

**National Space Grant College and Fellowship Program
Opportunities in NASA STEM
FY 2020 – 2024, Years 2-4 Augmentation**

Cooperative Agreement Notice (CAN)

**Minnesota Space Grant Consortium
Director: Professor Demoz Gebre-Egziabher
Department of Aerospace Engineering and Mechanics
University of Minnesota – Twin Cities
107 Akerman Hall
110 Union Street
Minneapolis MN 55455**

**612 624 2305
612 626 1558 (FAX)**

gebre@umn.edu

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2. PROPOSAL NARRATIVE

In the proposal below, we describe how the “Year 2”, “Year 3”, and “Year 4” Space Grant Augmentation funding will be used by the Minnesota Space Grant Consortium (MnSGC). As stipulated by the Request For Proposals (RFP), \$14,400/year will be set aside for NASA Internships and Fellowships (NIF). This will be closely coordinated with \$14,296/year set aside to support upcoming eclipse-ballooning activities aligned Human Exploration and Operations Mission Directorate (HEOMD). Also \$8,000/year will be used to fund statewide student challenge/competitions. While matching funds were not required by the RFP, we secured match in the amount of \$9,152/year from the U of MN – Twin Cities (lead institution) which will be used to continue match-funding of fellowships for recruiting outstanding underrepresented minority graduate students to the College of Science and Engineering at the U of MN – Twin Cities. Also \$25,000/year will be used to fund new and innovative programs at MnSGC affiliate member institutions. In addition, in line with our interest to expand the number of affiliates in the MnSGC, \$5,000/year will be used to sponsor activities at potentially-new-affiliate institutions (these will require match). The remaining Augmentation funds in the amount of \$5,000/year will be used to pay for annual administrative license fees for a professional application submission and data management software which we have been using to streamline and improve the data collection, reporting, and management of MnSGC activities.

2.1. NIF AWARDS (FOR ECLIPSE BALLOONING)

The MnSGC is planning to be heavily involved with national stratospheric ballooning efforts around the upcoming October 2023 and April 2024 solar eclipses. To this end, MnSGC will start building up student expertise to support these activities. The \$14,400/year allocation for NIF will be used to support ballooning student internship activities planned for the summers of 2021, 2022, and 2023, in preparation for the two solar eclipses. This will be used to provide support for student interns as they learn the art and science of high-altitude ballooning, with a focus on eclipse ballooning. Expenses for hardware, travel, and other miscellaneous items will be partially covered by \$14,296/year which is also set aside for this purpose. This activity is classified as aligned with HEOMD because it is a training exercise for students who are building sensors systems that could potentially be used in future exploration missions.

2.2. STATEWIDE CHALLENGE/COMPETITION ACTIVITIES

We will continue to support statewide challenge/competition activities to engage student teams from MnSGC affiliates as well as from institutions that are not MnSGC members. We currently are running a statewide Quadcopter Challenge, organized by Concordia College, Moorhead. In each of Years 2 through 4 we plan to use Augmentation funding to offer at least one statewide student competition. We will continue to encourage affiliates to take the lead in organizing and running such statewide competitions, whether it is a continuation of current quadcopter activities or challenges in other areas, such as high-powered rocketry or stratospheric ballooning. We will set \$8,000/year of the Augmentation funds to support this activity.

2.3. RECRUITMENT OF UNDERREPRESENTED MINORITY GRADUATE STUDENTS

One of the key factors that determines whether an undergraduate student will continue to graduate school after completion of a bachelor's degree is whether they secure a fellowship or research assistantship. Very capable undergraduates, when given the choice of a job in industry or continuing for an advanced degree, will consider graduate study if they are presented with a fellowship attached to an exciting research project. This is particularly true for students from economically disadvantaged backgrounds and from underrepresented minority groups. Last year we started a pilot program with the funds from the Year 1 Augmentation to offer fellowships to students who have been already admitted to graduate studies to the College of Science and Engineering at the U of MN –Twin Cities. We plan to continue this initiative using funds from a match we have secured from the Dean of the College of Science and Engineering at the U of MN – Twin Cities. The match is in the amount of \$9,152/year which we hope to use in support of about 2 incoming graduate students annually.

