

University Research Centers
Type of Agreement: Cooperative Agreements
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PROJECT DESCRIPTION

The University Research Centers (URC) are multi-disciplinary scientific, engineering and/or commercial research centers at host universities from Minority Institutions (MI). URCs provide a broad-based, competitive NASA-related research capability among the Nation's MIs that foster new aerospace science and technology concepts. Designed to expand the Nation's base for aerospace research and development, URCs provide mechanisms for expanded participation by faculty and students of MIs in mainstream research, and increase the number of underrepresented and underserved U.S. students obtaining advanced degrees in NASA-related fields. URCs are collaborative Centers conducted in cooperation with NASA's Mission Directorates and NASA Centers, substantially contributing to NASA's space and aeronautics goals and objectives.

The first competition for URC was held in Fiscal Year (FY) 1991 open only to HBCUs. It resulted in five-year awards to seven universities designated as NASA HBCU Research Centers. A second competition for new awards, open to both HBCUs and Other Minority Universities (OMU), was held in FY 1995, resulting in five-year awards to four HBCUs and three OMUs designated as Minority URCs. Shortly thereafter, the HBCU Research Centers and the Minority URCs were formally combined into a single program, with the two sets of awardees designated as Group 1 and Group 2, respectively.

In FY 1996, the Group 1 URCs were invited to propose for a second five-year period. After extensive reviews, all seven Group 1 URCs were awarded a second five-year term. In FY 2000, the Group 2 Centers were renewed for a second five-year period after extensive reviews. In FY 2002, eleven awards were made to Group 3 URCs. New five year awards were made to four HBCUs, four OMUs. Additionally, three Group 1 URCs were renewed for four years. In FY 2007, seven awards were made as Group 4 URCs.

PROJECT GOALS

The overall goal of the URC project is to continue NASA's commitment to achieving a broad-based, competitive aerospace research and technology development capability at MIs that will:

- Expand the nation's base for aerospace research and development by fostering new aerospace research and technology development concepts;
- Develop mechanisms for increased participation by faculty and students at MIs in the research programs of NASA's Mission Directorates; and

- Increase the numbers of undergraduate and graduate degrees awarded to U.S. citizens from MIs in NASA-related fields.

The specific objectives for URCs are to:

- Establish significant, multi-disciplinary scientific, engineering, and/or commercial research centers at the host university that contribute substantially to the programs of one or more of the four NASA Mission Directorates described in the NASA Strategic Plan;
- Move increasingly towards gaining support from sources outside the URC project by aggressively pursuing additional funding opportunities offered by the NASA Mission Directorates, industry, and other funding agencies; and
- Improve the rates at which U.S. citizens, who historically have been underrepresented in NASA-related fields, are awarded undergraduate and graduate degrees at their respective universities in NASA-related fields.

PROJECT BENEFIT TO OUTCOME

Outcome 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goal through a portfolio of investment.

Although the URC supports all of Outcome 1, the project is specifically designed to contribute to Objectives 1.1, 1.2, and 1.5 and addresses the associated measures of output.

Objective 1.1 Faculty and Research Support

Objective: **(Employ)** Provide NASA competency-building education and research opportunities for faculty, researchers, and post-doctoral fellows.

Objective 1.2 - Student Support

Objective: **(Educate)** Provide NASA competency-building education and research opportunities to individuals to develop qualified undergraduate & graduate students who are prepared for employment in STEM disciplines at NASA, industry, & higher education.

Objective 1.5 – Targeted Institution Research and Academic Infrastructure

Objective: **(Employ)** Improve the ability of targeted institutions to compete for NASA research and development work.

PROJECT ACCOMPLISHMENTS

The program supported 14 projects for the 2007 funding cycle. As a result, the following overall accomplishments were made:

Staffing

78 faculty members whom 46 were minorities engaged in research as a result of the project;
109 research Associates/Assistants whom 73 were minorities were engaged in research as a result of the project;

129 Graduates students of which 96 were minorities participated in the projects;
33 post-doctoral students of which 28 were minorities participated in the project;
29 other individuals of whom 26 were minorities engaged in activities associated with the projects;

Publications

As a result of the project, there were
257 publications
3,565 non-student authors
281 student authors
257 Primary NASA-related disciplines

Presentations

A large number of presentations were made as follows:
166 Peer reviewed national and international conferences and at NASA Centers
633 Non-student presenters
404 Student presenters
128 were in disciplines related to NASA

Panels

Participants served on 2 panels for the NASA division that provided the grants
Participants served on 3 panels for other NASA divisions
Participants served on 21 panels for other organizations

Patents/copyrights

9 patents pending
7 copyrights pending
2 copyrights received as a result of the projects

Course Development

6 courses were developed or enhanced as a result of NASA funding
6 courses were developed in the areas of Earth Science (3), Environmental Science (1) and Material Science (2);
5 courses have been formally approved by an appropriate body for inclusion in the institutional curriculum
5 courses are to become a regular part of the curriculum

Curriculum Development

31 curriculum development initiatives have been created as a result NASA funding; Of the 31 initiatives, 16 have been infused into the curriculum as a result of NASA funding; 11 initiatives have been disseminated to the general research and/or education community in different venues such as papers and presentation;

Partnerships

63 partnerships were formed as a result of the projects. Excluding NASA Centers, 38 partnerships were formed to facilitate research related to the NASA project. Partners were formed in the disciplines of Aerospace Engineering, Earth science, Electrical Engineering, Material Sciences and Physics.

PROJECT CONTRIBUTIONS TO PART MEASURES

Outcome 1.1 Faculty and Research Support- Minority institutions can compete more successfully for the best and brightest faculty and students and as a result position themselves to supply NASA with a cadre of qualified researchers to address the needs of human resources at NASA and at other scientific organizations currently and in the future. Faculty at MIs are better able to participate in advanced research opportunities that enhance their teaching capability in STEM related areas and support the teaching-learning process.

Publications 257

Peer Reviewed: 209

Patents: 9 Pending

Copyrights: 7 Copyright Pending and 2 received

Outcome 1.2 Student Support- Research opportunities at the MIs allows the institutions to recruit more aggressively talented students from high schools and undergraduate universities to matriculate at MIs to pursue and complete undergraduate and graduate degrees in STEM disciplines.

Participants- 512 Undergraduate & Graduate Students

Graduates - 52 B.S. in STEM

39 M.S. in STEM

11 Doctoral in STEM

Outcome 1.5 Targeted Institution Research and Academic Infrastructure- Increased support from sources outside of the URC project assist with the sustaining of research activity at the host institution with NASA, other federal agencies and industry.

Courses Developed – 4 new STEM Courses; 2 Enhanced in STEM;

Leverage Funding (Other Gov't and Industry)

82 Proposals Submitted; 41 Funded; Total \$26,573,174

IMPROVEMENTS MADE IN THE PAST YEAR

- Project Management of URC transferred to Dryden Flight Research Center
- Development and announcement of Project Manager Position Description

- Developed a workshop to strengthen the Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), in the grant and contracting arena. Partnered with Marshall Space Flight Center's Small Business Office.
- Developed the NASA Group 3 URC Solicitation. The first solicitation for URC since 2002.

PROJECT PARTNERS

A myriad of partnerships were developed with the grantee institutions listed below.

Norfolk State University
Hampton University
Clark Atlanta University
Morgan State University
Tuskegee University
Texas Southern University
Southern University and Agricultural and Mechanical College at Baton Rouge
Howard University
Fisk University
University of Texas at Brownsville
City University of New York City College
University of Puerto Rico-Piedras Campus
California State University-Los Angeles