

MINORITY GRADUATE EDUCATION

Program Announcement and Guidelines

DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES

Division of Human Resource Development

- INSTITUTIONAL AWARDS
- RESEARCH ON POLICY AND PRACTICE

Deadline Dates for Submission:

June 23, 1998 (notification of intent to submit proposals)

July 15, 1998 (full proposals)



NATIONAL SCIENCE FOUNDATION

MINORITY GRADUATE EDUCATION (MGE) PROGRAM

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INTRODUCTION

The U.S. continues to suffer from a long-standing underrepresentation of minorities among science, mathematics and engineering doctorates. This loss of talent has serious consequences for the nation's ability to compete in a world economy driven by technological advances, as well as for a large segment of the nation's citizens who suffer loss of opportunity. This underrepresentation is evidenced in all sectors: private, public, and academic.

The National Science Foundation (NSF) therefore seeks to establish a Minority Graduate Education (MGE) program that will significantly increase the number of African American, Hispanic, and Native American students receiving doctoral degrees in the sciences (physical and life science disciplines), mathematics, and engineering (SME). In addition, since lack of role models and mentors in the professoriate constitutes a significant barrier to producing minority SME graduates, NSF is particularly interested in increasing the number of minorities who will enter the professoriate in these disciplines. Specific objectives of the MGE program are (1) to develop and implement innovative models for recruiting, mentoring, and retaining minority students in SME doctoral programs and (2) to develop effective strategies for identifying and supporting underrepresented minorities who want to pursue academic careers.

Over the years, both federal and private institutions have invested significant resources for increasing minority representation in advanced SME study and careers. While some exemplary programs exist, limited progress has been made overall. To inform program development and implementation in this arena, MGE will also support a research effort to explain those factors underlying success at critical transition points from undergraduate through graduate study and ultimately SME workforce entry.

GENERAL PROGRAM INFORMATION

Eligible Fields and Disciplines. NSF-supported fields in the physical and life sciences, mathematics and engineering are eligible for support.

Eligible Institutions

Institutional Awards — Doctoral degree granting institutions in the U.S. and its territories or consortia of such institutions composed of a graduate institution and one or more partner undergraduate institutions are eligible for support. Applications from institutions with documented success in translating minority matriculants into degree recipients are strongly encouraged. Projects are expected to be comprehensive, broadly covering SME departments; all participating departments must be explicitly identified in the proposal. Single graduate departments or individuals are ineligible for support.

Research on Practice Award — Doctoral degree-granting institutions and educational research organizations that can assemble requisite expertise (e.g., familiarity with factors affecting minority underrepresentation, education research, program evaluation, knowledge of SME disciplines, understanding of higher education) are eligible for support.

Funding Levels

Institutional Awards. Up to eight MGE awards of up to five-years duration are anticipated; only one is allowable per institution or consortium. Awards will be made up to a level of \$500,000 per year, with funding level depending on numbers of students served and factors related to project design. The purpose of these awards is to catalyze changes in institutional, departmental, and organizational culture and practices that will result in significant increases in recruitment, retention, degree conferral, and SME career (especially academic) entry. While provision of student support is allowable, proposers should provide strong justification for its inclusion, as well as a full description of the strategy for providing such support. *[Please note that student support can only be provided to U.S. citizens, nationals, and permanent U.S. residents.]* Awards will be made as cooperative agreements.

Research on Practice Award. NSF will make one award of up to \$150,000 per year for a maximum three-year duration to support research that advances and disseminates understanding of

factors that facilitate successful transition of minority students through critical stages from undergraduate through career entry. The purpose of this research is to identify successful strategies that lead to increased minority representation in SME doctoral programs and SME-related careers, especially the professoriate. This award will be made as a cooperative agreement.

Cost-sharing. Cost-sharing by awardees and/or contributions from the private sector (e.g., foundations, business and industry, scientific and educational organizations, professional societies) is required and will be a factor in award decisions.

Proposals must describe how non-NSF funds will be used to support project activities. See the *Grant Proposal Guide (GPG, NSF 98-2)* for allowable cost-sharing activities.

PROJECT DESCRIPTION

Institutional Awards. The goal of the MGE program is to increase the number of minority students pursuing advanced study, obtaining doctoral degrees, and entering the professoriate workforce in SME disciplines. Institutions participating in this program are expected to engage in comprehensive cultural change that will lead to a sustained increase in the conferral of SME doctoral degrees significantly exceeding historic levels of performance. Institutional commitment will be assessed with respect to willingness and ability of participating institutions to align relevant financial and operational resources to the goals articulated by this program. To ensure commitment and the potential for success, the Chief Academic Officer (or an appropriate designee) should serve as Principal Investigator (PI) with Deans of Engineering and Arts and Sciences serving as co-PIs.

