

Strategic Plan for the NASA Georgia Space Grant Consortium

Updated January 2005

Vision

The Georgia Space Grant Consortium (GSGC) vision is to promote all disciplines of engineering, science, math, computer science, and technology in a manner that will accomplish national priorities in education, research, and public service with a focus on engaging underrepresented groups, and institutions such as HBCUs and female colleges and universities.

Mission

The GSGC through its network of colleges, universities, industrial affiliates, nonprofit organizations, and government agencies, will work throughout the State of Georgia to conduct programs of research, education, and outreach in aerospace-related fields to help maintain, increase and diversify the technological workforce in the United States.

The role of the Georgia Space Grant consortium will be to play a proactive rather than reactive role in increasing the technological workforce. The Georgia Space Grant has the ability to act as an integrator bringing researchers, the general public, educators, and students together to realize NASA's *Vision for Space Exploration*.

Goals and Strategies

Consortium Management

Goal 1 To ensure full participation of Consortium affiliates via a framework of dynamic policies for fiscal management, board composition, communications, relationship building and evaluation.

Objective 1.1 Build an infrastructure ready to maximize programs that complement existing programs or complementary programs (i.e., SHARP Plus, EPSCoR, and other existing and future NASA programs).

Strategy 1.1.1: Hire a second FTE to serve as a Program Coordinator to relieve Program Manager of specified responsibilities and allow the pursuit of complementary relationships and opportunities.

Outcome Indicators: 1 FTE Program Coordinator hired by end of 2nd quarter of Year 1.

Strategy 1.1.2: Develop improved mechanisms for setting priorities and identifying responsive activities
Outcome Indicators: Update and institute job descriptions for GSGC staff, Consortium Board Co-Directors, Advisory Board, and committees.

Strategy 1.1.3: Reduce bureaucratic layers in disseminating funds by restricting when affiliate co-directors

can request program support or additional funding.

Outcome Indicators: Annual budget call and requests for funding due 3rd quarter of Year 1.

Objective 1.2 Implement written policies ensuring fiscal responsibility and affiliate accountability.

Strategy 1.2.1: Update and execute policy creating an Advisory Board charged with oversight of Consortium activities.

Outcome Indicators: Advisory Board formed by end of 1st quarter of Year 1; commences meeting quarterly.

Strategy 1.2.2: Update and execute fiscal policy to ensure fair and equitable distribution of funds.

Outcome Indicators: Advisory Board reviews fiscal policies annually.

Strategy 1.2.3: Update and execute policy outlining addition and deletion of affiliates.

Outcome Indicators: Consortium Board reviews petitions twice a year.

Objective 1.3 Facilitate active participation for Consortium Board Co-Directors, Advisory Board and committees through multiple communication mechanisms.

Strategy 1.3.1: Hold semi-annual Consortium Board Meetings.

Outcome Indicators: 100% director attendance, or representation at semi-annual Consortium Board Meetings.

Strategy 1.3.2: Hold quarterly Advisory Board Meetings.

Outcome Indicators: 90% member attendance at quarterly Advisory Board Meetings.

Strategy 1.3.3: Produce quarterly newsletter with references to up-to-date website for most current information.

Outcome Indicators: 1 newsletter sent quarterly to Advisory Board, Consortium Board co-directors, and committee members starting 1st quarter of Year 1.

Strategy 1.3.4: Maintain current website and listserv address list.

Outcome Indicators: Website updated weekly.

Objective 1.4 Emphasize the responsibility of affiliates in building relationships with NASA Centers, legislature, private industry, non-academic affiliates, and HBCUs.

Strategy 1.4.1: Collect contacts from affiliates to include in a database for distribution of GSGC communications, public outreach invitations and publicity pieces.

Outcome Indicators: Each affiliate submits 5 contact names in the 1st quarter of Year 1.

Strategy 1.4.2: Utilize travel grants for affiliates proposing collaborations with private industry or NASA Centers.

Outcome Indicators: 2 new industry and NASA Center collaborations instituted by end of Year 1.

