

National Aeronautics and Space Administration (NASA)  
Office of Equal Opportunity Programs (OEOP)  
Minority University Research and Education Division (MURED)  
Washington, DC 20546-0001

CAN 98-OEOP-1  
**Issued: December 10, 1997**  
**Proposal Due: March 11, 1998**

# **Partnership Award for the Integration of Research into Mathematics, Science, Engineering & Technology Undergraduate Education (PAIR)**

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NASA Cooperative Agreement Notice (CAN)

Internet location: <http://mured.gsfc.nasa.gov>

## INQUIRIES

Questions about this NASA Partnership Award for the Integration of Research Into Mathematics, Science, Engineering, and Technology may be directed to the NASA OEOB Minority University Research and Education Division staff by contacting:

Ms. Bettie White  
Director, Minority University Research and Education Division  
NASA Headquarters  
Code EU  
300 E Street, SW  
Washington, DC 20546

Email: [bettie.white@hq.nasa.gov](mailto:bettie.white@hq.nasa.gov)

## SCHEDULE OF KEY DATES

**Issued: December 10, 1997**

Questions (Inquiries) via INTERNET: January 19, 1998

Response to Questions via INTERNET: January 26, 1998

Notification of Intent to Submit a Proposal: January 30, 1998

**Proposal Due: March 11, 1998**

**Selections Announced: May 1998**

## **NASA Partnership Awards for the Integration of Research (PAIR) into Mathematics, Science, Engineering & Technology Undergraduate Education**

This solicitation responds to the FY 1998 NASA Appropriations Bill that provides "...for continuation and expansion of the Partnership Awards..." and to congressional direction "to expand opportunities and enhance diversity in the NASA-sponsored research and education community." The NASA Office of Equal Opportunity Programs Minority University Research and Education Division (OEOP MURED) solicits proposals to establish Partnership Awards for the Integration of Research and Mathematics, Science, Engineering and Technology Undergraduate Education. This solicitation seeks proposals from Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU), including Hispanic-Serving Institutions (HSI) and Tribal Colleges and Universities (TCU), hereafter referred to as Minority Institutions (MI).

The purpose of this solicitation is to provide MI's with an opportunity to build upon their NASA-sponsored research and their rich history of educational excellence by creating partnerships between the MI NASA-sponsored researcher and the MI math, science, engineering and technology (MSET) academic programs, and between the MI, NASA Installations and Jet Propulsion Laboratory (JPL), other institutions of higher education and the aerospace community having substantial involvement in NASA's mission that would strengthen the MSET academic infrastructure of the HBCU/MI. As a result of these partnerships and collaborative relationships, the PAIR awards will:

- Produce more competitive undergraduate students who, because of their research training and exposure to cutting-edge technologies, are better prepared to enter MSET graduate programs or MSET employment in NASA-related fields;
- Increase participation of faculty and students in NASA-related projects that both foster collaborative inquiry, and that promote broad and significant improvements to undergraduate teaching and research training; and
- Establish replicative models of HBCU's and OMU's that successfully utilize NASA-related research and the results of its mission to enhance the content of science, mathematics, engineering and technology undergraduate curriculum and thereby expose greater numbers of students and faculty to cutting-edge science and technology concepts and practices.

PAIR Awards will be selected competitively from among MI's. The award recipient must meet the eligibility criteria outlined in this solicitation. It is anticipated that at least four Partnership Awards will be funded in response to this Cooperative Award Notice (CAN). Partnerships are strongly encouraged, however, the lead institution must be a minority institution. Consortiums that include linkages with TCU's are strongly encouraged.

NASA expects to provide first-year funds of \$500,000 and up to \$2 million for the second through fifth years, for a total of \$2.5 million. The appendices to this announcement include further details relevant to this program. Please use identifier number CAN-OEOP-98-1 when making an inquiry regarding this announcement.

Your interest and cooperation in participating in the NASA Partnership Award for the Integration of Research into Mathematics, Science, Engineering and Technology Undergraduate Education are appreciated.

George E. Reese  
Associate Administrator for  
Equal Opportunity Programs

**NASA Partnership Award for the Integration of Research (PAIR) into  
Undergraduate Education**

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## TECHNICAL DESCRIPTION

### Partnership Awards for the Integration of Research into Undergraduate Education (PAIR Awards)

#### 1. Introduction

In an era when technological changes occur more rapidly than the 4 years it takes to produce an undergraduate, it is unlikely that a university education alone will be sufficient to adequately prepare an undergraduate for the rigors of graduate school or the world of work. This is especially true in the sciences and technical fields. Therefore, it is imperative that higher education integrate current and emerging research into its undergraduate curricula to better prepare its graduates to compete beyond the undergraduate level.

*It is not the purpose of this offering to fund or even facilitate research; rather, to integrate cutting-edge NASA-related research into the undergraduate educational experience. Those who seek these funds must be able to show definitively and quantitatively how both the academic infrastructure and the undergraduate students will be measurably enhanced. At the conclusion of NASA funding, a discernable legacy of improved undergraduate curriculum enhancements should remain with the funded institution.*

NASA's Office of Equal Opportunity Programs' Minority University Research and Education Division (OEOP MURED) plans to establish at least four new Partnership Awards for the Integration of NASA-related Research into Undergraduate Education at Historically Black Colleges and Universities (HBCU) and at Other Minority Universities (OMU) which include Hispanic-Serving Institutions (HSI) and Tribal Colleges and Universities (TCU). This award is designed to: 1) increase the number of undergraduate students with research training who earn math, science, engineering and technology (MSET) baccalaureate degrees and go on to enter graduate-level MSET degree programs or MSET-related careers; 2) foster the integration of NASA-related research into undergraduate education and promote undergraduate research training as an integral part of the undergraduate student experience; 3) enhance research training by integrating discovery-based learning techniques throughout the MSET curricula; and 4) facilitate collaboration between the MI NASA-sponsored researcher and the MI MSET academic programs, and between the MI, NASA Installations and the Jet Propulsion Laboratory (JPL), other institutions of higher education and the aerospace community having substantial involvement in NASA's mission that would strengthen the MSET academic infrastructure of the HBCU/MI. These institutions will serve as models for the production of competitively trained MSET baccalaureate degree recipients fully prepared to meet the scientific and technological challenges of the new millennium.

## 2. Purpose of the Program

**NASA seeks HBCU's and OMU's that will build upon their NASA research to enhance the quality of their MSET undergraduate education.** The **goal** of this CAN is to strengthen the MSET baccalaureate degree-producing capacity of a number of the Nation's HBCUs and OMUs by building upon previous NASA funding. The specific **objectives** are to:

- increase the production of U.S. students, especially those underrepresented in MSET fields, in scientific and technical fields who are competitively trained, have discipline-related work experience, and who attain advanced degrees in NASA-related fields;
- integrate cutting-edge science and technology concepts and practices into relevant areas of the undergraduate curriculum, including into introductory-level courses and laboratories for majors and non-majors;
- increase participation by faculty and students in projects that both foster collaborative inquiry, and that promote broad and significant improvements to undergraduate teaching and learning, especially of the techniques and methodologies associated with the conduct of research; and
- create model HBCUs and OMUs for the development of excellence in MSET academic infrastructure, undergraduate preparation, and student research training in a NASA-related discipline.

As a result, the **outcomes** of this CAN are:

- more competitive undergraduate U.S. students, underrepresented in MSET fields who, because of their research training and exposure to cutting-edge technologies, are better prepared to enter MSET graduate programs or MSET employment;
- enhanced undergraduate courses and curriculum including laboratory-based curricula that foster collaborative educational experiences between faculty members and students; and
- model HBCUs and OMUs that integrate NASA-related research into the appropriate areas of the undergraduate curriculum that expose greater numbers of students and faculty to cutting-edge technologies.

## 3. Award Size and Duration

PAIR Awards will be selected competitively from among HBCUs and OMUs. It is anticipated that at least four Partnership Awards will be funded in response to this CAN. NASA expects to provide first-year funds of \$500,000 and up to \$2 million for the second through fifth years, for a total of \$2.5 million. Second-, third-, fourth- and fifth-year funding will be based on an annual evaluation of documented progress, the availability of funds and the amount of funds reported in the Agency's Financial and

Contractual Status (FACS) Report as disbursed at the end of the awards period of performance.

