

THE NATIONAL SPACE GRANT COLLEGE & FELLOWSHIP PROGRAM

FISCAL YEAR 2020 ANNUAL PERFORMANCE REPORT (APR)

FUNDING SOURCE:
OFFICE OF STEM ENGAGEMENT
SPACE GRANT

MANAGING ORGANIZATION:
NASA HEADQUARTERS OFFICE OF STEM ENGAGEMENT

DEPUTY PROGRAM MANAGER:
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MISSISSIPPI SPACE GRANT CONSORTIUM
LEAD INSTITUTION:
[THE UNIVERSITY OF MISSISSIPPI]

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COOPERATIVE AGREEMENT/GRANT NUMBER:
[80NSSC20M0101]

ACTIVITY/PROGRAM DESCRIPTION: (100 – 250 words)

The Mississippi Space Grant Consortium (MSSGC) has eighteen affiliate institutions including the State's four comprehensive universities (UM, MSU, JSU*, USM), four regional universities (ASU*, MUW, DSU, MVSU*), and ten of the 15 MS community colleges (ICC, CCC*, MCC, MDCC, HCC*, MGCCC, NEMCC, PRCC, JCJC, SMCC). Five of its affiliates (indicated with *) are Historically Black Colleges and Universities (HBCU), and one is an institution serving primarily women (MUW). MSSGC programs reach a majority of the state's students from all regions geographically and demographically through both statewide and affiliate activities. Seventeen of the affiliates are located in rural to small city areas with the HBCU Jackson State University the only affiliate in a large metropolitan area. MSSGC's partnerships include all of the NASA Centers through student internships and research partnerships; Mississippi-based, NASA-related industries; informal science centers; and educational partners throughout the state, including the state's two private HBCU's (Rust College & Tougaloo College).

ACTIVITY/PROGRAM GOALS: (Bulleted list)

MSSGC's program engages with NASA's mission through utilization of NASA resources and contribution to NASA's objectives. Broadly, MSSGC operates a coordinated network that (1) funds opportunities for students to engage with the NASA mission at the undergraduate and graduate level, (2) pilots research and educational programs that enhance the STEM ecosystem in Mississippi, and (3) disseminates NASA resources and information about NASA's needs and objectives through a statewide affiliate network.

Goals

- A. **“Engage”** – Establish a distributed network of programs that directly supports research and education in NASA-relevant STEM pursuits throughout the state.
- B. **“Empower”** – On an individual level, equip and inspire students, particularly those from underrepresented groups, to pursue careers in Science, Technology, Engineering and Mathematics.
- C. **“Enhance”** – Enhance and nurture the STEM-learners' educational/support network to insure development of a STEM-literate, NASA-relevant workforce for Mississippi and the Nation.
- D. **“Enlighten”** – Contribute to the general scientific literacy of the population.

Objectives

Specific, Measurable, Appropriate, Realistic, Timely (SMART)

In support of Goal A “Engage”

A1 – Fellowships: Annually, fund a minimum of 8 graduate fellows among the four comprehensive universities (UM, MSU, JSU, USM).

A2 – Internships: Annually, fund a minimum of 9 undergraduate internships between both NASA and MS Industry opportunities.

A3 – Affiliates: Annually, fund a minimum of 16 affiliate institutions to establish a state-wide distributed network for Space Grant in Mississippi.

A4 – Student-Led STEM: Annually, fund a minimum of 2 student-led STEM teams.

A5 – Seed Grants: Annually, fund a minimum of 2 seed grants in NASA STEM to foster collaboration and support research opportunities for undergraduates.

A6 – STEM Engagement: Annually, fund a minimum of 4 mini-grant activities to enhance K-12 STEM education in Mississippi.

A7 – Foundations: Annually, host a minimum of 50 participants in STEM efficacy training to enhance the STEM ecosystem in Mississippi.

A8 – Reach: Meet or exceed the (# of direct participants)/(\$1000 of direct NASA funds) on an annual basis (0.596 for 2018; not including NCAS).

In support of Goal B “Empower”

B1 – Obtain a Degree: Annually, successfully identify the next step after graduation for 80% of the students receiving significant direct awards by the program. (79.2% for 2014-2018 awards)

B2 – Remain in STEM Disciplines: Annually, at least 75% of the individuals receiving significant direct awards remain in STEM disciplines as evidenced by their next step after graduation. (74.5% for 2014-2018 awards)

B3 – Pursue Advanced Degrees: On average, over the course of the contract, for students receiving significant direct support, exceed the percentage of individuals that pursue advanced degrees by at least 40% as compared to the general population of individuals receiving comparable STEM degrees as reported by the National Association of Colleges and Employers. (34.3% for 2014-2018 awards vs. 24.6% for the general population receiving comparable STEM degrees = 39.3% increase)

B4 – Diversity, Women: On average, over the course of the contract, match or exceed the percentage of significant direct awards made to women to the percentage enrollment of women in 2016 as reported by the DoE NCES. (53.2 % for 2014-2018 awards – 60.0% target)

B5 – Diversity, Underrepresented: On average, over the course of the contract, match or exceed the percentage of significant direct awards made to racially or ethnically underrepresented individuals to the percentage enrollment of racially or ethnically underrepresented individuals in 2016 as reported by the DoE NCES. (41.3 % for 2014-2018 awards – 42% target)

In support of Goal C “Enhance”

C1 – Authentic Experiences: Annually, 75% of students supported by or participating in a MSSGC-sponsored program will agree¹ with the statement, “I gained useful skills and experiences from my participation in this Space Grant program.”