Objective 1.5 Evaluate GSGC programs to ensure that participation in NASA programs and research influences an increasing number of students to continue their STEM-related studies or enter STEM-related career paths, giving careful attention to retaining an efficient ratio of dollars per individual inspired.

Strategy 1.5.1: Collaborate with Arizona Space Grant to develop a longitudinal tracking system for GSGC-funded students.

Outcome Indicators: Longitudinal tracking system in place by end of Year 1.

Strategy 1.5.2: Ensure better documentation of programs with monthly calls for progress reports from affiliates for input into CMIS.

Outcome Indicators: CMIS data input updated monthly.

Strategy 1.5.3: Institute quality improvement controls for GSGC-funded research by requiring funded researchers to present findings to Advisory Board each year.

Outcome Indicators: 10 researchers from lead institution or affiliates to present to Advisory Board in 3rd quarter of Year 1.

Strategy 1.5.4: Reinforce evaluation of program effectiveness with efficiency standards by reducing ratio of dollars per individual inspired.

Outcome Indicators: Ratio of 35 dollars per individual inspired at end of Year 1; drops by 5% by end of Year 2.

Fellowship/Scholarship Program

Goal 2: To deliver a scholarship/fellowship program that stimulates STEM excellence for America's students and teachers, targeting underrepresented groups to build a diverse workforce pipeline in the STEM skills most needed by NASA and the State of Georgia.

Objective 2.1 Ensure competitive distribution of scholarship/fellowship funds.

Strategy 2.1.1: Institute a centralized statewide application process to ensure fair and equitable distribution of funds.

Outcome Indicator: 3 undergraduate scholarships awarded in Year 1.

Strategy 2.1.2: Target women and underrepresented populations with scholarship/fellowships for Ph.D.s in STEM disciplines.

Outcome Indicator: 100% of all students receiving GSGC funding for Ph.D.'s reflect underrepresented populations or women.

Strategy 2.1.3: Utilize pipeline to fund students from affiliate dual degree programs

Outcome Indicator: 30% of scholarships/fellowships awarded to graduates of affiliate dual degree programs.

Strategy 2.1.4: Utilize the GSGC advisory board for oversight of awards to ensure fair distribution.

Outcome Indicator: Awards reflect the diversity of the Consortium's membership, with 40% of awards to underrepresented populations by end of Year 1.

Objective 2.2 Partner student fellowship awardees to work with mentors inspired by NASA's *Vision*.

Strategy 2.2.1: Increase number of students placed at NASA academies and other NASA programs.

Outcome Indicator: 2 students placed at NASA Centers each year.

Strategy 2.2.2: Pair students with faculty mentors.

Outcome Indicator: 100% of students assigned a faculty mentor by end of Year 1.

Research Program

Goal 3: To support customer-focused research activities that develop innovative technologies, knowledge and infrastructures to shape decisions impacting human space exploration.

Objective 3.1 Integrate research efforts with those of NASA and other interested stakeholders, with emphasis on research with direct application to the state of Georgia.

Strategy 3.1.1: Facilitate researcher ties with aerospace industry.

Outcome Indicator: Secure 3 industry contacts by end of Year 1.

Strategy 3.1.2: Link NASA personnel, technology and resources to solutions for State agricultural issues.

Outcome Indicator: 5 research activities tie directly to NASA researchers by end of Year 1.

Strategy 3.1.3: Award travel grants to encourage faculty to visit field centers.

Outcome Indicator: At least 1 travel grant awarded for collaborative efforts with NASA in Year 1.

Objective 3.2 Provide tangible experiences for students to identify current and potential uses of NASA technologies.

Strategy 3.2.1: Expand existing collaborations with NASA Space Academies and the NASA C-9 Microgravity aircraft.

Outcome Indicator: Send 2 students to NASA Space Academies and co-sponsor 2 undergraduate student research projects for the NASA C-9 Microgravity aircraft in Year 1.

Objective 3.3 Emphasize support for Space Grant Fellows opportunities.