#### 4. Eligibility

All proposals must originate from U.S. colleges or universities that meet the following criteria. Proposing institutions **must**:

- a. Offer an undergraduate degree in mathematics, science, engineering and/or technology, **and**
- b. Be a current recipient of a NASA grant or cooperative agreement of at least \$100K annually for the conduct of research and projected to be in effect through FY 1999, **and**
- c. Meet **one** of the following criteria:
  - 1) Be an institution designated by the Department of Education as a Historically Black College or University under Title III of the Higher Education Act of 1965, as amended (see 34 CFR 608.2.); **or**
  - 2) Be designated by the Department of Education as a Hispanic-Serving Institution (HSI) under Title III of the Higher Education Act of 1965, as amended [See 20 USC 1059c, Public Law 102-325-July 23, 1992-Section 316]; **or**
  - 3) Be designated a Tribal College or University as defined by Executive Order 13021, Section 1, as those institutions cited in Section 532 of the Equity in Educational Land-Grant Status Act of 1994, (7 U.S.C. 301 note) and any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 *et seq.*) and Navajo Community College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title III (25 U.S.C. 840a note); **or**
  - 4) Be an accredited minority college or university with enrollment of a single disadvantaged and/or disabled group or the combination of underrepresented minority groups that exceeds 50 percent of the total student enrollment as defined in the Higher Education Act, as amended [See 20 USC 1135d-5 and 34 CFR 637.4 (b)].

*Two-year institutions of higher education that also meet the criteria described herein are encouraged to form partnerships with other eligible minority institutions that also meet the criteria.*

Only the above eligible institutions of higher education can be recipients of the NASA PAIR award. Since the NASA award is to the institution, any arrangements and/or agreements to have the administration of the award performed by a third party is between the awardee and the third party and does not require NASA's involvement or approval.

Institutions currently receiving funds in support under the National Science Foundation (NSF)/NASA Minority Institutions of Excellence (MIE) Program **are not eligible** to receive a PAIR award.

## 5. Proposal Content and Design

Support will be provided for systemic improvement of current MSET course, including laboratory-based curricula, content, conduct, and quality of undergraduate instruction. In addition, NASA will support the development of experiments and laboratory curricula for improving MSET undergraduate education and research training. **Only HBCU's and OMU's are eligible to be recipients of PAIR awards.**

### **Partnership with one or more NASA Field Installation(s) and/or JPL is required.**

Proposals that demonstrate effective partnerships or cooperative arrangements among academia, government agencies, and industry are strongly encouraged. Consortium proposals that include TCUs are also strongly encouraged. U.S. Federal Government agencies that wish to participate will be expected to supply their own funding.

Other organizations that may participate as cooperating partners with a PAIR Institution include industry, other educational institutions, nonprofit organizations, other NASA Field Installations, JPL, and Federal, state, and local government agencies.

*Relationships are strongly encouraged with hardware and support service contractors at specific NASA sites as well as Small and Disadvantaged Businesses working on NASA projects as a way of exposing greater numbers of HBCU/MI faculty and students to appropriate areas of the undergraduate curriculum and cutting-edge technologies.*

Proposals must clearly identify the current NASA research **and its relationship to a NASA Installation or JPL Center of Excellence Area** (See *Appendix F*). Further, proposals must illustrate where and how its integration is appropriate within the MSET curriculum, and how its use will improve the undergraduate educational experience. The proposal must also specifically identify how these experiences will result in more competitively trained students, and what new skills these students will possess.

## 6. Proposal Preparation and Submission

### A. Proposal Deadline

Proposals must be received no later than 4:30 PM EST on March 11, 1998.

### B. Notification of Intent to Submit a Proposal

To facilitate proposal processing and selection of reviewers, the proposed principal investigator is requested to confirm plans to submit a proposal by sending a two-page letter of intent. This letter should contain proposed project title, a brief summary describing the proposed project, the potential principal co-investigators, and the potential members to be included in a partnership or collaboration. This non-binding letter must be received by January 30, 1998.

The Notification of Intent may be submitted via the Internet at

<http://mured.gsfc.nasa.gov/> **OR** a hard copy must be received by 4:30 PM EST at the following address:

Allied Technology Group, Inc.  
4200 Forbes Boulevard - Suite 106  
Mail Stop 110  
Lanham, MD 20706-4342  
FAX: 301-918-8154

### C. Question/Answer Internet Forum

There will be an opportunity for proposers to post questions about this offering via the Internet. The Internet site for submitting questions is: <http://mured.gsfc.nasa.gov/pub/index.html>. All questions raised will be answered and posted for all to see. Deadline for submission of questions is January 19, 1998.

### D. General Information

Detailed instructions, examples, and forms necessary for proper submission are contained in the Appendix section. Briefly, proposals should be written concisely in English to minimize the burden on the reviewers and to facilitate the overall evaluation process. The total length of the proposal project narrative, including figures, tables, etc., shall not exceed 34 sheets of 8.5" x 11" paper, with a maximum of 52 lines per page (point size 12 or larger, with 1-inch margins).

Proposals using type smaller than 12 point, compressed type, or less-than-normal leading (space between lines) which makes reading difficult, will be returned unreviewed. Review panels will schedule reviews based on a maximum of 20 pages of proposal narrative. Technical and resource reviewers will be instructed to consider only the first 20 pages of proposal narrative. Do not attach appendices other than those required by this announcement.

To facilitate the recycling of shredded proposals after review, proposals shall be submitted on plain, white paper only. This precludes the use of cardboard stock, plastic covers, colored paper, and binders such as 3-Ring, GBC, spiral, plastic strips, etc.

### E. Proposal Submission

The original and 4 copies of the proposal package must be **received** no later than 4:30 p.m. (EST), March 11, 1998.

Submit to:

#### U.S. MAIL

Ms. Bettie White  
NRA 97-OEOP-2  
NASA Headquarters, Code EU  
Washington, DC 20546-0001

#### Commercial Delivery

Ms. Bettie White  
Code EU  
Attn: Receiving and Inspection (rear of building)  
300 E Street, SW  
Washington, DC 20024-3210

### F. Schedule

Notification of Intent to Submit a Proposal  
Proposal Due  
Selection Announcement

January 30, 1998  
March 11, 1998  
May 1998

## G. Eligible and Ineligible Activities

Eligible activities include, but are not limited to:

- Acquisition of laboratory instrumentation/equipment that will be used by undergraduate students to enhance the MSET instructional program
- Development/improvement of laboratory-based curricula
- Development of courses that incorporate research training into the MSET curriculum for MSET majors and non-majors
- Development of courses that acquaint MSET majors and non-majors with the principles and methods of science, mathematics, engineering, and technology
- Upgrading or replacing obsolete or unreliable equipment as long as the new equipment is essential to expose students to concepts and/or techniques directly related to the NASA research area and corresponding NASA Center of Excellence core area(s) of responsibility
- Development of undergraduate honors program, student research, and/or independent study that will provide greater depth of understanding of MSET issues and concepts related to the NASA research area and corresponding NASA Center of Excellence core areas of responsibility
- Access by students to undergraduate computer networks that provide greater instructional capabilities than are available locally
- Support for building significant capacity in the areas of excellence in teaching and research training, for the purpose of curriculum innovations and enhancements
- Development or expansion of opportunities for undergraduate student research and design at appropriate locations (institutional, regional or national)
- Support for distance learning, as part of a recruitment and retention strategy for students at 2-year institutions with whom the lead institution has a signed articulation agreement

Ineligible activities include, but are not limited to:

- Teaching aids (e.g., films, slides, projectors, "drill and practice" software), word-processing equipment, library reference materials, or expendables (e.g., glassware, chemicals, etc.)
- Instrumentation that does not relate to the development/improvement of laboratory-based curricula to be used by MSET undergraduate students to enhance the instructional program
- Vehicles, laboratory furnishings or general utility items (e.g., office equipment, benches, tables, desks, chairs, storage cases, routine supplies, and general consumables)
- Maintenance equipment and maintenance and service contracts even when these are for equipment procured through the PAIR award
- Salaries of new employees
- Honoraria, consulting fees, and travel expenses except as requested by the grantor
- Costs of construction or laboratory modification required for installation of the equipment (as distinct from simply integrating multiple computational equipment or

- interfacing computers to instruments)
- General replacement equipment

#### H. Organization and Management

The PAIR institution must designate Co-Investigators (CO-I), one represents the research aspect of the project, the other represents the education aspect of the project. Each CO-I must be tenured or tenure-tracked if at an institution of higher education. It is expected that one CO-I will have significant influence at the institution level to facilitate the integration of research into the MSET curriculum.

The PAIR institution, through its CO-Is, will be responsible for the integration of research into the MSET curriculum, the development of courses and laboratories, the conduct of research training, the acquisition of equipment, the achievement of the planned goals and objectives and their contribution to the identified NASA Installation/JPL Center of Excellence Area. The recipient must propose goals, objectives, and performance metrics against which to measure annual program outcomes.

