

WISCONSIN SPACE GRANT CONSORTIUM STRATEGIC PLAN 2020-2024



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Overview

The Wisconsin Space Grant Consortium (WSGC), constituted in 1990, is a Wisconsin-wide network of public and private universities and colleges, industry partners, government agencies, nonprofit associations, and other entities. The purpose of the Consortium is to coordinate and improve Wisconsin's future in aerospace science, design, and technology. The focus of the Consortium is to stimulate aerospace research, education, and outreach activities throughout the State. WSGC encourages cooperative programs among universities, aerospace industry, and government and encourages interdisciplinary, interuniversity, and university/industry training, research, and public service. It aids in the recruitment and training of professionals, especially women, under-represented minorities, and the developmentally challenged, for careers in aerospace science, design, and technology.

Vision

To provide opportunities for student and faculty engagement with the mission and activities of NASA in order to support vigorous development of the state's aerospace workforce.

Mission

The mission of NASA's Space Grant Program is to contribute to the nation's science enterprise by funding education, research, and informal education projects through a national network of university-based Space Grant consortia. The mission of the WSGC is to use the excitement and vision of space and aerospace science to equip the citizens of Wisconsin with the math, science and technology tools they need to thrive in the 21st century.

Purpose and Scope

To achieve the mission of the WSGC, this plan identifies programmatic emphases that will guide strategic decision-making during the 2020-2024 period. These emphases are:

- Expand opportunities for students and faculty researchers to benefit from the unique capabilities and assets of NASA through targeted programs that attract and retain STEM students and faculty through hands-on research and training.
- Develop and expand internship opportunities for students to participate in authentic and meaningful research with academic and industrial partners within our affiliate network.
- Recruit and train professionals, especially women, underrepresented minorities, and persons with disabilities, for careers in aerospace related fields.

The programmatic emphases are embodied in the Consortium's primary lines of business:

- Fellowships and Scholarships
- Internships
- Student Satellite Programs
- Research Infrastructure
- Higher Education Incentives
- Aerospace Outreach and Special Initiatives Programs

Unless otherwise indicated, the time frame for implementation and evaluation of the objectives identified in this Strategic Plan is 2020-2024.

Goals, Objectives, and Strategies

A. Higher Education Engagement

Goal A.1: To efficiently administer a competitive and highly visible program of fellowship and scholarship opportunities for college and university students in STEM disciplines that align with both NASA's mission and the missions of our affiliates.

Objective A.1.1: Deliver a competitive Scholarship and Fellowship program that is characterized by effectiveness at increasing retention in STEM fields among pre-college, first and second year students.

Strategy A.1.1.1: Expand the pool of applicants for scholarships and fellowships by engaging underrepresented populations at affiliate campuses through targeted marketing and outreach.

Strategy A.1.1.2: Increase the award amounts for WSGC Scholarship and Fellowship awards to enhance the competitiveness and impact of the awards and to align them with NASA benchmarks for "significant awards."

Strategy A.1.1.3: Work with affiliate faculty to assess the climate and potential for early-stage research experiences on partner campuses to promote first-year research experiences for STEM majors in Wisconsin.

Strategy A.1.1.4: Develop and cultivate a database of STEM majors from affiliate campuses to whom targeted opportunities for scholarships and fellowships may yield higher participation rates in WSGC Scholarship and Fellowship programs.

Strategy A.1.1.5: Modify the requirements of the existing graduate fellowship program to allow professional and medical students engaged in STEM research aligned with NASA priorities to participate in the WSGC Graduate Research Fellowship programs.

Success Indicators:

- Applicant pool for F/S program will grow by at least 20% by 2024 to a combined pool of 50 applicants of whom 13% or more will be from historically underrepresented populations.
- First and second-year participants in the F/S program will persist in STEM programs at rates above institutional norms as measured one and two years post-award.

Objective A.1.2: Increase the number of students from two-year colleges applying for and receiving WSGC scholarships and fellowships by at least 30% over four years to a combined pool of 10 applicants.