2.4. SUBCONTRACTS AND INNOVATIVE NEW PROGRAMS

For the past two years we have been encouraging MnSGC affiliates to start new and innovative programs, in addition to offering their recurring activities. To that end, we dedicated much of one recent statewide affiliate meeting to sharing ideas and discussing activities that could be scaled up to other affiliate institutions. We continue to encourage affiliates to include new and innovative programs in their annual proposals. To support such activities, we will set aside \$20,000/year for affiliate subcontracts with match being optional, in case that is a barrier to starting new programs.

2.5. ADDING NEW AFFILIATES TO THE MNSGC

The formal affiliate membership of the MnSGC has not grown for well over a decade, with a total of 13 current institutions in the consortium. Over the years, the consortium has been approached by several institutions of higher learning in the state interested in joining. However, funding limitations have not allowed increasing the membership of the consortium without adversely impacting effective existing programs at current affiliates. Recently one of the MnSGC affiliates, Southwest Minnesota State University (SMSU), indicated that they would be withdrawing from the consortium. Their withdrawal frees up some funding which can be used to bring in one or more new affiliate members. Our plan is to use the funds that have been freed up by SMSU's departure from the consortium, plus an additional \$5,000/year from this Augmentation, to fund exploratory proposals from one or more potential new affiliate members over Years 2 through 4. These proposals will require a 1-to-1 match. The potential affiliate member(s) will be required to submit a proposal that will be evaluated using our standard proposal evaluation process. Performance on the project(s) funded will be used as an evaluation as to whether the proposer will be a successful affiliate member and help with forwarding the goals and objectives of the MnSGC. The bylaws of the MnSGC require that the current consortium affiliate members vote to induct a new member into the consortium. The performance of the prospective affiliate member(s) during the upcoming years will be considered when their potentially-permanent membership is brought to a vote in a future year.

3. BUDGET TABLES AND BUDGET JUSTIFICATION

Budget tables for all three years are provided on the next pages, plus a table detailing match and additional budget justification text.

3.1. MNSGC YEAR 2 AUGMENTATION BUDGET DETAILS (6/8/2021 – 6/7/2022)

MnSGC Augmentation Budget (6/8/21 - 6/7/22) (AKA "Year 2")

	Fiscal Year 2021-2022		
	NASA funds	Cost-Share	Total Funding
A. Personnel/Direct Labor			
None			0
Total Salaries	0	0	0
B. Fringe Benefits (36.0%)			
None	0	0	0
Total Fringe	0	0	0
C. Equipment			
None			0
D. Materials and Supplies			
None			0
E. Services			
Annual subscription to "Submittable" for on-line data collection and reporting	5000		5000
F. Domestic Travel			
None			0
G. NASA Internships and Fellowships (NIF)			
1. Internships - eclipse prep internships	14400		14400
2. Fellowships - underrepr. minority graduate student(s) at UMTC (Dean's Cost Share)		9152	9152
H. Aeronautics Mission Directorate Projects			
One statewide student challenge - Quadcopter or Ballooning or Rocketry Challenge in "Year 2"	8000		8000
I. Human Exploration Mission Directorate Projects			
Support for eclipse-ballooning development	14296		14296
J. Science Mission Directorate Projects			
No projects			0
K. Space Technology Mission Directorate Projects			
No projects			0
L. Competitive Projects			
No projects			0
Total Direct Project Costs (A-L)	41696	9152	50848
M. Subcontracts	25000	5000	30000
Augmentation to Subcontracts to MnSGC Affiliates (MD Alignment - "Competitive")	20000	0	20000
E-grant Subcontract(s) to non-MnSGC Institution(s) (MD Alignment - "Competitive")	5000	5000	10000
N. Total Direct Costs (Statewide)	66696	14152	80848
O. UMTC Indirect Cost (35.0% rate of item N minus NIF)	18304	3203	21507
P. Total Costs (Statewide)	85000	17355	102355

3.2. MNSGC YEAR 3 AUGMENTATION BUDGET DETAILS (6/8/2022 – 6/7/2023)

MnSGC Augmentation Budget (6/8/22 - 6/7/23) (AKA "Year 3")