#### I. Program Management and Review Mechanisms

The Partnership Awards for Integration of Research into Undergraduate Education Program is managed from NASA Headquarters by the OEOP MURED Director in cooperation with Headquarters Program Offices, NASA Field Installations and JPL. A Technical Monitor at an appropriate NASA Installation will be appointed as technical contact with each PAIR recipient. The Technical Monitor will establish a technical assistance team that will provide technical guidance, conduct an annual review of the project, and an assessment of the progress toward NASA PAIR program goals. The Technical Monitor will prepare and submit an annual assessment report to OEOP MURED. NASA OEOP MURED will annually evaluate the overall progress of the PAIR program and determine the level of continuation funding.

At the completion of the second year and the fourth year of the award, NASA OEOP MURED will convene an agencywide review panel, composed of internal and external reviewers, to conduct a comprehensive on-site review of each PAIR to determine progress toward the Agency's PAIR program outcomes.

## 7. Proposal Evaluation

### A. Evaluation Process

A three-phase merit review process may be used to assess the CAN proposals. The first phase may involve review by specific discipline experts from government, industry, and universities. Upon consideration of the results of this initial review, a NASA working group may be used to examine all aspects of the proposals and identify those proposals that appear most promising to be advanced to the second phase, or require a reverse site visit. A third phase may consist of a comprehensive review of all documented information and reverse site visit reports by a NASA steering committee. The steering committee can recommend priorities for selection by the NASA selection official.

### B. Specific Evaluation Criteria

Specific evaluation criteria are outlined in Subsection 10 of Appendix A within this offering. Briefly, the four specific criteria areas and their sub-components are noted below:

#### Area A Project Design and Partnership Plan (25% of total score)

- Technical Soundness
- Quality of Partnership Planning
- Likelihood of Achieving Program Goals, Objectives, and Outcomes

#### Area B Integration of Research and Research Training (25% of total score)

- Adaptability of NASA-Related Research and Associated NASA Center of Excellence Core Area(s) of Responsibility into MSET Curriculum
- Relevance, Quality, and Applicability of Research Training to a NASA Installation/JPL Center of Excellence Area

#### Area C Project Impact (30% of total score)

- Organization and Management Structure
- Likelihood to Improve Academic Infrastructure
- Likelihood to Improve Quality, Graduation Rate, or Effectiveness of Undergraduate MSET Students

#### Area D Resources (20% of total score)

- Reasonableness of Costs
- Qualifications of Personnel
- University and Partners' Commitment

**INSTRUCTIONS FOR RESPONDING TO NASA COOPERATIVE AGREEMENT  
NOTICE: PAIR CAN 98-OEOP-1**

**1. Foreword**

NASA depends upon industry, educational institutions, and other nonprofit organizations for many of its research and development efforts. While a number of mechanisms have been developed over the years to inform the research and development community of those areas in which NASA has special interests, the instructions in this section apply only to this Cooperative Agreement Notice. A NASA Cooperative Agreement Notice (CAN) permits competitive selection of projects in accordance with statute, and preserves some of the traditional concepts and understanding associated with NASA sponsorship normally solicited by a NASA Research Announcement (NRA). A CAN also introduces new concepts for NASA sponsorship.

**2. Policy**

NASA fosters and encourages the submission of proposals relevant to Agency mission requirements by solicitations, CAN's, and NRA's which describe areas of interest to NASA. Proposals received in response to this CAN will be used only for evaluation purposes.

NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to the CAN, to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or materials that NASA and the awardees mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

NASA may select only a portion of a proposed application, in which case the Principal Investigator (PI) will be given the opportunity to accept or decline such partial acceptance.

If a proposer intends to use any limited-rights data or restricted computer software (as defined in FAR 27.404) in the results of proposals, then such data and software shall be identified in the proposal.

### 3. Purpose

These instructions are intended to supplement documents identified as “NASA Cooperative Agreement Notices.” Such notices contain programmatic information and certain CAN-specific requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all CAN’s.

### 4. Relationship To Award

A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded on the basis of a proposal submitted in response to a CAN. NASA will determine the appropriate instrument.

Grants are generally used to fund basic research in educational and nonprofit institutions, while research in other private sector organizations is accomplished under contract. Additional information unique to the contractual process (certifications, cost and pricing data, facilities information, etc.) will be requested, as necessary, as the procurement progresses. Contracts resulting from CAN’s are subject to the Federal Acquisition Regulation.

### 5. Conformance to Guidance

NASA does not have any mandatory forms or formats for preparation of responses to CAN’s; however, it is requested that proposals conform to the procedural and submission guidelines covered in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' **most favorable** terms.

In order to be considered responsive to the solicitation, a submission must, at a minimum, present a specific project within the areas delineated by the CAN; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; and not significantly duplicate a more specific, current, or pending NASA solicitation. NASA reserves the right to reject any or all proposals received in response to the CAN when such action is considered in the best interest of the government.

### 6. Proposal Contents

Transmittal Letter (see Section 6.1)	1 Page
Standard Cover Page (see Form E-1)	1 Page
Executive Summary (see Form E-6)	2 Pages
Proposal Narrative (See Section 6.5)	20 Pages
Proposed Costs and Required Certifications (see section 6.6)	10 Pages

All proposals should be arranged according to the format specified in *Appendix D* of this CAN, including the standard cover page. The proposals shall have a fully completed and signed cover

page and certifications, as enclosed in *Appendix E* of this CAN.

Subsection 6.1 below gives instructions for transmittal letter.

The following general information is needed in all proposals in order to permit consideration in an objective manner. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

When completing the prefatory forms, please note that for proposals in response to CAN's, NASA recognizes only one PI for each proposal. Other investigators are designated Co-Investigators (CO-I), even if their contributions to the proposal and responsibilities are comparable to those of the PI.

The proposer's sponsoring institution shall endorse all proposals. Only properly endorsed proposals are acceptable. The cover page contains space for this endorsement by an institutional representative authorized to legally bind the institution to perform the proposed effort.

Besides the cover page and summary form, the proposals shall contain a table of contents, an executive summary of the proposed program, a program narrative that describes the project, a budget section, a statement of current and pending Federal support, biographical sketches of key personnel, and letters of endorsement (if appropriate) arranged according to the format in *Appendix D*. For more information on these proposal sections, refer to Subsections 6.1 to 6.10 of this Appendix.

Proposals are expected to be written concisely in English to minimize the burden on the reviewers and to facilitate the overall evaluation process. The total length of the proposal project narrative, including figures, tables, etc., shall not exceed 20 sheets of 8.5" x 11" paper, with a maximum of 52 lines per page (point size 12 or larger, with 1-inch margins).

It is strongly recommended that proposals use type 12 point, and not less-than normal leading (space between lines). Only the first 34 pages will be reviewed if a proposal meets the composition specifications but exceeds 34 pages.

To facilitate the recycling of shredded proposals after review, proposals shall be submitted on plain, white paper only. This precludes the use of cardboard stock, plastic covers, colored paper, and binders such as 3-Ring, GBC, spiral, plastic strips, etc.

### **6.1 Transmittal Letter, Cover Page, and Proposal Summary Requirements**

The transmittal letter, should include the proposal title, identification of any other organizations currently evaluating a proposal for the same effort, identification of this Cooperative Agreement Notice (PAIR CAN 98-OEOP-1) and the total dollar amount requested of NASA.

### **6.2 Executive Summary**

The Executive Summary is an abstract of the proposed project which includes: new approaches in undergraduate education and research training; the existing and planned resources the university will commit to the venture; and the nature and use of existing partnership or partnerships to be established. See Form D-6.

### **6.3 Restriction on Use and Disclosure of Proposal Information**

It is NASA's policy to use information contained in proposals for evaluation purposes only. Information (data) contained in proposals will be protected to the extent permitted by law; but NASA assumes no liability for use and/or disclosure of information not made subject to specific notice. While this policy does not require that the proposal bear a restrictive notice, offerors or quoters should, in order to maximize protection of trade secrets or other information that is commercial or financial, and confidential or privileged, place the following notice on the title page of the proposal.

#### NOTICE

##### Restriction on Use and Disclosure of Proposal Information

The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial, and confidential or privileged. It is furnished to the government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a grant or cooperative agreement is awarded on the basis of this proposal, the government shall have the right to use and disclose this information (data) to the extent provided in the grant or cooperative agreement. This restriction does not limit the government's right to use or disclose this information (data) if obtained from another source without restriction.

## 6.4 Table of Contents

A table of proposal contents and page numbers should be provided at the beginning of the proposal.