Strategy A.1.2.1: Continue to expand our affiliate network to include additional and geographically diverse two-year affiliates.

Strategy A.1.2.2: Work specifically with targeted recruiting in our two-year campuses to enhance awareness of and participation in WSGC Scholarship and Fellowship programs.

Success Indicators:

- By 2024, the pool for the F/S program will have expanded by at least 5-10 applicants from two-year schools. Of these applicants, at least 50% will be competitively selected for F/S awards.

Objective A.1.3: The WSGC will improve its longitudinal tracking efforts to support retention tracking among its F/S awardees.

Strategy A.1.3.1: Social media tools will be used to establish durable contact with awardees and annual contact will be established with F/S awardees within a three-year period to assess enrollment status, progress-toward degree and major field of study.

Success Indicator:

- By 2024, at least 90% of F/S awardees between 2020-2024 will have been contacted and tracked to support retention data studies.

Goal A.2: To increase the impact of the WSGC internship programs on career placements within the aerospace industry in Wisconsin.

Objective A.2.1: Cultivate partnerships with commercial partners within the state to offer at least 3 summer and semester internship programs.

Strategy A.2.1.1: Explore the development of two additional, persistent, cost-shared internship programs at existing commercial aerospace affiliates.

Strategy A.2.1.2: Work with academic partners to identify and publicize opportunities for college credit through internships with our affiliate commercial partners.

Strategy A.2.1.3: Coordinate pathways between scholarship/fellowship awards and subsequent internship placements in the state.

Success Indicator:

- At least two new regularly offered internship programs with commercial affiliates or partners will be established to support WSGC students.

Objective A.2.2: Establish a pipeline for technically proficient STEM students at two-year affiliate institutions to transition from internship to career within the state aerospace industry.

Strategy A.2.2.1: Dedicate sessions at annual meetings and conferences to understand the needs and hiring capacity of industrial partners employing a technical workforce.

Success Indicator:

- At least two students from two-year affiliates will be supported by the WSGC through internships with commercial affiliates.

Goal A.3: To expand opportunities for students to secure NASA Center internships.

Objective A.3.1: Statewide, at least 4 students each year will receive NASA Center internships each year.

Strategy A.3.1.1: Provide web resources and training at annual conferences for students considering applying for NASA internships.

Strategy A.3.1.2: Develop workflow processes around cultivating a list of potential applicants early in the internship application season and provide regular feedback and updates on the application process.

Strategy A.3.1.3: Regularize the process of communicating with affiliate faculty to identify promising STEM students and mentor them through the process of applying for NASA internships.

Success Indicator:

- At least 50 students will apply for NASA internships each year and at least four will be awarded.

Goal A.4: To provide highly visible and impactful team-based research and space technology experiences for undergraduates.

Objective A.4.1: Ensure an efficient and equitable allocation of resources across existing and emerging team-based research and space technology opportunities for students.

Strategy A.4.1.1: Develop an assessment of impact and per-student cost of WSGC satellite programs and adjust resource allocation and program design accordingly.

Strategy A.4.1.2: The Consortium will pursue external funding to support the high costs of Student Satellite program participation.

Success Indicators:

- At least one source of external funding will be identified and pursued to support program costs. Timeframe: 2022.

Objective A.4.2: Increase the diversity of students participating in high-impact team experiences to match the demographic profile of our affiliate campuses.

Strategy A.4.2.1: Use assessment data and resource reallocation associated with Strategy 4.1.1 to better tailor recruiting and marketing for student satellite programs to focus on short- and long-term benefits of participation.

Strategy A.4.2.2: Pursue funding to establish an aerial robotics program with academic and industrial partners.

Strategy A.4.2.3: Develop appropriate recruiting materials and target on-campus opportunities for recruiting diverse populations at affiliate colleges and universities.

Success Indicators:

- The demographic profile of the aggregate Student Satellite program will include representation consistent with the diversity profile of the state.

Goal A.5: To improve STEM education in institutions of higher education through the introduction of research-based pedagogies and learner-centric curricula.