Proposals are expected to demonstrate:

- knowledge of those factors affecting the successful transition of minority students from undergraduate through graduate study and career entry in SME fields;
- prior success in dealing with affective (non-academic) components of graduate education that are necessary to ensure success of minority students in obtaining SME doctoral degrees;
- potential for successfully aligning similar existing programs (NSF-supported or otherwise) within, or outside of, the institution to ensure a comprehensive, integrated effort; and,
- ability to provide quality educational and research opportunities that will prepare students for successful SME careers (e.g., interdisciplinary research, use of information technology, communications skills).

The proposal should clearly describe strategies to ensure effective recruitment, mentoring, retention, and degree completion of minority students. Under the MGE program, NSF intends to support a portfolio of projects that will model effective approaches to addressing this issue. Proposals should clearly describe strategies for increasing minority student admissions; for creating supportive environments for these students at both the institutional and departmental levels; as well as for developing student interest in, and preparation for, academic careers (teaching and other faculty roles). Relevant strategies may include, for example, developing partnerships with undergraduate institutions that produce large numbers of minority SME majors (e.g., Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), Tribal Colleges); providing to minority undergraduates enriched academic and research experiences with strong emphasis on obtaining doctorates and pursuing academic careers in order to increase graduate school preparation; and/or developing student networks or mentoring programs at the undergraduate and/or graduate levels. If institutions request student financial support, proposals must clearly explain the need being addressed, as well as student recruitment, selection and accountability criteria.

The MGE program stresses the building of a well-documented knowledge base of successful strategies. Awardees will be required to participate in a program-level evaluation by which NSF can assess quantitative gains in relevant measures for minority students and make qualitative assessments of the process of change. Shortly after awards have been made, project evaluators will be asked to assist a NSF contractor in developing a program evaluation that will mutually benefit the agency and project participants. MGE projects are expected to have the capability of collecting and analyzing these data.

In addition, it is expected that MGE projects will complement this effort with their own formative evaluation. This evaluation should be the basis for strengthening implementation over the course of the project and for annual reporting to NSF that will be used to justify continued investment in the award. Proposals should provide suggestions of objectives, benchmarks, and indicators of progress that will inform reviewers of the proposers' understanding of essential factors for judging accountability, both quantitative (minority enrollment and Ph.D. production) and qualitative (the process of change in organizational culture). This evaluation must show an effective process by which student progress will be assessed on an annual basis.

To aid reviewers in assessing past performance of bidding institutions, proposals for Institutional Awards should include the following baseline data (for U.S. citizens, nationals, and permanent U.S. residents only):

- annual numbers of total and minority enrollment and Ph.D. degree conferral for each relevant SME department, disaggregated by population subgroup (e.g., African American) over the last four years;
- annual total and minority baccalaureate and master's degree conferral for SME departments of the submitting institution and undergraduate institutions that are part of an established consortium; and,
- annual number of underrepresented minority students who have left the same programs over the past four years.

Research on Practice Award. The objective of the research effort is to identify major factors that occasion successful transition of minority students (1) from undergraduate through graduate study; (2) from course-taking in the early years of the graduate experience to independent research required for completion of a dissertation; and (3) from the academic environment to the SME workplace. To accomplish this objective, it is expected that this study will review a portfolio of Federal and private efforts in this arena to identify factors underlying exemplary, as well as unsuccessful efforts. The resulting research product should identify successful efforts and expand understanding of their effective implementation.

PREPARATION AND SUBMISSION OF PROPOSALS

Full proposals must contain the following elements in the order indicated. Proposals that do not strictly adhere to the specified page limitations (given below) will be ineligible for consideration and will be returned without review. The proposals should be prepared and submitted in accordance with specific guidelines provided in this document and general guidelines provided in the *Grant Proposal Guide (NSF 98-2)*. Specifically, the proposal should include the following:

1. **Cover Sheet for Proposals with Institutional Certifications (NSF Form 1207).** Proposals should specify "MGE" and list the announcement number NSF 98-114 in the appropriate box. A short, informative title should be provided on the appropriate line.
2. **Project Summary.** Provide a brief (200 words or less) description of the project, clearly stating objectives and strategies to be employed.
3. **Table of Contents (NSF Form 1359).**
4. **Project Description.** The narrative (not to exceed 15 single-spaced typed pages) presents most of the information that determines whether a grant will be awarded.