## 6.5 Project Narrative

The project narrative should reflect the unique combination of the institution's interests and capabilities. It should clearly and concisely justify the requested NASA support.

*The project narrative must be written in “outcomes” language; that is, it must qualitatively and quantitatively identify specific long-term enhancements to the undergraduate curriculum as well as specific enhancements to the students. Curriculum enhancements should accrue to a wide spectrum of students rather than a select few.*

**The Project Narrative is restricted to a maximum of 20 pages - appended material other than that specifically requested will not be accepted.** Important components are as follows:

- 1) **Description of the PAIR** – Identify the specific NASA research involved, and the academic programs that will be enhanced as a result of this award. Provide a brief description of proposed PAIR goals and objectives, specific enhancements to the curriculum, depth and/or breadth of PAIR elements, relevance to NASA, and how all the elements are integrated to meet the goals and objectives. Indicate the adequacy of internal and external procedures for assuring success, monitoring results, and evaluating the impact on the undergraduate as well as the institution.
- 2) **Technical Plan** - Provide a technical program plan for an initial period of 5 years that describes in detail the selected single or cross-discipline mathematics, science and/or engineering disciplines that will be impacted, the breadth and depth of the planned undergraduate educational outcomes, the breadth and depth of research training and undergraduate MSET curriculum reform to be conducted. Clearly identify, for example, what laboratory instrumentation/equipment will be used by undergraduate students, what laboratory-based curricula and/or courses will be developed, etc.
- 3) **Basis for the Proposed PAIR** - Present the strengths and quality of any existing related undergraduate reform programs and describe how existing institutional programs provide a basis for the proposed PAIR. Also, describe any additional elements that will be added that will relate to and strengthen the proposed PAIR.

- 4) **Partnership Plan** - Present a partnership plan that describes the proposed collaboration with industry, other universities, NASA and/or other government agencies that will be utilized to enhance the research training and undergraduate education outcomes, to leverage supporting funds, and to provide new research and employment opportunities for faculty and students. Describe the benefit of the partnership to the proposed recipient.

If a particular contribution of a collaborating institution is essential to the performance of improvements proposed in this CAN, then letters of commitment outlining and confirming that commitment **must be submitted** by a responsible official from this institution. Each commitment letter shall indicate agreement with the nature of the collaboration detailed in the proposal, which shall be identified by title and date of submission. All commitment letters shall refer to the "Partnership for the Integration of Research" CAN of the Minority University Research and Education Division.

If a partnership includes a subcontractor, then a statement of work and the cost of that work **must be submitted** as a part of the Partnership Plan.

- 5) **Mathematics, Science, Engineering and Technology (MSET) Outcomes** - Present a plan for increasing the quality of U.S. graduates, who are underrepresented in science, mathematics, engineering and technology with degrees and who will be exposed through MSET curricula enhancement/change. The number of undergraduate students participating in the MSET majors and non-MSET majors and to be impacted by the project should be presented in chart form (by year and ethnicity). Also provide information on new educational activities (e.g., new courses, laboratory-based curricula, new degree programs, and other methodologies used to bring about enhanced curriculum outcomes).
- 6) **Research Training** – Describe how the NASA-related research can be adapted to provide an undergraduate research training in the appropriate MSET area. This training should focus primarily on the techniques and methodologies of conducting research. All students should be exposed and/or participate in a research experience. Indicate the approximate number of student participants and how such training will make them more competitive upon graduation. Cite studies, graduate catalogs, etc. to substantiate claim. Describe the long-term effect on the curriculum and instructional program as a result of PAIR and other support.
- 7) **University and Partners' Commitment** – Present the university's commitment of resources, such as facilities and facility development, staffing, computer and experimental equipment, and new curriculum that supports the core teaching area. In a similar manner, present the commitment of Partners participating in the proposal.
- 8) **Organization of the PAIR Recipient and Proposed Management Structure** - Present the proposed organization and management structure of the PAIR, including: a) leadership qualities of the proposed PAIR PI and CO-I; b) initial personnel; c) future staff positions committed to the program; and d) the approach(es) to building an academic infrastructure that will support faculty, meet the objectives of the PAIR, and significantly improve the

production of competitively-trained MSET baccalaureate degree recipients. Visiting and institutional personnel should be identified with a commitment as to how much of their time will be devoted to the development of the PAIR, how investigators will benefit from the proposed academic infrastructure, and specific activities directly related to personnel growth and advancement.

Provide the names and titles of any other scientists and technical personnel associated substantially with the project in an instructional or advisory capacity. Any special industry/university cooperative arrangements should be described. If selected for a reverse site visit, additional information on the overall management of the PAIR, as well as career paths, promotion, and tenure practices for MSET faculty and staff may be required.

- 9) **Resource Plan** - Provide a 5-year resource plan that describes the distribution of funds to the various activities of the PAIR. Include a description of available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any government-owned facilities, industrial plant equipment, or special tooling that are proposed for use on the project (use NASA form in *Appendix E*). This plan should be coordinated with the Contracts and Grants Office and Financial Management Office to ensure the accuracy and reliability of the fiscal and purchasing plan. Please remember in formulating your plan, that all funds must be disbursed during the 12-month period for which the funds were requested.
- 10) **Evaluation Plan** - Present an evaluation plan that addresses evaluation of both implementation and sustained operation of the PAIR relative to items 1 and 2 and items 4-9, as listed above. The plan must clearly identify the project's goals, objectives, performance metrics and expected outcomes.
- 11) **Personnel** - A brief biographical sketch, along with citations of the most relevant recent publications covering the past 5 years, must be included for the PI and the CO-I. The biographical sketch and publications list must not exceed one page for either the PI or the CO-I.

## 6.6 Proposed Costs and Required Certifications

In addition to the instructions contained in this section, proposers are referred to *Appendix E*. This Appendix contains the budget format and the required certification (Certification Regarding Drug-Free Workplace Requirements, Debarment, Suspension, and Other Responsibility Matters, and Non Discrimination) that must be included as part of the proposal. The budget section should include a budget breakdown for each year of the proposed work, as well as a budget summary for the entire period of the proposal. The total budget request and total yearly budget requests shall also be entered onto the proposal summary page, as shown in *Appendix E*.

If proposals involve collaborations with CO-I's who are at institutions different from that of the PI, and those CO-I's require funding support, the budget total of each participating institution shall be listed under category "3.a. Subcontracts" in the Proposal Budget. Summary of the details of the budgets of such participating institutions shall be provided separately using the same budget form.

Proposals shall contain cost and technical parts in one volume; do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; automated data processing expenses; publication or page charges; consultants; subcontractors; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., PI's, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Direct labor costs should provide estimated hours, hourly rates, and total amounts for each. Cost estimates should include the basis on which they are derived, such as currently paid rates or outstanding offers to prospective employees.

Explanatory notes should accompany the cost proposal to provide identification and estimated cost, including information on indirect costs (including date of most recent negotiation and cognizant agency). Each significant other category regarding costs shall be detailed, explained, and substantiated. For example, proposals for equipment purchases shall specify the type of equipment, number of units, and unit cost. Before requesting a major item of capital equipment, the proposer should determine if equipment-sharing or loan is a feasible alternative to purchase. Where such arrangements cannot be made, the proposal should so state. Requested travel allowances shall include the destination, number of travelers, number of days, and the total cost per trip. Note that an annual trip by the PI and other key personnel is required to a 2-day program workshop, typically held in Washington, DC. Offerors should exercise prudent judgment, since the amount of detail necessary may vary with the complexity of the proposal. Moreover, the format used should allow the government to evaluate costs as to reasonableness.

Title and disposition of equipment purchased with Government funds will be determined for each cooperative agreement depending upon the nature of the recipient (i.e., nonprofit or profit-making company) and other factors.

## **6.7 Current and Pending Support**

Following the budget section, the proposal shall contain a summary of current and pending Federal support of all projects with substantial involvement of the PI and each of the CO-I's for whom support is requested. The format for this summary appears in *Appendix D*. The information content shall include: source of support; project title with grant or contract number; award amount by government fiscal year; and total award amount, award period, level of effort in person-months, and the location where the work is to be performed.

## **7. Notification of Intent to Submit a Proposal**

The intent to submit a proposal is due by January 30, 1998. The intent to submit may be submitted via the Internet at <http://mured.gsfc.nasa.gov/> **OR** a hard copy must be **received** by 4:30 PM EST at the following address:

Allied Technology Group, Inc.  
4200 Forbes Boulevard - Suite 106  
Mail Stop 110  
Lanham, MD 20706-4342  
FAX: 301-918-8154

## **8. Proposal Submission Requirements and Deadline**

**Proposal narratives must be limited to 20 pages.** They may be single-spaced, and single- or double-column. Please do not submit videos. One copy of the proposal must be signed by the PI and official(s) authorized to commit the institution in business and government affairs. Fifteen copies of the full proposal and 10 copies of the Executive Summary shall be sent to one of the following addresses depending on the mailing service utilized.