Objective A.5.1: Provide at least one Higher Education Incentive awards to incentivize the adoption and adaptation of existing and proven curricular innovations in STEM education through a highly visible and competitive grant program for higher education faculty.

Strategy A.5.1.1: Develop web resources highlighting best practices and proactively tell the stories of successful HEI program implementations to administrators and faculty at partner schools through press releases and targeted communications.

Success Indicators:

- The HEI applicant pool will expand over three years to include at least 8 competitive proposals each year.
- At least one HEI award will be given annually to support research-based STEM pedagogy.

Goal A.6: To efficiently administer a competitive and highly visible program of research awards to faculty engaged in promising research related to NASA mission and goals.

Objective A.6.1: Support new and developing research in interdisciplinary and collaborative projects aligned with NASA's mission; annually support 1-2 such projects.

Strategy A.6.1.1: Continue to evaluate and adjust award levels to balance impact potential and participation opportunity across the Consortium.

Strategy A.6.1.2: Develop practices for highlighting successful outcomes of the WSGC Research Infrastructure program to both state and national audiences.

Success Indicators:

- The Consortium will fund at least two collaborative (inter-institutional or NASA-collaborative) research projects each year.
- In collaboration with university communication offices, the Consortium will highlight research achievements and program accomplishments through press releases targeted at key state and national stakeholders.

Objective A.6.2: Expand opportunities (1-2 per year) for faculty-led student research programs at two-year schools through integration of our Research Infrastructure program with other WSGC programs for two-year schools.

Strategy A.6.2.1: Work with Associate Directors to communicate opportunities for two-year faculty and to identify potential collaborations between two- and four-year institutions for mentored research of undergraduates.

Success Indicator:

- At least one two-year affiliate campus will be regularly engaged in collaborative research with Consortium affiliate(s).

Objective A.6.3: Annually support at least two research collaborations between faculty at affiliate institutions and between faculty and NASA Center scientists and engineers.

Strategy A.6.3.1: Using existing relationships between Consortium faculty, industry partners, and NASA Center scientists and engineers to build durable project-based programs for student-faculty teams to collaborate on projects with NASA Center personnel.

Strategy A.6.3.2: WSGC will fund at least one trip to a NASA center each year for an affiliate researcher to develop collaborations with Center personnel.

Success Indicator:

- WSGC will highlight (through web stories and media releases) at least one faculty-NASA collaboration each year.
- At least one project seed-funded through RIP will demonstrate long-term viability through sustained external funding.

B. K-12 Engagement

Elementary and Secondary Education – Educate and Engage: *Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.*

Goal B.1: To facilitate the development of K-12 instructional materials, outreach activities and informal education opportunities that promote the participation of a diverse population of students and faculty in STEM fields related to NASA mission and goals.

Objective B.1.1: Utilize our Aerospace Outreach Program to fund six innovative planning grants and supplemental grants for projects that increase interest, recruitment, experience and training of pre-college students in the pursuit of space- or aerospace-related science, design, or technology, or encourage K-12 students in space-related pursuits.

Strategy B.1.1.1: Use the Consortium's limited resources to continue to fund successful outreach efforts and to promote the successes of these efforts to state- and national audiences.

Success Indicators:

- Each year, at least 150 K-12 students and teachers will participate in programs funded by the Aerospace Outreach program.
- Six AOP projects will be funded annually.
- Two or more high impact outreach programs will be featured on the Consortium web site and submitted to NASA as Space Grant success stories.

C. Outreach and Informal Education

Informal Education – Engage and Inspire: *Build strategic linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.*

Goal C.1: To incentivize the awareness and participation of underrepresented groups in NASA's mission through community-based programming.

Objective C.1.1: Utilize our Special Initiatives Program to fund at least five projects and programs that target historically underrepresented groups and that encourage their continued participation in WSGC programs.

Strategy C.1.1.1: Develop and deliver a workshop for prospective, current and past grant recipients that focuses on program development, direction and impact of STEM participation.