Institutional Awards: Proposals should clearly articulate project objectives, planned outcomes with respect to recruitment, retention, and degree conferral of minority

students; project monitoring guidelines; and how outcomes will be measured.

Proposals should (1) demonstrate understanding of issues and awareness of existing programs; (2) describe supported activities, indicating unique aspects of the project and logic underlying its development; (3) state plans for institutionalization of these strategies after NSF support ends; (4) provide baseline statistics and describe anticipated project impact; (5) identify major project participants (institutional partners and key personnel), clearly articulating their capabilities and roles; (6) describe plans for coordination and management of activities; (7) describe grantee contributions to the project in terms of cost-sharing of supported activities; and (8) describe indicators and other evaluative information for monitoring annual progress.

If the prospective PI or co-PI(s) received support for related NSF activities within the past five years, a brief description of project(s) and outcomes must be provided in sufficient detail to enable reviewers to assess the value of results achieved. Projects should be identified by NSF award number, amount, period of support, title, summary of results, and list of publications and formal presentations that acknowledge the NSF award. Descriptions of prior NSF support should be limited to five pages and must be included as part of the 15-page limit.

Bidding institutions or any consortia partners that are award recipients of NSF programs that promote involvement of minorities in higher education must describe the value-added and complementarity to both efforts. Such programs include Alliances for Minority Participation (AMP), Centers of Research Excellence in Science and Technology (CREST), and Minority Institutions of Excellence (MIE).

Research on Practice Award: The proposal should clearly describe the experience of the bidding organization(s) and key personnel for advancing knowledge on barriers to SME degree production and implementation of strategies to redress the problem. Proposals should describe how present literature, studies, and extant programs in this area will be analyzed; research methodologies that will be employed; and the means by which these findings will be disseminated to inform practice. Proposals should clearly articulate a dissemination strategy to provide timely information to graduate institutions for increasing their productivity with respect to minority SME degree conferral and minority SME career entry (especially to the professoriate).

5. **Biographical Sketches and Individual Support.** Biographical sketches of key project personnel (each no more than two pages in length) should highlight relevant experience in recruiting, mentoring and producing

minority SME Ph.D. recipients and career entrants (for Institutional Awards) and in knowledge of research methodologies, higher education, minority participation in advanced SME study and workforce entry, etc. Up to 10 major relevant publications may be listed for each of the key personnel.

- 6. Budget and Allowable Costs [use NSF Form 1030HRD (9/94)].** A budget for each year of support requested, as well as a cumulative budget for all years of support must be provided. No funds for faculty research or faculty salaries may be requested. Student support is allowable with appropriate justification. Students receiving support must be citizens, nationals, or permanent residents of the U.S. Limited funds intended to partially defray the costs of research by students may also be requested. A copy of the relevant form is included as Appendix A to this document.

Institutional Awards should include requests for funds to support annual visits to NSF in Arlington VA for (1) the PI and lead representatives from participating institutions (if a consortia) and (2) project evaluators.

- 7. Budget Justification.** A brief justification (two pages maximum) for funds in each budget category should be provided. This section should also include details of institutional cost-sharing, if any, and of other sources of support. Any such commitment specified in the proposal will be referenced and included as a condition of an award resulting from this announcement.

- 8. Timeline for Major Project Benchmarks (1 page maximum).**

Proposal Submission.

Institutions must notify NSF of their intent to submit MGE proposals (either for Institutional or Research on Practice Awards) no later than close-of-business June 23, 1998. If an institutional consortium is being proposed, notification should identify all intended institutional partners. Notifications should be mailed to Dr. A. James Hicks, Program Director, Division of Human Resource Development – EHR Room 815, National Science Foundation, 4201 Wilson Boulevard, Arlington VA 22230 (please mark “MGE Program” in lower left corner of the envelop) or e-mail intent to ahicks@nsf.gov.

The deadline for proposal receipt is *close-of-business July 15, 1998*. Seven copies of the full proposal, including one with original signatures and NSF Form 1225, should be mailed to:

**Minority Graduate Education Program
National Science Foundation
Proposal Processing Unit, Room P60
4201 Wilson Boulevard
Arlington, VA 22230**

REVIEW CRITERIA

Proposals will be reviewed in accordance with established NSF procedures and criteria described in *GPG*, as well as the following evaluation criteria:

Institutional Awards [additional review criteria].