Proposals mailed through the U.S. Postal Service as first-class, registered, or certified mail should be addressed as follows:

Ms. Bettie White  
CAN-OEOP-98-1  
Code EU  
NASA Headquarters  
Washington, DC 20546-0001

Proposals sent by commercial delivery services (e.g., Federal Express) or hand-carried should be delivered to the following address between the hours of 8:00 AM and 4:30 PM:

Ms. Bettie White  
CAN-OEOP-98-1  
NASA Headquarters  
Code EU  
Attention: Receiving & Inspection (Rear of Building)  
300 E Street, SW  
Washington, DC 20024-3210

Proposals **must be received** at NASA Headquarters by **March 11, 1998, by 4:30 PM EST**. Proposals not received by this date and time will be considered late and will be returned unreviewed. Proposers will receive an acknowledgment of proposal receipt by return mail within 14 calendar days of the due date. NASA cannot receive proposals on Saturdays, Sundays or federal holidays.

## **9. Withdrawal**

Proposals may be withdrawn by the proposer at any time. Offerors are requested to notify NASA if the proposal is funded by another organization or other changed circumstances which dictate termination of evaluation.

## **10. Proposal Evaluation**

### **10.1 Evaluation Process**

Several evaluation procedures are regularly used within NASA. In all cases, however, proposals are subject to peer review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house where NASA has particular competence; others are evaluated by a combination of in-house people and selected external reviewers, while others are subject to a full external review procedure (with due regard for conflict-of-interest and protection of proposal information), by mail or through assembled panels. Regardless of the procedure, the final decisions are always made by a designated NASA selecting official.

A three-phase merit review process may be used to assess the CAN proposals. The first phase may involve review by scientists and engineers from government, industry, and universities. Upon consideration of the results of this initial review, a NASA working group may be used to examine all aspects of the proposals and identify those proposals that appear most promising to be advanced to the second phase, or require a reverse site visit. A third phase may consist of a comprehensive review of all documented information and reverse site visit reports by a NASA steering committee. The steering committee can recommend priorities for selection by the NASA selection official.

### **10.2 Specific Evaluation Criteria**

Proposals will be evaluated according to the following criteria:

#### **Area A – Project Design and Partnership Plan (25% of total score)**

**Technical Soundness:** Technical quality and understanding of the proposed educational improvements, its relevance to the NASA mission, and the manner in which it will contribute to the advancement of the production of U.S. graduates in MSET areas of studies, as well as foster excellence in the MSET curriculum.

**Quality of Partnership Planning:** The quality of a partnership plan that describes proposed collaboration(s) with industry, other universities, NASA, and/or other government agencies and that will be utilized to enhance the undergraduate teaching program, to leverage supporting funds, and to provide additional opportunities such as research training and/or experiences for faculty and students. Form, appropriateness, and strength of the linkages and knowledge transfer to other groups, including NASA's scientists and engineers.

**Likelihood of Achieving Program Goals, Objectives, and Outcomes:** Probability that proposed project design and partnership plan will enable the institution to realize the program's goals, objectives, and outcomes.

#### **Area B – Integration of Research and Research Training (25% of total score)**

**Adaptability of NASA-Related Research and Associated NASA Center of Excellence Core Area(s) of Responsibility into MSET Curriculum:** Ease of incorporating NASA-related research into MSET curriculum.

**Relevance, Quality and Applicability of Research Training:** Appropriateness of research training to enhance the undergraduate experience. Likelihood of research training to have post-graduation usefulness. Quality of the proposed research training.

#### **Area C – Project Impact (30% of total score)**

**Organization and Management Structure:** Leadership and instructional qualities of the PAIR CO-I's and instructional team. Documented competence of the partners and faculty to deliver high quality instruction and supervision. Adequacy of plans for program evaluation and information dissemination within and outside project personnel.

**Potential to Improve Academic Infrastructure:** The potential that the plan described will bring substantive and long-term positive change within the academic infrastructure.

**Likelihood to Improve Quality, Graduation Rate, or Effectiveness of Undergraduate MSET Education for MSET Majors and Non-MSET Majors:** Adequacy of the plan for graduating competitive U.S. students in NASA-related disciplines and involving an increasing number of non-MSET majors in cutting-edge science and technology concepts and practices over the 5-year program period.

**Area D – Resources (20% of total score)**

**Reasonableness of Costs:** Appropriateness of the budget, including the reasonableness of the proposed cost and the relationship of the proposed cost to available funds.

**Qualification of Personnel:** Experience of the personnel assigned to the project as well as those who will provide instruction and supervision of students.

**University and Partners' Commitment:** Resources (staff, facilities, laboratories, indirect support, etc.) that the university will commit to the undergraduate education and research training program and the relationship to the institutional long-term strategic commitment in the MSET area.

**11. Cancellation of CAN**

NASA reserves the right to make no awards under this CAN, and in the absence of program funding or for any other reason, to cancel this CAN by having a notice published in the Commerce Business Daily. NASA assumes no liability for canceling the CAN or for anyone's failure to receive actual notice of cancellation. Cancellation may be followed by issuance and synopsis of a revised CAN, since amendment of the CAN is normally not permitted.

**12. Schedule**

The schedule for the review and selection of proposals for this CAN is as follows:

Release of the CAN	<u>December 10, 1997</u>
Notification of Intent to Submit a Proposal due	<u>January 30, 1998</u>
Questions about this CAN due	<u>January 19, 1998</u>
Proposals due	<u>March 11, 1998</u>
Selections announcement	<u>May 1998</u>

Following completion of the proposal evaluation process, NASA will notify both successful and unsuccessful proposers.

## ADDITIONAL SOURCES OF INFORMATION

**Additional information regarding the NASA MURC Program can be obtained from the following sources:**

### 1. NASA Headquarters

For questions concerning the solicitation, please contact the following person:

#### *Hispanic-Serving Institutions*

Ms. Millie Mateu  
MURED Program Specialist  
NASA Headquarters - Code EU  
Washington, DC 20546-0001  
Telephone: (202) 358-0954  
E-mail: millie.mateu@hq.nasa.gov  
Fax: (202) 358-3745

#### *Historically Black Colleges and Universities*

Dr. Lynwood Randolph  
MURED Program Specialist  
NASA Headquarters - Code EU  
Washington, DC 20546-0001  
Telephone: (202) 358-2378  
E-mail: lynwood.randolph@hq.nasa.gov  
Fax: (202) 358-3745

#### *Tribal Colleges*

Dr. Philip Sakimoto  
MURED Program Specialist  
NASA Headquarters - Code EU  
Washington, DC 20546-0001  
Telephone: (202) 358-0949  
E-mail: philip.sakimoto@hq.nasa.gov  
Fax: (202) 358-3745

*Other inquiries*

Ms. Bettie White  
Director, Minority University Research  
and Education Division  
NASA Headquarters - Code EU  
Washington, DC 20546-0001  
Telephone: (202) 358-0970  
E-mail: bettie.white@hq.nasa.gov  
Fax: (202) 358-3745

**2. MURED Program Office Contacts at NASA Installations and the Jet Propulsion Laboratory**

<u>Installation</u>	<u>NASA Contact</u>	<u>Telephone Number</u> <u>Fax Number</u>
Ames Research Center Mail Stop 223-3 Moffett Field, CA 94035	Mr. Geoffrey Lee	(650) 604-6406 Fax (650) 604-3869
Dryden Flight Research Center P.O. Box 273 Edwards, CA 93523	Ms. Erma Cox	(805) 258-3033 Fax (805) 258-2298
Goddard Space Flight Center Mail Code 160 Greenbelt, MD 20771	Mr. Dillard Menchan	(301) 286-7348 Fax (301) 286-0298
Jet Propulsion Laboratory Mail Code 238-420 4800 Oak Grove Drive Pasadena, CA 91109	Mr. Richard Ashe	(818) 354-0122 Fax (818) 393-4977
Johnson Space Center Mail Code AJ111 Houston, TX 77058	Dr. Joseph D. Atkinson	(281) 483-4831 Fax (281) 483-0609
Kennedy Space Center Mail Code EO Kennedy Space Center, FL 32899	Ms. Evelyn Johnson	(407) 867-2307 Fax (407) 867-1066
Langley Research Center Mail Code 400 Hampton, VA 23665	Dr. Samuel E. Massenberg	(804) 864-5800 Fax (804) 864-8835

