDEST has two rounds each year for consideration of proposals. The target dates are February 1 and August 1. Proposals focused on undergraduate education should be submitted for the February closing date of the program, since their review will be coordinated with that in the Division of Undergraduate Education in the Directorate for Education and Human Resources.

Preliminary proposals, giving a description of the project and its suitability for consideration in SDEST, can be submitted at any time; the program directors will try to respond with informal suggestions for submission.

For further information on SDEST, contact Program Directors Rachelle Hollander or John Perhonis, NSF, Room 995, 4201 Wilson Blvd., Arlington, VA 22230. Telephone: 703-306-1743. Fax: -0485.
E-mail: rholland@nsf.gov or jperhoni@nsf.gov

Modes of Support

Support for SDEST projects involving one or more investigators is available through grants for research or education. Some categories are noted below:

1) Standard Grants for research, infrastructure or education projects. Research projects may involve one or several investigators, additional collaborators, advisors, postdoctoral researchers, or graduate or undergraduate student assistants. Infrastructure projects may involve a variety of activities to stimulate new research areas, outreach efforts, or development and dissemination of appropriate data bases, text retrieval systems, and graphic resources for research, educational or public use.

SDEST education projects on ethics, values and the conduct and impacts of science or engineering may also require collaboration among investigators and support for postdoctoral, graduate or undergraduate assistants or training. They can include such activities as national summer workshops for graduate students or faculty, or projects by professional societies to develop concentrations in ethics and the social context of science and engineering for undergraduate or graduate level science and engineering students. Applicants should contact the program to discuss their ideas before preparing written submissions for education projects.

2) SDEST Scholars Awards, enabling individuals to undertake full time research during part or all of an academic year or summer. Awards allow up to \$15,000 for partial support of full time summer research and/or related costs, and up to \$50,000 for partial support of one or more semesters (or quarters) of full time academic year release time and related expenses. Summer support is limited to 2/9ths academic year salary. The maximum inclusive award in this category is \$95,000; this is expected to extend over at least a 24 month period. Research assistance from postdoctoral, graduate and undergraduate students, if justified, may be included within these requests.

3) Professional Development Fellowships (PDF) for researchers who wish to improve and expand their skills in the areas of EVS (for physical and natural scientists and engineers) or in areas of science or engineering (for researchers trained in ethics, history, philosophy, or social science of science). For example, historians, philosophers and social scientists may have a research project in EVS that would benefit from further education and related training in a particular field of science or engineering. Alternatively, scientists or engineers may use this award to work with a historian, philosopher or social scientist to learn methods to improve an EVS research project. Awards can extend over two years; they are expected to support a full-time academic year of research and study in a field outside the applicant's current area of expertise. PDFs must contain both a training and a research component. Letters from host scholars, describing their plans to work with the applicants, and from the host institutions, agreeing to provide appropriate space and facilities, must accompany these proposals. Reference letters may also be submitted.

EVS Professional Development Fellowships provide a stipend and travel allowance to the fellow and an activities support allowance to the host institution. The amount of the stipend depends on the fellow's prior earnings and work history; it can range from \$28,000 to \$50,000. The award also provides up to \$3,000 for travel and \$3,000 for the host institution allowance. The activities support allowance can be used to cover direct or indirect costs associated with the fellowship.

4) Doctoral Dissertation Research Improvement Grants. These grants provide funds for research expenses not normally available through the student's university. More information to apply is in Grants for Improving Doctoral Dissertation Research (NSF92-114). The dissertation advisor is the principal investigator on these applications; the doctoral student should be listed as co-principal investigator. No indirect costs are allowed; and the usual limit on an award is \$7,000 for research in North America and \$12,000 for work abroad. The proposal should include a letter of recommendation from the faculty advisor evaluating the student's promise as a researcher and the value and status of the proposed research. If the doctoral student will use the award for travel expenses to work with a specialist, the proposal should provide a justification for this choice and a letter from the specialist agreeing to work with the student. The proposal should include a statement indicating whether the student has passed the preliminary qualifying exams and all course work required for the dissertation. These requirements must be met before an award will be made.

5) Small Grants for Training and Research. These awards are intended to provide sustained research opportunities for graduate students and post-doctoral fellows on important issues in SDEST. One or more senior investigators may propose a sustained course of study, research and training (for from one to three years) on a subject of significance.

These training programs should have a specific research theme (e.g., ethics and computers in education, or analysis of federal and state science policy efforts), and the proposal should indicate how the training will be organized around the theme. Applicants must also indicate their plans to incorporate training in research ethics for their students, and the efforts that will be made to recruit women and minority students into the programs. The grants can provide a maximum of \$100,000 support for one postdoctoral fellow and up to three graduate students to participate each year. For projects of more than one year, PIs may retain or change the postdoc and graduate students. The budget for training support belongs in the participant support costs section of the budget form, and no indirect costs can be applied to these budget items.

Administration of Fixed Amount and Fellowships Awards

SDEST Scholars Awards are fixed amount awards. They will be made on a fixed amount basis subject to the conditions of the grant instrument and this Announcement. A fixed amount award represents a predetermined amount for NSF support of the proposed research without regard to the subsequent costs of the project. Note to Institutional Research Administrators: grants awarded on a fixed amount basis are not subject to Federal cost principles as contained in OMB Circular A-21. As part of the final report required by the grant general conditions, the grantee must certify that the person months funded were actually expended. Individuals receiving fellowships or fixed amount awards to individuals must be U.S. citizens or U.S. nationals or have permanent U.S. resident status.

Other Information

Grants awarded as a result of this announcement are administered in accordance with the terms and conditions of NSF GC-1, "Grant General Conditions," or FDP-II, "Federal Demonstration Project General Terms and Conditions," depending on the grantee organization. Copies of these and other NSF publications are available at no cost from the NSF Forms and Publications Unit, 703-306-1130, or via e-mail at pubs@nsf.gov. More comprehensive information is contained in the NSF Grant Policy Manual (NSF 95-26, July 1995), for sale and subscription through the Superintendent of Documents, Government Printing Office, Washington DC 20402; telephone 202-512-1800.

NSF requires yearly progress reports and a final project report. Approximately one month before the scheduled project termination date, NSF will send the principal investigator the Final Project Report Form (98A). Applicants should review these forms prior to proposal submission so that the proposal plan incorporates mechanisms to collect appropriate information for the progress and final reports.

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