Plan. Is the project informed by best practices gained from a working knowledge of producing minority SME doctorates? Is the approach sound with respect to the content and academic experiences to be provided? Does the plan describe how strategies for addressing affective (non-academic) components will contribute to changes in institutional culture that will likely result in increased numbers of minority SME doctorates and their successful career entry? Does the plan provide for sustained support of project goals and objectives beyond the period of NSF funding? Does the project employ, or will it develop, a particularly creative approach that might serve as a model for others in changing institutional culture?

Institutional Capacity and Commitment. Are designated personnel of sufficient expertise and background to ensure the success of the project? Do proposed personnel have a track record of success in this endeavor? Are levels of commitment commensurate with their anticipated contribution? Is there evidence of institutional commitment in recruiting and admissions outside of the disciplinary faculty to be involved? Is there evidence of institutional commitment in terms of cost-share and integration of this award with relevant non-NSF resources and program efforts?

Cooperative Relationships. Does the project clearly build on the relative strengths of participants? Has a reasonable working relationship among collaborating parties been established and is this relationship clearly evidenced in the proposal? Is the proposed management plan sufficient to ensure effective communication among participating institutions so as to ensure full integration of efforts?

Research on Practice Award [additional review criteria].

Research Design. Is the research based on understanding of relevant literature and familiarity with characteristics and performance of related programs that are, or have been, operating in the field? Will appropriate answers to the research questions posed likely fill knowledge gaps and increase understanding of barriers that negatively affect minority SME degree conferral and entry to academic careers? Is the research likely to inform practice in the field? Does the project propose a creative approach that might serve as a model for others?

Research Methodology. Are the selected methodologies appropriate for meaningfully addressing the issues to be studied? Are the quantitative and qualitative indicators proposed appropriate to meeting the objectives of the study? Are relevant data and information sources accessible for fully implementing the research design?

Dissemination. Is the strategy (e.g., selected audience, mechanisms) and timeline for dissemination likely to be effective in informing higher education administrators and faculty, policymakers, government agencies, appropriate professional societies, etc.?

Expertise and Collaboration. Does the project draw on relevant expertise in terms of knowledge of barriers to minority representation, institutional structure of higher education, Federal or private sector programs, data sources, statistical methodologies, etc.? If collaborative efforts are being proposed, are roles of partners appropriate to relative expertise; are management and communication plans likely to produce effective interactions?

GRANT ADMINISTRATION:

Awards made under this solicitation will be administered in accordance with the terms and conditions of NSF GC-1, "*Grants General Conditions*," or CA-1 "*Cooperative Agreement General Terms and Conditions*." Copies of these documents are available at no cost from the NSF Publications Clearinghouse, (301) 947-2722, or via Internet e-mail (pubs@nsf.gov). More comprehensive information is contained in the NSF *Grant Policy Manual* (NSF 95-26, July 1995), for sale through the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The telephone number at GPO is (202) 783-3208 for subscription information.

If the submitting organization has never received a NSF award, it is recommended that appropriate administrative officials become familiar with the policies and procedures in the NSF *Grant Policy Manual*, which are applicable to most NSF awards. If a proposal is recommended for an award, the NSF Division of Grants and Agreements will request certain organizational, management, and financial information. These requirements are described in Chapter V of the NSF *Grant Policy Manual*.

ADDITIONAL INFORMATION:

Questions not addressed in this publication may be directed to Dr. A. James Hicks, Program Director, National Science Foundation, Division of Human Resource Development – EHR Room 815, 4201 Wilson Boulevard, Arlington, VA, 22230, telephone number (703) 306-1632, FAX number (703) 306-0423; e-mail ahicks@nsf.gov. Direct contact to discuss potential projects is encouraged.

Upon completion of the project, a Final Project Report (NSF Form 98A), including the Part IV Summary, will be required. NSF will send the form with Part I information preprinted to the Principal Investigator [Project Director] approximately one month prior to the grant's expiration date. In addition to a 98A, these Cooperative Agreements will require a comprehensive final technical report that is to include project evaluation results. Annual progress reports will be required.

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. 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 subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. Information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the application review process; to applicant institutions/grantees to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/ Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Gail A. McHenry, Reports Clearance Officer; Information Dissemination Branch, DAS; National Science Foundation; Arlington, VA 22230.

NATIONAL SCIENCE FOUNDATION

ARLINGTON, VA 22230

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