<u>Installation</u>	<u>NASA Contact</u>	<u>Telephone Number</u> <u>Fax Number</u>
Lewis Research Center Mail Stop 0100 21000 Brookpark Road Cleveland, OH 44135	Dr. Julian Earls (for HBCUs)	(216) 433-3014 Fax (216) 433-5266
Lewis Research Center Mail Stop 3-16 21000 Brookpark Road Cleveland, OH 44135	Mr. Robert Lawrence (for USAR & GEM)	(216) 433-2921 Fax (216) 433-2348
Lewis Research Center Mail Stop 7-4 21000 Brookpark Road Cleveland, OH 44135	Ms. JoAnn Charleston (for OMs)	(216) 433-2957 Fax (216) 433-8000
Marshall Space Flight Center Mail Code CE01 MSFC, AL 35812	Mr. Willie Love	(205) 544-0088 Fax (205) 544-2411
Stennis Space Center Mail Code MA00 Stennis Space Center, MS 39529	Dr. Armond Joyce	(601) 688-3830 Fax (601) 688-7499

### **3. NASA University Affairs Officers at NASA Installations and the Jet Propulsion Laboratory**

<u>Installation</u>	<u>Contact</u>	<u>Telephone Number</u> <u>Fax Number</u>
Ames Research Center Mail Stop 241-3 Moffett Field, CA 94035	Ms. Meredith Moore	(415) 604-5624 Fax: (415) 604-3622
Dryden Flight Research Center Mail Code 120 Edwards, CA 93523	Ms. Erma Cox	(805) 258-3033 Fax (805) 258-2298
Goddard Space Flight Center Mail Code 160 Greenbelt, MD 20771	Dr. Gerald Soffen	(301) 286-9690 Fax: (301) 286-1610

<u>Installation</u>	<u>Contact</u>	<u>Telephone Number</u> <u>Fax Number</u>
Jet Propulsion Laboratory Mail Stop 183-900 4800 Oak Grove Drive Pasadena, CA 91109	Dr. Fred Shair	(818) 354-8251 Fax: (818) 393-4977
Johnson Space Center Code AP2 Houston, TX 77058	Dr. Donn G. Sickorez	(713) 483-4724 Fax: (713) 484-4876
Kennedy Space Center Mail Stop HM-CIC Kennedy Space Center, FL 32899	Mr. Gregg A. Buckingham	(407) 867-7952 Fax: (407) 867-2454
Langley Research Center Mail Stop 400 Hampton, VA 23665	Mr. Roger Hathaway	(804) 864-3312 Fax: 804) 864-8835
Lewis Research Center Mail Stop 3-7 21000 Brookpark Road Cleveland, OH 44135	Dr. Francis Montegani	(216) 433-2956 Fax: (216) 433-3687
Marshall Space Flight Center Code DX01 Marshall Space Flight Center, AL 35812	Dr. James Dowdy	(205) 544-0997 Fax: (205) 544-5893
Stennis Space Center Applications Research Branch Stennis Space Center, MS 39529	Dr. Armond Joyce	(601) 688-3830 Fax: (601) 688-7499

#### 4. Codes Used In This Cooperative Agreement

##### ETHNIC ORIGIN CODE-ITEM 10B

- A. African American
- B. American Indian of Alaskan Native
- C. Asian
- D. Hispanic
- E. Pacific Islander
- F. White, not of Hispanic Origin
- G. Other (specify on form)

##### DISABILITY CODE-ITEM 10C

- 0. No Disability
- 1. Visual Impairment
- 2. Hearing Impairment
- 3. Orthopedic/Mobility Impairment
- 4. Learning Disability
- 5. Other

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**TYPE OF EMPLOYING INSTITUTION CODE-ITEM 11**

**Institutions of higher education offering  
as the highest degree:**

- A1. At least two but less than four years
- A2. Four or five year baccalaureate
- A3. First professional degree, e.g., M.D., D.V.M., etc.
- A4. Masters degree
- A5. Beyond Masters but less than doctorate
- A6. Doctorate degree
- A7. Any other degree not falling in the above classes  
(specify on form)

**Other Institutions:**

- B1. Business or Industry
- B2. Non-Profit Research Organization
- B3. Federal Government
- B4. State or Local Government (except school systems)
- B5. School System (pre-college)
- B6. Museum
- B7. Professional Organization
- B8. Trade Association
- B9. Union Organization
- B10. Charitable Organization or Foundation
- B11. Other (specify on form)

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**NASA-RELATED FIELD CODE-ITEM 21**

**PHYSICAL SCIENCES**

- 11. Astronomy
- 12. Chemistry
- 13. Physics
- 14. Planetary Sciences
- 19. Space Physics  
form)

**LIFE SCIENCES**

- 51. Biological Sciences
- 54. Environmental Biology
- 55. Agriculture Sciences
- 56. Medical Sciences
- 59. Other Life Sciences (specify on  
form)

**MATHEMATICS/COMPUTERS**

- 21. Mathematics
- 22. Computer Science
- 29. Other math/computer science  
(specify on form)

**PSYCHOLOGY**

- 61. Biological
- 62. Social Aspects
- 69. Other Psychology (specify on form)

**ENVIRONMENTAL SCIENCES**

- 31. Atmospheric Sciences
- 32. Geological Sciences
- 33. Oceanography
- 34. Hydrological

**MATHEMATICS AND SCIENCE TEACHER TRAINING**

- 81. Pre-service
- 82. In-service
- 89. Other teacher preparation (specify on form)

**ENGINEERING**

- 41. Aeronautical
- 42. Astronomical
- 43. Chemical
- 44. Civil
- 45. Electrical
- 46. Mechanical
- 47. Metallurgy and Materials
- 49. Other Engineering (specify on form)

**MATHEMATICS AND SCIENCE EDUCATION  
OUTREACH PROGRAM**

- 91. Bridge Programs
- 92. After School Enrichment Programs
- 93. Saturday Academies
- 94. Summer Science Camp
- 99. Other Educational Outreach (specify on form)

**OTHER SCIENCES**

- 100. All disciplines (specify on form)

**PAIR Notification of Intent to Submit a Proposal**

**I. INSTITUTION**

**Program Title:** \_\_\_\_\_

**Submitting Institution:** \_\_\_\_\_

**Co-Investigator Names:** \_\_\_\_\_ & \_\_\_\_\_

**Mailing Address:** \_\_\_\_\_ (1<sup>st</sup> Name Listed)

**Department:** \_\_\_\_\_ (1<sup>st</sup> Name Listed)

**Telephone Number:** \_\_\_\_\_ (1<sup>st</sup> Name Listed)

**Email Address:** \_\_\_\_\_ (1<sup>st</sup> Name Listed)

**Fax Number:** \_\_\_\_\_ (1<sup>st</sup> Name Listed)

**II. Proposed Collaborations REQUIRED (Check all that apply):**

- |                                                        |                                                       |
|--------------------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> Ames Research Center          | <input type="checkbox"/> Kennedy Space Center         |
| <input type="checkbox"/> Dryden Flight Research Center | <input type="checkbox"/> Langley Research Center      |
| <input type="checkbox"/> Goddard Space Flight Center   | <input type="checkbox"/> Lewis Research Center        |
| <input type="checkbox"/> Jet Propulsion Laboratory     | <input type="checkbox"/> Marshall Space Flight Center |
| <input type="checkbox"/> Johnson Space Center          | <input type="checkbox"/> Stennis Space Center         |

**Others OPTIONAL (Please Specify):**

**III. Strategic Enterprises Addressed (Please check all that apply):**

For more information, go to the NASA Homepage at: <http://www.nasa.gov>

- Aeronautics and Space Transportation Technology
- Human Exploration and Development of Space
- Mission to Planet Earth
- Space Science