Success Indicators:

- 70% of grant program participants will attend an annual workshop on STEM careers and success strategies.
- At least five projects funded annually.
- Evaluation tools will be developed to assess the effectiveness of SI program in recruiting and retaining underrepresented groups in WSGC programs.

Objective C.1.2: Increase formal linkages between statewide K-12 institutions with underrepresented communities and space-focused informal education opportunities in the state.

Strategy C.1.2.1: Fund educator programs to provide K-12 students with access to affiliate planetarium programs and Consortium-sponsored activities such as rocket and balloon launches.

Strategy C.1.2.2: Develop and disseminate targeted marketing materials to provide educators with information on how to apply for funding grants to connect students to informal space-related education resources in their communities.

Success Indicator:

- Fund at least one community-based informal education program each year that engages K-12 students in visits to space-related informal education sites.

Objective C.1.3: Devote 10% of our K-12 funding programs to engage, inspire, and educate individuals with special needs to explore STEM-related curricula, programs, and careers.

Strategy C.1.3.1: Develop K-12 partnerships with educational institutions, industry, government, and non-profit organizations designed to address the unique needs of individuals with disabilities.

Success Indicator:

The Consortium will fund at least one innovative and impactful program serving the needs of STEM educators who work with population(s) of students with disabilities.

D. Consortium Management

Goal D.1: To promote the WSGC to state stakeholders and ensure that the Consortium is managed in a way that is consistent with its mission and purpose and that maximizes the impact of WSGC programs for the benefit of affiliate members and their students.

Objective D.1.1: Promote the successes of WSGC affiliates and awardees to state and national audiences.

Strategy D.1.1.1: Maintain an effective and attractive website for promotion of WSGC activities and events and for program application and award information.

Strategy D.1.1.2: Develop and promote an online *Proceedings* journal to provide award winners with a public and peer-reviewed venue for their WSGC-funded research results.

Strategy D.1.1.3: Visit state and national public officials to communicate the accomplishments and capabilities of the WSGC.

Strategy D.1.1.4: Promote presentations of WSGC student and faculty accomplishments at state, regional and national meetings.

Success Indicators:

- Website updates will occur quarterly.
- An online *Proceedings* Journal with an editorial board, submission guidelines and tracking metrics will be fully implemented.
- State Representatives will be provided regular updates on Consortium activities and will be regularly invited to attend annual conferences.
- The Consortium will fund at least one student to present WSGC-supported research at regional and/or national disciplinary conference(s).

Objective D.1.2: Develop and maintain effective and efficient communication practices to keep WSGC stakeholders informed and aware of funding opportunities, national initiatives, Consortium accomplishments, and opportunities to participate in policy decisions.

Strategy D.1.2.1: Hold semi-annual consortium meetings with all Advisory Council members, quarterly update meetings with Executive Committee members, and maintain regular communication between program office and Consortium Institutional Representatives.

Strategy D.1.2.2: Send letters to Deans, Department Chairs, and Provosts highlighting the accomplishments of their students facilitated through the support of WSGC programs and awards.

Strategy D.1.2.3: Develop a social media presence for the Consortium through Facebook and Twitter; work with Communications Offices at affiliate institutions to expand the audience for these message platforms.

Success Indicators:

- The Executive Committee will be fully staffed with Associate Directors representing each of the Consortium programs.
- Administrative leaders at affiliate campuses will be regularly apprised of Consortium activities and accomplishments.
- Social Media will be the primary means of communicating with targeted populations for program Announcements of Opportunity.

Objective D.1.3: Improve the clarity of communication and streamline the processes associated with grant submission and tracking.

Strategy D.1.3.1: Develop and implement a web-based grant award and tracking system to improve the efficiency and clarity of processes associated with the solicitation, submission, communication, and tracking of grant awards.

Success Indicator:

- All grant submissions, communications, and tracking data will be collected/disseminated from a single database with a web-based front-end.

Objective D.1.4: Ensure that Consortium programs are aligned with state priorities.