C2 – Effectiveness: Annually, 75% of teachers participating in a MSSGC-sponsored event, will agree with the statement, “The material presented will make me a more effective STEM teacher.”

C3 – Inspire Future Generations: Annually, 80% of teachers working with MSSGC Graduate Fellows will agree with the statement, “The fellow’s presence in my classroom has inspired some of my students to pursue further study in the STEM fields who may otherwise have not.”

In support of Goal D “Enlighten”

D1 – Increase Awareness: Annually, 75% of participants at MSSGC-sponsored educational programs/events will agree with the statement, “The material presented in this program has increased my awareness of current science or math issues.”

D2 – NASA Opportunities: Annually, 80% of MSSGC affiliates and partners will agree with the statement, “The MSSGC office has kept my campus abreast of relevant NASA and Space Grant opportunities and announcements.”

**ACTIVITY/PROGRAM CONTRIBUTIONS TO PERFORMANCE GOALS (PG)
AND SUCCESS CRITERIA**

List appropriate FY 2020 PGs and Success Criteria, and write a brief description of the project activity’s contribution to each.

PG 3.3.3: Provide opportunities for students to engage with NASA’s aeronautics, space, and science people, content, and facilities in support of a diverse future NASA and aerospace industry workforce.

Response to PG 3.3.3 and PG 3.3.3 Success Criteria goes here:

MSSGC opportunities, which support student engagement in NASA’s mission of a diverse future NASA and aerospace industry workforce, include fellowships, internships, mentored research, higher education projects, and student lead STEM activities. In FY2020, MSSGC direct funded 116 students: 79 scholarships and fellowships, 3 NASA Centers Internships, 6 Summer Industry Internship, 13 higher education project students and 15 mentored research students. These awards aligned with NASA ARMD, HEOMD, and SMD Directorates. IES/US Department of Education stats: MS minority enrollment average is 41.3%. MSSGC direct funded underrepresented % is 46.6% with 45.7% female. In FY2020, MSSGC significant award totaled 91 students: 39.6% were awarded to underrepresented students, 58.2% were awarded to males and 41.2% were awarded to females. FY20 MSSGC objectives A1, A2, A3, A4, A5, A6, A7, B1, B2, B3, C1 met.

MSSGC funded three internships at NASA Center (2 at LRC and 1 at SSC) and six Summer Industry Internships at Lockheed Martin located at Stennis Space Center. Due to COVID-19, NASA Center Internships were held virtually. The Summer Industry Internships were held in person with safely protocols put in place to help ensure the safety of the staff and interns at Lockheed Martin.

PG 3.3.4: Enhance the effectiveness of education investments using performance assessment and evaluation-driven processes.

PG 3.3.3 Success Criteria: Achieve milestone(s) in the implementation of performance assessment and evaluation of STEM engagement investments. Milestone: Award one competitive agreement to conduct a multi-year, third-party, project-level evaluation of the National Space Grant College and Fellowship Project.

Response to PG 3.3.4 and PG 3.3.4 Success Criteria goes here:

The effectiveness of our program is assessed through multiple strategies:

- Annual meeting of the lead and affiliate institutions to discuss and evaluate current practices and share best practices
- Evaluation of the Annual MSSSG Teacher Conference by attendees
 - 100% of the 2021 Teacher Conference attendees agreed, “The material presented at this conference will make me a more effective math/science teacher”.
 - 97% of the 2021 Teacher Conference attendees agreed, “Materials presented at this conference has increased my knowledge of current math or science issues.”
- Evaluation of the NASA Center and Summer Industry Internship programs
- Evaluation of the MSSGC Graduate Fellowship Research Fellowship by the current Fellows
- Evaluations by the teacher or site coordinator with whom the MSSGC Graduate Research Fellow conducted their K-12 Outreach Project
- Annual Affiliate Reports submitted to the MSSGC Administrative Office
- Progress reports submitted by sub-awardees
- Evaluations conducted by Affiliates at MSSGC sponsored programs

PG 3.3.5: Provide opportunities for students to contribute to NASA’s aeronautics, space, and science missions and work in exploration and discovery.