**PAIR Notification of Intent to Submit a Proposal (Continued)**

**IV. Current NASA Grant or Cooperative Agreement Information**

**Grant Number:** \_\_\_\_\_

**Proposed Qualifying Area:** \_\_\_\_\_

**Research Title:** \_\_\_\_\_

**Sponsoring NASA Installation:** \_\_\_\_\_

**Approved Total Period of Performance:** \_\_\_\_\_

**V. Project Description:**

## CAN PROPOSAL FORMAT

**Please prepare your proposal in the following format:**

<b>Content</b>	<b>Page Length</b>
<b><u>Forms and Certifications</u></b>	
1. Standard Cover Page (see page E-1)	1 Page
2. Table of Contents	1 Page
3. Executive Summary (see page 16)	2 Pages
4. Proposal Summary Forms (see page E-6)	1 Page
5. Enrollments and Degrees Awarded for AY 1996-97	1 Page
6. Budget Forms (see page E-7)	2 Pages
7. Specialized Equipment Request Form (see page E-8)	1 Page
<b><u>Proposal Narrative (30-Page maximum)</u></b>	
1. Overview of PAIR Goals and Objectives In Relation to Institutional Goals and Objectives	Variable*
2. Technical Program Plan	Variable*
3. Summary of Existing and Related Programs	Variable*
4. Partnerships and Partner Responsibilities	Variable*
5. Organizational and Management Structure	Variable*
6. Student Recruitment and Educational Plan	Variable*
7. University Commitment of Resources	Variable*
8. Partnership Plan	Variable*
9. Growth Potential	Variable*
10. Resource Plan	Variable*
11. Evaluation Plan	Variable*
12. Biographical Sketches	Max 1 page per key staff*
13. Bibliography	As Required*

**\* the sum of the Proposal Narrative pages shall not exceed 20 pages  
PAGES SUBMITTED IN EXCESS OF THOSE LISTED FOR THIS FORMAT WILL NOT BE  
CONSIDERED**

## REQUIRED FORMS

E-1 Standard Proposal Cover Page

E-2 Certification of Institution and Faculty Eligibility

E-3 Supplementary Information Report

E-4 Certifications Regarding Lobbying; Debarment,  
Suspension and Other Responsibility Matters; and  
Drug-Free Workplace Requirements

E-5 Enrollments and Degrees Awarded, AY 1994-95

E-6 Proposal Summary Form

E-7 Budget Form and Instructions

E-8 Specialized Equipment Request Form

*For Forms E-1, E-2, E-4, and E-5, choose one of the Co-Investigators to serve as Principal Investigator. Use that individual and the corresponding institution as lead contacts responsible for reporting and administrative matters as appropriate. The lead Principal Investigator must be at an eligible institution. Both Co-Investigators are asked to fill out Form E-3. Two copies are provided.*

**PAIR Proposal Cover Page**

<b>This Box for NASA Use Only</b>	
_____ Proposal Number	_____ Date Received
<b>Name of Submitting Institution</b>	
<b>Proposal Title</b>	
Principal Investigator - Name	Authorized Institutional Official - Name
Title	Title
Department	Department
Mailing Address	Mailing Address
Telephone Number	Telephone Number
Fax Number	Fax Number
E-mail Address	E-mail Address
Principal Investigator - Signature	Authorized Institutional Official - Signature
Date	Date
(Required) Please check proposed NASA Installations for Collaboration:	
Ames Research Center	Jet Propulsion Laboratory
Goddard Space Flight Center	Dryden Flight Research Center
Kennedy Space Center	Stennis Space Center
Langley Research Center	Johnson Space Center
Lewis Research Center	Marshall Space Flight Center
Other proposed collaborations: (Please Specify)	

**PAIR 1997**

***Certification of Institution and Principal Investigator Eligibility***

Submit one copy of this form with the original proposal.  
Do not include this form with any of the other copies, as this may  
compromise the confidentiality of the information.  
Completion of this form is required.

**I. Institutional Eligibility Certification**

1. Institution Name \_\_\_\_\_
2. Proposal Title \_\_\_\_\_  
\_\_\_\_\_
3. Identify Highest degree offered (e.g., MS, or Ph.D.) by the institution in Mathematics, Science or Engineering  
Major \_\_\_\_\_ Highest Degree \_\_\_\_\_  
Major \_\_\_\_\_ Highest Degree \_\_\_\_\_  
Major \_\_\_\_\_ Highest Degree \_\_\_\_\_
4. Check each of the Department of Education FY 1997 certifications held by the institution.  
 Minority Institution (underrepresented minority group(s) exceed 50% of the total student enrollment)  
 Designated Hispanic-Serving Institute  
 Designated Historically Black College or University  
 Tribal Colleges

**II. Principal Investigator Eligibility Certification**

1. Last Name \_\_\_\_\_ First Name \_\_\_\_\_ MI \_\_\_\_\_
2. Verification of Employment:  
Employed by (institution): \_\_\_\_\_  
School/Department of (specify): \_\_\_\_\_
- Check type of position  
 Tenured     Tenured-track     Contractual
3. U.S. Citizen     Yes     No (citizenship will be verified at award time)
4. Is Principal Investigator a recipient of a Ph.D. degree?  
 yes     no

**If yes, specify area: engineering, mathematics, science**

\_\_\_\_\_

### III. Previous NASA Funding

List all NASA awards, NASA contracts, NASA consulting from which the proposed PI received funding as PI or CO-I during the past five years, including active awards.

Column A	Column B	Column C	Column D	Column E
Award	PI or CO-I	Title of Award	Period (from - to)	Amount
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			<b>TOTAL FUNDING:</b>	

Instructions:

**Column A:** Identify whether award was a research grant ( R ), education grant ( E ), contract ( C ), or consulting agreement ( A ).

**Column B:** For each award indicate whether applicant was a PI or CO-I.

**Column C:** List title of award.

**Column D:** List the period of performance.

**Column E:** List amount of award. For awards on which the proposed PI was a CO-I, show only that portion of the award which supported the proposed personal research of the PI, and attach an explanation of how this was determined. For awards on which the proposed PI was the PI, show the total award amount.

#### Certification Authority

The person authorized to sign below certifies that the information provided is accurate.

Authorized Institutional Official \_\_\_\_\_

Typed \_\_\_\_\_

Title \_\_\_\_\_

Authorized Institutional Official Signature \_\_\_\_\_

**PAIR 1997**

*Supplementary Information Report*

Submit one copy of this form with the original proposal. Do not include this form with any of the other copies, as this may compromise the confidentiality of the information. Completion of this form is voluntary. Please check the appropriate answers to each question for the principal investigator. Co-Investigators are also asked to fill out this form. Any individual not wishing to provide the information should check the space provided.

No, I prefer not to provide this information

1. Gender  Female  Male

2. Which ONE of these categories best describes this person's ethnic/racial status?

(If more than one applies, use the category that most closely reflects the person's recognition in the community.)

American Indian or Alaskan Native

Black, not of Hispanic Origin

Asian

Pacific Islander

Hispanic

White, not of Hispanic Origin

3. Does this person have a disability\* which limits a major life activity?

Yes  No

**Definitions**

American Indian or Alaskan Native: A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

Asian: A person having origins in any of the original peoples of East Asia, Southeast Asia and the Indian subcontinent. This area includes for example, China, India, Indonesia, Japan, Korea and Vietnam.

Black, not of Hispanic origin: A person having origins in any of the Black racial groups of Africa.

Pacific Islander: A person having origins in any of the original peoples of Hawaii; the U.S. Pacific Territories of Guam, American Samoa, and the North American Marianas; the U.W. Trust Territory of Palau; the islands of Micronesia and Melanesia; and the Philippines.

White, not of Hispanic origin: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

\*Disabled: A person having a physical or mental impairment that substantially limits one or more major life activities; who has a record of such impairment' or who is regarded as having such impairment.

***Why this information is being requested:***

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity or disability of the nominee. To gather the information needed for this important task, you should submit a single copy of this form. However, submission of the requested information is not mandatory and is not a precondition of award.

Information from this form will be retained by Federal agencies as an integral part of their Privacy Act Systems of Records in accordance with the Privacy Act of 1974. These are confidential files accessible only to appropriate Federal agency personnel and will be treated as confidential to the extent permitted by law. Data submitted will be used in accordance with criteria established by the respective Federal agency for awarding grants for research and education, and in response to Public Law 99-383 and 42 USC 1885c.

**CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS;  
AND DRUG-FREE WORKPLACE REQUIREMENTS**

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the Instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 34 CFR Part 82, "New Restrictions on Lobbying," and Nonprocurement) and Government-Wide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Education determines to award the covered transaction, grant, or cooperative agreement.

**1. LOBBYING**

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 34 CFR Part 82, for persons entering into a grant or cooperative agreement over \$100,000, as defined at 34 CFR Part 82, Sections 82.105, and 82.110, the applicant certifies that:

- (a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;
- (b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions;
- (c) The undersigned shall require that the language of this certification be included in the award documents for all subaward at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts) and that all subrecipients shall certify and disclose accordingly.