Strategy 3.3.1: Create new initiatives among consortium members to give Space Grant Fellows opportunities to work at GSGC member institutions.

Outcome Indicator: 1 Space Grant Fellows placed at GSGC member institutions during Year 1.

Strategy 3.3.2: Provide seed money for young faculty members to write proposals and start-up money for small research projects, with priority to young faculty members who mentor dual degree students or who have been space grant fellows and are currently working in the State of Georgia.

Outcome Indicator: 1 research grants awarded in Year 1

Objective 3.4 Ensure competitive distribution of research funds.

Strategy 3.4.1: Release an annual statewide call for proposals to all affiliates.

Outcome Indicator: 75% of all HBCU affiliates have at least one submission for each competition each year.

Strategy 3.4.2: Utilize a selection process that places special emphasis on collaboration at HBCUs.

Outcome Indicator: Awards will reflect the diversity of the consortium's membership, with 2 awards for collaborations at HBCUs in Year 1.

Strategy 3.4.3: Prioritize participation from underrepresented populations in research projects.

Outcome Indicator: 12 students from underrepresented populations participate in research projects in Year 1.

Objective 3.5 Disseminate research results to NASA, stakeholders, and national audience.

Strategy 3.5.1: Require research award recipients to submit research outcomes for publication in journals, conference proceedings and encourage them to submit to refereed academic publications.

Outcome Indicator: At least one publication will result from each funded project annually.

Education Program

Goal 4: To uphold a two-tier education program comprised of pre-college and higher education programs, tailored to the needs throughout the State of Georgia, to improve STEM education for our future workforce and inspire youth to enter technology fields.

Pre-College

Objective 4.1 Respond to the state of Georgia's STEM education needs for K-12 students, thus building a pipeline for the state's burgeoning technical workforce.

Strategy 4.1.1: Provide hands-on NASA-related activities at the elementary education level, with special emphasis on parental involvement.

Outcome Indicator: Kennesaw State oversees 5 Space Grant Fellows working with elementary teachers to provide direct hands-on science activities for students in Year 1; 100 middle school students from underrepresented populations participate in 2-week summer camp and academic year enrichment program; GSGC-sponsored job shadowing day at 2 middle schools in Year 1; Georgia Southern University hosts 5,000 visitors at 150 public planetarium events in Year 1.

Strategy 4.1.2: Provide hands-on NASA-related activities at the secondary education level.

Outcome Indicator (all for Year 1): 2 high school interns matched with each affiliate each year; 100 students from 4 high schools participate in Saturday Engineering workshops; 1 team representing 7 high schools participate in Southwest Georgia Model Bridge Building Contest; 50 high school students attend annual Physics Demonstration Night; 10 students

participate in National Space Grant Student Satellite Program.

Strategy 4.1.3: Provide judges and support for student science and engineering fairs at county, regional, state, national and international competitions.

Outcome Indicator: Space Grant Fellows, staff, and co-directors participate as judges at 5 student science and engineering fairs in Year 1.

Strategy 4.1.4: Subsidize affiliate-sponsored summer science, space and computer camps.

Outcome Indicator: 5 summer science, space and computer camps sponsored with GSGC funds in Year 1.

Objective 4.2 Motivate and inspire teachers in the state of Georgia with engaging STEM content based on NASA discoveries.

Strategy 4.2.1: Collaborate with Orbit Education, Inc., and Kennedy Space Flight Center Education Specialist to increase priority on teacher training in the STEM disciplines.

Outcome Indicator: Produce 10 professional development workshops each year, including Xtreme Science mini-conference for in-service and pre-service teachers, Space Week Educators' Workshop at the Coca-Cola Space Center, and school district-level activity workshops.

Strategy 4.2.2: Utilize Orbit Education, Inc., and Kennedy Space Flight Center collaboration to increase accessibility of content based on NASA's discoveries correlated to national education standards.

Outcome Indicator: Materials disseminated to 25 school systems, 4 museums and science centers, and 3 aerospace organizations by end of Year 1.

