Mississippi Space Grant Consortium (MSSGC) 2007 Annual Performance Data

General Information

Mississippi Space Grant Consortium (MSSGC)
Lead Institution: University of Mississippi
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MSSGC Affiliates:

Comprehensive Universities
The University of Mississippi (UM)
The University of Southern Mississippi (USM)
Mississippi State University (MSU)
Jackson State University (JSU)

Regional Universities
Alcorn State University (ASU)
Delta State University (DSU)
Mississippi University for Women (MUW)
Mississippi Valley State University (MVSU)

Community Colleges
Coahoma Community College (CCC)
Hinds Community College (HCC)
Itawamba Community College (ICC)
Meridian Community College (MCC)
Mississippi Delta Community College (MDCC)
Pearl River Community College (PRCC)
Mississippi Gulf Coast Community College (MGCCC)
Northeast Mississippi Community College (NEMCC)

Program Description

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The MS Space Grant Consortium (MSSGC) is a Designated Consortium funded at a level of $590,000 for fiscal year 2007.

Program Relevance to NASA

Space Grant consortia build human capital and research expertise to support NASA programs and missions, expand NASA's expertise and educational networks, and bring knowledge and awareness of space to a broad range of constituents in every state.

MSSGC Benefits to the State of Mississippi

The MSSGC provides new faculty at universities within the Consortium the opportunity to pursue seed grants, many of which subsequently lead to larger grants from NASA and other agencies. Students have the opportunity to work for NASA and aerospace-related industry within the state. Companies have the opportunity to select students from all of the state universities to work for the summer. Many of these internships result in offers of permanent employment. .

MSSGC Program Goals

Goal #1: Encourage and support university and community college affiliate STEM faculty to engage in faculty development, NASA sponsored faculty opportunities, curriculum development and other enhancement activities particularly in the geospatial fields (seminars, workshops, etc.).
Goal #2: Increase collaborative projects among the universities and community colleges.
Goal #3: Support mentor/tutor programs at the affiliates.
Goal #4: Increase research opportunities for undergraduate students.
Goal #5: Increase research opportunities for graduate students.
Goal #6: Establish research opportunities with local aerospace-related industries.
Goal #7: Continue to support the MSSGC Student Satellite Program.
Goal #8: Foster and nurture MSSGC, aerospace-related industry, and NASA Center partnerships to address workforce issues.
Goal #9: Seek new alliances with the remaining higher education public institutions in the state.
Goal #10: Foster and nurture a strong STEM educational base from K-12 by providing professional development for K-12 STEM educators.
Goal #11: Supplement innovative teaching and learning experiences by expanding the mini-grant program.
Goal #12: Enhance K- 12/Higher Education programs.
Goal #13: Support museums, planetariums, astronomical associations, and other public institutions to deliver science-related programs.
Goal #14: Continually maintain and expand the MSSGC Website as a resource to the general public, educators, students, industry, researchers, affiliates, etc.

MSSGC Program + Student Accomplishments: FY07

The key MSSGC accomplishments for FY07 include:

- **MSSGC Workforce Development Program**

The Mississippi Space Grant Consortium (MSSGC) implemented a workforce development program in 2003. This highly successful program is comprised of a student internship and a community college faculty fellowship program. The MSSGC established partnerships with aerospace-related industries in Mississippi and with NASA Stennis,

Marshall and Kennedy Space Centers that provided ten-week internships for the summer 2007 for six undergraduate students and eight-week summer fellowships for four community college faculty at the partner facilities.

❖ **Student Internships at NASA Centers**

MSSGC funded 6 students for summer internships: (1) student at Langley/LARSS program, (5) students at NASA/Marshall.

❖ **Scholarship and Fellowship Programs**

A. MSSGC awarded four $17,000 fellowships. Fellows are required to be a resource person to a teacher in one of their graduate institution's neighboring K-12 schools for ten hours per week.

B. MSSGC Community College Graduate Program
MSSGC funded (10) awards at $3,000 each to Community College graduates to complete their STEM degree at a four year MSSGC affiliate university.

C. Affiliates' Fellowship and Scholarship Programs
MSSGC affiliates funded (over $90,000) 50 fellowships/scholarships for students in the STEM field.

❖ **Research Infrastructure Programs**

A. MSSGC Infrastructure Program
MSSGC Review Panel selected two projects in December, 2007. Preference was given to projects that related to NASA's research needs, had a strong interdisciplinary team, included new faculty and directly involved students. Projects selected are: (1) "Low Power Cooperative Source Channel Coding and Routing in Wireless Sensor Networks," (UM/USM $25,000) and (2) "Evaluation of the Cryogenic Fracture Toughness of Polymeric Composites for Pressure Vessels," (MSU/NASA/Marshall, $25,000)

B. Affiliates' Research Infrastructure Programs
MSSGC affiliates funded (over $100,000) for STEM research at their facilities involving student/faculty research.

❖ **Higher Education Programs**

A. MSSGC Affiliate MSU has funded the University Student Launch Initiative: two student teams designed and built rockets and participated in the competitive launch at NASA/Marshall and the AIAA Southeastern Region Student Conference.

B. MSSGC Affiliate USM funds a spring "Innovative Computing Solution Competition." Students are encouraged to contact local businesses, medical and industrial communities for projects. This goal is to encourage students and motivate their innovativeness in developing computer solutions and programs in the working environment. Presentations are judged by the School of Computing Faculty.

❖ **K-12 Programs**

A. MSSGC Annual MSSGC Teachers Conference The workshop was held January 18 and 19, 2008 at the University of MS. Over 70 middle school teachers attended with speakers from the Consortium, NASA/Stennis and its partners presenting topics in mathematics and science.

B. Provine High School: Robotics Team

Provine High School students designed and built a radio-controlled robot that competed in the F.I.R.S.T. Robotics Competition. The members of the Provine Robotics team are all minority students.

C. Tupelo High School**:**

This project included high school student science lectures, research activities, mentoring program.

D. Rainwater Observatory

Projects funded are four teacher workshops: two Backyard Astronomy workshops, Hands-On Astronomy workshop, and Astronomy to Classroom workshop.

E. Byers High School/Exploring Engineering

In this project, Byers High School students designed and built a radio-controlled robot that competed in the F.I.R.S.T. Robotics Competition.

F. Southeast Elementary School, Meridian, MS

This summer mathematics camp targeted 2^{nd} – 4^{th} grade students and focused on challenging hands-on functional activities.

G. University of Southern Mississippi

The University of Southern MS coordinated, developed, and published an astronomy-music curricular project for middle school science and music teachers' professional development activities. The project expanded an existing interdisciplinary NSF funded program including Audubon Mississippi and the Pascagoula School District.

❖ **General Public Programs**

A. Rainwater Observatory and Planetarium

The Rainwater Observatory and Planetarium received four awards for workshops. These workshops are open to the public, although many are designed for K-12 teachers. The director of the Rainwater Observatory is Mississippi's Solar System Educator, Mr. Jim Hill.

MSSGC Affiliates ICC and MCC each funds a "Backyard Astronomy Program" presented by Jim Hill, Director from the Rainwater Observatory and Planetarium, Mississippi's Solar System Educator open to all students and the general public.