Strategy D.1.4.1: Maintain the presence of representatives of the Department of Public Instruction, Department of Transportation on the Consortium's Advisory Council.

Strategy D.1.4.2: The Consortium will provide annual briefings on program accomplishments to representatives of state government.

Success Indicators:

- All relevant state government agencies will be represented on the Advisory Council of the WSGC.

- Members of the state legislature and US Representatives will receive regular contact regarding Consortium activities and accomplishments.

Objective D.1.5: The Consortium leadership will continuously pursue opportunities to expand the resources available to the Consortium and to leverage collaborative opportunities with other state consortia.

Strategy D.1.5.1: The Consortium leadership will work with Advisory Council and Executive Committee membership to identify and pursue Cooperative Agreements as they become available in areas aligned with state need and Consortium capability.

Strategy D.1.5.2: The Consortium leadership will work with affiliate partners to identify and pursue sources for outside funding and match.

Success Indicator:

- Each year, the Consortium will submit at least one proposal for targeted support of initiatives aligned with this Strategic Plan.

Summarized Table of SMART Goals and Objectives

Strategic Priority Alignment	Space Grant Objective Alignment	Consortium Goal	Consortium Objective(s)	Metric	Consortium Year 1 Performance		Consortium Year 2 Performance		Consortium Year 3 Performance		Consortium Year 4 Performance	
					Target Number	Deadline	Target Number	Deadline	Target Number	Deadline	Target Number	Deadline
1,2,3	2,3,6	A.1: To efficiently administer a competitive and highly visible program of fellowship and scholarship opportunities for college and university students in STEM disciplines across the state.	A.1.1: Deliver a competitive Scholarship and Fellowship program that is characterized by effectiveness at increasing retention in STEM fields among precollege, first, and second year students.	Relative retention % of WSGC-funded students to general population	a 10% relative gain of WSGC students over general population	Jun-21	a 10% relative gain of WSGC students over general population	Jun-22	a 10% relative gain of WSGC students over general population	Jun-23	a 10% relative gain of WSGC students over general population	Jun-24
			A.1.2: Increase the number of students from two-year colleges applying for and receiving WSGC scholarships by at least 20% over four years to a combined pool of 10 applicants.	# of 2-year students applying for WSGC scholarships	5	Jun-21	3	Jun-22	3	Jun-23	3	Jun-24
			A.1.3: The WSGC will improve its longitudinal tracking efforts to support retention tracking among F/S awardees.	Implementation of EPSS longitudinal tracking system	N/A	Jun-21	N/A	Jun-22	N/A	Jun-23	N/A	Jun-24
			A.1.4: Competitively award at least 120 direct student awards.	Number of direct student awards	120	Jun-21	120	Jun-22	120	Jun-23	120	Jun-24
1	6	A.2: To increase the impact of the WSGC internship programs on career placements within the aerospace industry in Wisconsin.	A.2.1: Cultivate partnerships with commercial partners within the state to offer summer and semester internship programs.	# of new commercial partners	1	Jun-21	1	Jun-22	1	Jun-23	1	Jun-24
			A.2.2: Establish a pipeline for technically proficient STEM students at two-year affiliate institutions to transition from internship to career within the state aerospace industry.	# of two-year students funded by WSGC who move through internships to job	2	Jun-21	2	Jun-22	2	Jun-23	2	Jun-24
1,2,3	2,6	A.3: To expand opportunities for students to secure NASA Center internships and Co-Ops.	A.3.1: Statewide, at least 50 students each year will apply for NASA Center internships.	# of applicants applying through WSGC	50	Jun-21	50	Jun-22	50	Jun-23	50	Jun-24
1,2,3	2,3,4,5,6,7	A.4: To provide highly visible and impactful team-based research and space technology experiences for undergraduates.	A.4.1: Ensure an efficient and equitable allocation of resources across existing and emerging team-based research and space technology opportunities for students.	# of team-based design-build-fly opportunities	4	Jun-21	3	Jun-22	3	Jun-23	3	Jun-24
			A.4.2: Increase the diversity of students participating in high-impact team experiences to match the demographic profile of our affiliate campuses.	% of underrepresented students in Student Satellite Programs	13%	Jun-21	13%	Jun-22	13%	Jun-23	13%	Jun-24
1,2,3	3,4,5,6,7	A.5: To improve STEM education in institutions of higher ed. through the introduction of research-based pedagogies and learner-centric curricula.	A.5.1: Provide HEI awards to incentivize the adoption and adaptation of existing and proven curricular innovations in STEM education through a highly visible and competitive grant program for higher ed. faculty.	# of HEI awards that implement research-based curriculum in aero-STEM fields	3	Jun-21	2	Jun-22	2	Jun-23	2	Jun-24
1,2,3	2,3,4,5,6,7	A.6: To efficiently administer a competitive and highly visible program of research awards to faculty engaged in promising research related to NASA mission and goals.	A.6.1: Support new and developing research in interdisciplinary and collaborative projects aligned with NASA's mission.	# of new research and collaborative projects (no previous WSGC funding)	1	Jun-21	1	Jun-22	1	Jun-23	1	Jun-24
			A.6.2: Establish research collaborations between faculty at affiliate institutions and between faculty and NASA Center scientists and engineers.	# new research collaborations between Affiliates and between Affiliates and NASA Centers	1 and 1	Jun-21	1 and 1	Jun-22	1 and 1	Jun-23	1 and 1	Jun-24