Strategy 4.2.3: Collaborate with organizations dedicated to working exclusively with teachers to increase STEM discipline training opportunities for teachers.

Outcome Indicator: 5 STEM-related programs delivered through CEISMC in Year 1.

Objective 4.3 Ensure a diverse future workforce pipeline reflective of Georgia's underrepresented populations.

Strategy 4.3.1: Utilize the Cooperative Developmental Energy Program to develop a continuous pipeline of students from underrepresented populations and female students from ninth grade through the Ph.D., majoring in mathematics, science, technology and engineering.

Outcome Indicator: 30 rising ninth grade minority students attend the 2-week Mathematics, Science and Engineering Academy in Year 1.

Strategy 4.3.2: Deliver pre-college program opportunities to urban and rural areas with large underrepresented populations and lower test scores.

Outcome Indicator: 12 pre-college programs delivered to school districts comprised of 90% underrepresented populations.

Objective 4.4 Promote GSGC's 75 pre-college education programs to teachers, students and parents.

Strategy 4.4.1: Encourage a shared vision of skills needed to train future scientists and engineers, along with a communications conduit to keep current on state STEM education circumstances.

Outcome Indicator: 3 affiliates participate on school boards, PTA's, booster clubs, K-12 teacher conferences, and after school programs such as Boys and Girls Club of America.

Strategy 4.4.2: Expand pre-college opportunities through collaboration with nationwide Space Grant Consortia.

Outcome Indicator: GSGC participates in 2 programs in Year 1 sponsored by other Space Grant Consortia (such as Texas Space Grant's "Liftoff").

Strategy 4.4.3: Foster relationships with Georgia's technology museums including the Children's Museum in Macon and the Museum of Aviation in Warner Robins.

Outcome Indicator: 2 representatives from science museums and Georgia extension service join GSGC Board of Directors by end of Year 1.

Strategy 4.4.4: Leverage electronic resources to disseminate STEM content to students, parents and teachers.

Outcome Indicator: 36 requests for information from Albany State University's Engineering website fulfilled in Year 1; 52 requests for

information from the Electronic Educator Resource Center fulfilled in Year 1.

Higher Education

- Objective 4.5 Develop a higher education program to increase retention levels in the STEM fields.
- Strategy 4.5.1: Collaborate with affiliates to provide mentoring opportunities to increase number and retention of students for graduate programs in the STEM disciplines.
Outcome Indicator: 12 students matched with mentors in the Graduate Mentor-Undergraduate Mentee Program in Year 1.
- Strategy 4.5.2: Utilize the Undergraduate Research Experience program to encourage students pursuing STEM degrees to advance to graduate-level programs in the STEM disciplines.
Outcome Indicator: 25% alumni of the Undergraduate Research Experience program enroll in graduate school programs by end of Year 1.
- Objective 4.6 Provide higher education students with tangible, customer-focused education activities rich in the STEM content necessary for space commerce and exploration.
- Strategy 4.6.1: Link higher education students to hands-on experiences in the scientific and technical disciplines.
Outcome Indicator: 10 students participate in the American Society of Civil Engineers Concrete Canoe competition in Year 1; 10 students participate in the NASA Means Business team in Year 1; 20 students utilize the wind tunnel lab at Albany State in Year 1; 20 students participate in Demonstration Tests for Hands-On Experience.
- Strategy 4.6.2: Maximize undergraduate microgravity teams' experiences through Texas Space Grant by requiring teams to present results to pre-college teachers and students.
Outcome Indicator: 5 students participate in Texas Space Grant Consortium undergraduate microgravity teams in Year 1, presenting their results to 100 K-12 students and their teachers.
- Strategy 4.6.3 Develop competitive undergraduate research Request for Proposals program.

Outcome Indicator: 10 proposals received for first call for proposals issued by 3rd quarter of Year 1.

Strategy 4.6.4 Strengthen ties to NASA Centers by identifying opportunities for hands-on experiences for higher education students.

Outcome Indicator: 5 higher education students matched to NASA Center activities by end of Year 1.