**2. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS**

As required by Executive Order 12549, Debarment and Suspension, and implemented at 34 CFR Part 85, for prospective participants in primary covered transactions, as defined at 34 CFR Part 85, Sections 85.105 and 85.100 --

- A. The applicant certifies that it and its principals:
  - (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - (b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local)

- transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
- (d) Have not within a three-year period preceding this application had one or more public transactions (Federal, State, or local) terminated for cause or default; and
- B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

**3. DRUG-FREE WORKPLACE  
(GRANTEES OTHER THAN INDIVIDUALS)**

As required by the Drug-Free Workplace Act of 1988, and implemented at 34 CFR Part 85, Subpart F, for grantees, as defined at 34 CFR Part 85, Sections 85.605 and 85.610 --

- A. The applicant certifies that it will or will continue to provide a drug-free workplace by:
  - (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
  - (b) Establishing an ongoing drug-free awareness program to inform employees about—
    - (1) The dangers of drug abuse in the workplace;
    - (2) The grantee's policy of maintaining a drug-free workplace;
    - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
    - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
  - (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
  - (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will—
    - (1) Abide by the terms of the statement; and
    - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
  - (e) Notifying the agency, in writing, within 10 calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such

National Aeronautics and Space Administration  
Office of Equal Opportunity Programs (OEOP)  
Minority University Research and Education Division (MURED)

conviction. Employers of convicted employees must provide notice, including position title, to: Director, Grants and Contracts Service, U.S. Department of Education, 400 Maryland Avenue, S.W. (Room 3124, GSA Regional Office, Building No. 3), Washington, DC 20202-4571. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted-

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), ©, (d), (e), and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (street address, city, county, state, zip code)

---

SIGNATURE

DATE ED 80-0013

---

Check ( ) if there are workplaces on file that are not identified here.

*DRUG-FREE WORKPLACE*

(grantees who are individuals)

As required by the Drug-Free Workplace Act of 1988, and implemented at 34 CFR Part 85, Subpart F, for grantees, as defined at 34 CFR Part 85, Sections 85.605 and 85.610 --

A. As a condition of the grant, I certify that I will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant; and

B. If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, I will report the conviction, in writing, within 10 calendar days of the conviction, to: Director, Grants and Contracts Service, U.S. Department of Education, 400 Maryland Avenue, S.W. (Room 3124, GSA Regional Office Building No. 3), Washington, DC 20202-4571. Notice shall include the identification number(s) of each affected grant.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above certifications. NAME OF APPLICANT

---

PR/AWARD NUMBER AND/OR PROJECT NAME

---

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

**PAIR 1997**

**Enrollments and Degrees Awarded Academic Year 1995-1996**

Institution \_\_\_\_\_

**Enrollments-AY 1995-96**

Total Enrollment No.	U.S. Citizens (%*)	African American (%*)	Hispanic (%*)	Native American (%*)	Pacific Islanders (%*)

< % of Total Enrollment of U.S. Citizens. Note in parenthesis next to the total number, the number of individuals with disabilities i.e., 356 (7)

**Degrees Awarded-Academic Year 1995-96**

Degrees	Total	U.S. Citizens (%*)	African American (%*)	Hispanic (%*)	Native American (%*)	Pacific Islanders (%*)
<b>Bachelors</b>						
<b>Masters</b>						
<b>Ph.D.'s</b>						

Note in parenthesis next to the total number, the number of individuals with disabilities i.e., 356 (7)



**PAIR 1997**  
**Budget Form**

From \_\_\_\_\_ To \_\_\_\_\_

	A	NASA USE ONLY	
		B	C
1. Direct Labor (salaries, wages, fringe benefits)			
2. Other Direct Costs			
a. Subcontracts			
b. Consultants			
c. Equipment			
d. Supplies			
e. Travel			
f. Other			
3. Indirect Costs			
4. Other Applicable Costs			
5. Subtotal - Estimated Costs			
6. Less proposed cost sharing (if any)			
7. Carryover Funds			
a. Anticipated amount			
b. Amount used to reduce budget			XXXXXXX
8. Total Estimated Costs	XXXXXXX	XXXXXXX	

### **General Budget Instructions**

1. Provide a separate budget form for each year of proposed research and a summary form.
2. Grantee estimated cost should be entered in the first column. Columns two and three are for NASA use only. Column three represents the approved grant budget.
3. Provide in attachments to the budget summary the detailed computations of estimates in each cost category, along with any narrative explanation required to fully explain proposed costs.
4. General-purpose, non-technical equipment is not allowable as a direct cost to NASA grants unless specifically approved by the grant officer.
5. In connection with indirect cost provide the name, address, and telephone number of the Federal agency and official having cognizance over such matters for the institution.

### **Line-by-Line Instructions**

1. Direct Labor (salaries, wages and fringe benefits): Attachments should list number and titles of personnel, amount of time to be devoted to the grant and hourly rates of pay.
2. Total Direct Labor Hours: Show total number of estimated labor hours required to accomplish the task.
3. Other Direct Costs:
  - a. Subcontractors - Attachments should describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting this effort.
  - b. Consultants - Identify consultants to be used, why they are necessary, time to be spent on the projects and rates of pay (not to exceed the equivalent of the daily rate for GS-18 in Federal service: \$429 per day as of January 19, 1992, excluding, expenses and indirect cost).
  - c. Equipment - List separately and explain the need for items of equipment exceeding \$1,000. Describe the basis for the estimated cost.
  - d. Supplies - Provide general categories of needed supplies, the method of acquisition, estimated cost, and the basis for the estimate.
  - e. Travel - List proposed trips individually, describe their purpose in relation to the grant, provide dates, destination, and number of travelers where known, and explain how the cost for each was derived.
  - f. Other - Enter the total of any other direct costs not covered by 3a through 3e. Attach an itemized list explaining the need for each item and the basis for the estimate.
    4. Indirect Costs: Identify indirect cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. If unproved rates are used, explain why and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.
    5. Other Applicable Costs: Enter the total of any other applicable costs. Attach an itemized list explaining the need for each item and the basis for the estimate.
    6. Subtotal — Estimate Costs: Enter the sum of items 1, 3.a, through 3.f, 4, and 5.
    7. Less Proposed Cost Sharing (if any): Enter the amount proposed if any. If cost sharing is based on specific cost items, identify each item and amount in attachment.
    8. Total Estimate Costs: Enter the total after subtracting item 7 from item 6.

## **Purchase of Special Purpose Equipment**

Office of Management and Budget (OMB) Circular A-21, Cost Principles for Educational Institutions:, Paragraph J.16 (b)(2), states "Capital expenditures for special purpose equipment are allowable as direct charges, provided that the acquisition of items having a unit cost of \$1,000 or more is approved in advance by the sponsoring agency."

"Special purpose equipment" means equipment, the use of which is limited to research, medical, scientific or other technical activities. Examples of special purpose equipment include, spectrometers, microscopes, etc.

Special purpose equipment has been identified as a direct charge to the grant identified above. Approval of item/s as a direct charge to the Government requires certification that the equipment will not be used for other than the purpose of research.

If additional space is needed, please use plain paper.

1. Description of equipment:

2. Justification for equipment use:

3. Justification of why the equipment cannot be purchased with indirect funds:

**Detailed Budget (Equipment List)**

Item (Descriptive name, probable brand, and model)	Quantity	Unit Price	Basis	Total Cost (Discounted)	Justification

Total Equipment: \_\_\_\_\_  
 Non-NASA Contribution: \_\_\_\_\_  
 Cost to NASA: \_\_\_\_\_

NASA INSTALLATIONS/JPL CENTER OF EXCELLENCE AREA

<b>Center</b>	<b>Designated Center of Excellence Area</b>	<b>Mission Area</b>
Ames Research Center www.arc.nasa.gov	Information Technology	Aviation Operations Systems and Astrobiology
Dryden Flight Research Center www.dfrc.nasa.gov	Atmospheric Flight Operations	Flight Research
Goddard Space Flight Center www.gsfc.nasa.gov	Scientific Research	Earth Science and Physics and Astronomy
Jet Propulsion Laboratory www.jpl.nasa.gov	Deep Space Systems	Planetary Science and Exploration
Johnson Space Center www.jsc.nasa.gov	Human Operations in Space	Human Exploration and Astro Materials
Kennedy Space Center www.ksc.nasa.gov	Launch and Payload Processing Systems	Space Launch
Langley Research Center www.larc.nasa.gov	Structure and Materials	Airframe Systems and Atmospheric Science
Lewis Research Center www.lerc.nasa.gov	Turbomachinery	Aeropulsion
Marshall Space Flight Center www.msfc.nasa.gov	Space Propulsion	Transportation Systems Development and Microgravity
Stennis Space Center www.ssc.nasa.gov	Rocket Propulsion Test	Propulsion Test

National Aeronautics and Space Administration  
Office of Equal Opportunity Programs (OEO)  
Minority University Research and Education Division (MURED)