Strategic Priority Alignment	Space Grant Objective Alignment	Consortium Goal	Consortium Objective(s)	Metric	Consortium Year 1 Performance		Consortium Year 2 Performance		Consortium Year 3 Performance		Consortium Year 4 Performance	
					Target Number	Deadline	Target Number	Deadline	Target Number	Deadline	Target Number	Deadline
1,2,3	1,6,7	C.1: To incentivize the awareness and participation of underrepresented groups in NASA's mission through community based programming.	C.1.1: Utilize our Special Initiative Program to fund projects and programs that target historically underrepresented groups and that encourage their continued participation in WSGC programs and their retention in STEM fields at all educational levels.	# Underrepresented students involved in SIP projects	150	Jun-21	150	Jun-22	150	Jun-23	150	Jun-24
			C.1.2: Devote 10% of our K-12 funding programs to engage, inspire and educate individuals with special needs to explore STEM-related curricula, programs, and careers.	# awards meeting the C.1.2 Objective	1	Jun-21	1	Jun-22	1	Jun-23	1	Jun-24
3	3,4,7	Goal D.1: To promote the WSGC to state stakeholders and ensure that the Consortium is managed in a way that is consistent with its mission and purpose and that maximizes the impact of WSGC programs for the benefit of affiliate members and their students.	D.1.1: Promote the successes of WSGC affiliates and awardees to state and national audiences.	# in attendance at annual Wisconsin Space Conference	170	Jun-21	170	Jun-22	170	Jun-23	170	Jun-24
			D.1.2: Develop and maintain effective and efficient communication practices to keep WSGC stakeholders in formed and aware of funding opportunities, national initiatives, Consortium accomplishments, and opportunities to participate in policy decisions.	# Advisory Council Meetings	2	Jun-21	2	Jun-22	2	Jun-23	2	Jun-24
			D.1.3: Improve the clarity of communication and streamline the processes associated with grant submission and tracking.	Process upgrades to online proposal submission system at lead institution	N/A	Jun-21	N/A	Jun-22	N/A	Jun-23	N/A	Jun-24
			D.1.4: Ensure that Consortium programs are aligned with state priorities.	# Executive Committee meetings	2	Jun-21	2	Jun-22	2	Jun-23	2	Jun-24
			D.1.5: The Consortium leadership will continuously pursue opportunities to expand the resources available to the Consortium and to leverage collaborative opportunities with other state consortia.	# non-NASA proposals and collaborations pursued	2	Jun-21	2	Jun-22	2	Jun-23	2	Jun-24