Objective 4.7 Maximize opportunities for underrepresented groups pursuing higher education.

Strategy 4.7.1: Collaborate with HBCUs to design programs to target and recruit underrepresented populations in the STEM fields.

Outcome Indicator: 90% retention rate of students from affiliate HBCUs in the dual degree program in Year 1.

Strategy 4.7.2: Utilize the NASA-funded Optics Lab at Morehouse College to support research conducted by students representative of underrepresented groups.

Outcome Indicator: 30 underrepresented students conduct research at Optics Lab.

Strategy 4.7.3: Conduct GRE prep sessions at HBCUs for underrepresented students pursuing the STEM disciplines.

Outcome Indicator: 80% of minority students attending GRE prep sessions enroll in graduate programs to pursue STEM disciplines by the end of Year 1.

Strategy 4.7.4: Sponsor student organizations supporting STEM disciplines and underrepresented groups.

Outcome Indicator: 5 student groups receive GSGC support, including American Institute of Aeronautics and Astronautics, Society of Women Engineers, Black Graduate Student Association...

Objective 4.8 Incorporate private industry resources to integrate GSGC higher education efforts with the STEM workforce needs of Georgia.

Strategy 4.8.1: Invite the best in the aerospace industry to participate by tapping affiliates' contacts.

Outcome Indicator: Each affiliate suggests a corporation participates in an introductory meeting with a representative from private

industry whom they have identified as someone who should be involved in GSGC activities.

Public Outreach

Goal 5: To collaborate with informal learning institutions and private industry representatives to engage the public in NASA's *Vision for Space Exploration* through a vigorous campaign to disseminate content based on NASA's discoveries and exploration.

Objective 5.1 Provide space-related educational materials to the general public, with particular emphasis on reaching underrepresented and under-served populations.

Strategy 5.1.1: Develop and maintain computer kiosks placed in non-standard venues, such as physicians' offices, hospitals, malls, parks and other venues located in under-served areas.

Outcome Indicator: 2 functioning kiosks strategically placed by end of Year 1.

Strategy 5.1.2: Develop, maintain and sponsor exhibits displaying NASA-related content, with priority for displays located in under-served areas.

Outcome Indicator: 4 exhibits presented by end of Year 1, 50% of which are located in under-served areas.

Strategy 5.1.3: Participate in statewide activities to disseminate information and provide training, such as Agricultural Extension Service Exhibitions, National Science Center events, Georgia Science Teach Association State Conference, the Warner Robins Air Force Base Open House, Science Day, National Space Day, Black History Month, National Engineering Day, as well as career and science fairs at the state, county and school levels.

Outcome Indicator: 12 statewide presentations, displays and activities led by GSGC staff and affiliates by end of Year 1.

Strategy 5.1.4: Increase affiliate participation in GSGC public outreach activities.

Outcome Indicator: All consortium members receive a calendar with dates for the year's general public outreach activities by January each year, with a schedule of member participation developed and distributed to all consortium members each subsequent February.

Objective 5.2 Work with the best in aerospace and private industry to stimulate technology transfer for application to space commerce.

- Strategy 5.2.1: Pursue research collaborations with space commerce applications with local industry, manufacturers and start-up companies.
Outcome Indicator: 5 collaborations with researchers and industry launched by end of Year 1.
- Strategy 5.2.2: Require students and faculty to present or publish results from research collaborations with local industry, manufacturers and start-up companies.
Outcome Indicator: 10 faculty and student research presentations at state, national and international conferences based on experiences with local industry initiatives by end of Year 1; 10 faculty and student papers submitted for publication by end of Year 1.
- Strategy 5.2.3: Bring together representatives from the government, private industry, and education sectors that have links to NASA at the *Making NASA Connections* conference.
Outcome Indicator: 100 people attend conference in Year 1.
- Strategy 5.2.4: Collaborate with professional organizations seeking a relationship and opportunities with NASA (i.e., National Technical Association, National Society of Black Engineers).
Outcome Indicator: 10 collaborations with professional organizations supported.