PG 3.3.3 Success Criteria: Number of paper presentations and peer-reviewed research publications (and beginning in FY2021 to include student proposed solutions and products) resulting from STEM engagement investments. (Target number is 1,300)

Response to PG 3.3.5 and PG 3.3.5 Success Criteria goes here:

Due to COVID-19, many scheduled conferences were either rescheduled or cancelled. Nine MSSGC funded individuals presented their research at conferences: AIAA Regional Student Conference, Undergraduate Research Symposium (Mississippi State University), Motors in Quarantine Webinar Series (Warwick University), 2020 Bayous and Bays Symposium, and the Mississippi IDeA Network of Biomedical Research Excellence Conference.

ACTIVITY/PROGRAM ACCOMPLISHMENTS: (250 – 500 words)

- MSSGC funded 88 NIFS awards. Additionally, 13 significant Higher Education and 15 significant Research Infrastructure awards were funded. (A1, A2, B1, B2, B3, B4, B5, C1)
- MSSGC awarded eight \$22,500 Graduate Research Awards for 2020 – 2021 (A1, C3)
- The MSSGC 2021 Teacher Conference was held virtually on January 8-9, 2021 with fifty-five 5th – 8th grade Science and Math teachers. Four MSSGC Fellows and five Center for Math and Science (CMSE) Fellows served as presenters. (C2)
- Space Grant funded students at Hinds Community College were able to participate in the STEMposium and conduct virtual tours of Mississippi Valley State University, Tennessee State University and Michigan State University. The STEMposium included professionals across various STEM fields and Kelly Martin-Rivers, Director of Education, Stennis Space Center, served as a speaker. (B2, B5, C1)
- At Mississippi University for Women, twenty-one students were funded to conduct a mock, physically-distanced, pandemic-friendly symposium associated with a comparative anatomy class. The students presented posters summarizing a comparative anatomy paper they chose and explained the research to fellow students and faculty members who were invited to the symposium. (B4, B5, C1, GSFC, ARC, JPL)
- Northeast Mississippi Community College hosted a virtual Regional Science Fair.
**Final attendance numbers have not been received, but will be entered into the new NAS data reporting system. (C1, SMD)

ACTIVITY/PROGRAM IMPROVEMENTS MADE IN THE PAST YEAR:

(e.g. activity management, cost efficiencies)(100 – 250 words)

- In March 2021, requests were emailed to affiliates regarding documentation for the creation of their 2021-2022 subcontracts. A deadline of May 10th was provided. This time frame will allow all affiliates enough time to prepare and submit their signed documents to the MSSGC Administration Office. This is a process that is reevaluated annually.
- Affiliates were required to utilize a new Affiliate Report format which included each affiliate providing information on how the project(s) they conducted met MSSGC objectives and aligned with NASA Mission Priorities.
- To mitigate the adverse impacts of COVID-19 on its Tutoring Program, Alcorn State University purchased a subscription for an online tutoring platform to enhance their tutoring program as they transitioned from in-person to online tutoring during COVID-19 and post-COVID-19.

ACTIVITY/PROGRAM PARTNERS AND ROLE OF PARTNERS IN ACTIVITY

EXECUTION:

Bulleted list or table. May include a brief description of how partners were involved in the project activity.

The role of MSSGC partners is vital to the success of programs funded by the consortium. The Center for Math and Science Education (CMSE) at The University of Mississippi serves in various capacities to assist with the coordination of MSSGC sponsored programs. CMSE takes the lead in the coordination of the Annual Teacher Conference. CMSE staff and Fellows also serve as presenters for the conference. CMSE also annually conducts the orientation for the MSSGC Graduate Research Fellows. (aligns with SMD)

MSSGC also partners with Lockheed-Martin at Stennis Space Center to provide students with an authentic STEM experience through the Summer Industry Internship Program. Selected students are placed with a research group at Lockheed Martin for an on-site learning experience for 10 weeks. The main purpose of the program is to offer exposure to research and training and to enhance aerospace and aerospace related training and learning opportunities for students. (aligns with SSC)

CURRENT AND PROJECTED CHALLENGES:

Identify any current or projected challenges in the implementation or execution of activities. Explain how the management team is working to address the challenges identified and/or how National Program Staff can assist.

The main challenges faced by the consortium center around the impact of COVID-19. Numerous activities were canceled as a result of the pandemic. ICC and MCC were not able to host their annual Backyard Astronomy events for the general public. Travel plans to Marshall Space Flight Center, campus visits for community college students, Mississippi Academy of Sciences Conference and other conferences were canceled. Several of our affiliates are still conducting virtual learning only. This led to affiliates not being able to allocate funds as originally planned. To assist our affiliates, ideas regarding the reallocation of funds were offered by the MSSGC Administrative Office and budget revisions were approved by the MSSGC Director.

A projected challenge for the consortium is that while some institutions are moving back to full on-campus classes for Fall 2021, other affiliate institutions have not committed to that transition yet. Some affiliates may continue to see interruptions of their planned activities as a result of COVID-19 and may continue to experience problems with the allocation of funds.

REFERENCES (optional – include only if needed):

(APA style reference list)

N/A