	Fiscal Year 2022-2023		
	NASA funds	Cost-Share	Total Funding
A. Personnel/Direct Labor			
None			0
Total Salaries	0	0	0
B. Fringe Benefits (36.0%)			
None	0	0	0
Total Fringe	0	0	0
C. Equipment			
None			0
D. Materials and Supplies			
None			0
E. Services			
Annual subscription to "Submittable" for on-line data collection and reporting	5000		5000
F. Domestic Travel			
None			0
G. NASA Internships and Fellowships (NIF)			
1. Internships - eclipse prep internships	14400		14400
2. Fellowships - underrepr. minority graduate student(s) at UMTC (Dean's Cost Share)		9152	9152
H. Aeronautics Mission Directorate Projects			
One statewide student challenge - Quadcopter or Ballooning or Rocketry Challenge in "Year 3"	8000		8000
I. Human Exploration Mission Directorate Projects			
Support for eclipse-ballooning development	14296		14296
J. Science Mission Directorate Projects			
No projects			0
K. Space Technology Mission Directorate Projects			
No projects			0
L. Competitive Projects			
No projects			0
Total Direct Project Costs (A-L)	41696	9152	50848
M. Subcontracts	25000	5000	30000
Augmentation to Subcontracts to MnSGC Affiliates (MD Alignment - "Competitive")	20000	0	20000
E-grant Subcontract(s) to non-MnSGC Institution(s) (MD Alignment - "Competitive")	5000	5000	10000
N. Total Direct Costs (Statewide)	66696	14152	80848
O. UMTC Indirect Cost (35.0% rate of item N minus NIF)	18304	3203	21507
P. Total Costs (Statewide)	85000	17355	102355

3.3. MNSGC YEAR 4 AUGMENTATION BUDGET DETAILS (6/8/2022 – 6/7/2023)

MnSGC Augmentation Budget (6/8/23 - 6/7/24) (AKA "Year 4")

	Fiscal Year 2023-2024		
	NASA funds	Cost-Share	Total Funding
A. Personnel/Direct Labor			
None			0
Total Salaries	0	0	0
B. Fringe Benefits (36.0%)			
None	0	0	0
Total Fringe	0	0	0
C. Equipment			
None			0
D. Materials and Supplies			
None			0
E. Services			
Annual subscription to "Submittable" for on-line data collection and reporting	5000		5000
F. Domestic Travel			
None			0
G. NASA Internships and Fellowships (NIF)			
1. Internships - eclipse prep internships	14400		14400
2. Fellowships - underrepr. minority graduate student(s) at UMTC (Dean's Cost Share)		9152	9152
H. Aeronautics Mission Directorate Projects			
One statewide student challenge - Quadcopter or Ballooning or Rocketry Challenge in "Year 4"	8000		8000
I. Human Exploration Mission Directorate Projects			
Support for eclipse-ballooning development	14296		14296
J. Science Mission Directorate Projects			
No projects			0
K. Space Technology Mission Directorate Projects			
No projects			0
L. Competitive Projects			
No projects			0
Total Direct Project Costs (A-L)	41696	9152	50848
M. Subcontracts	25000	5000	30000
Augmentation to Subcontracts to MnSGC Affiliates (MD Alignment - "Competitive")	20000	0	20000
E-grant Subcontract(s) to non-MnSGC Institution(s) (MD Alignment - "Competitive")	5000	5000	10000
N. Total Direct Costs (Statewide)	66696	14152	80848
O. UMTC Indirect Cost (35.0% rate of item N minus NIF)	18304	3203	21507
P. Total Costs (Statewide)	85000	17355	102355

3.4. MNSGC YEAR 2 MATCH BUDGET DETAILS (6/8/2021 – 6/7/2022) – YEARS 3 AND 4 ARE IDENTICAL

Matching of MnSGC Augmentation Budget (6/8/21 - 6/7/22) (AKA "Year 2") (Years 3 and 4 Matching Similar)

<p>Matching funds from Lead Institution (AKA "Dean's Cost Share") Match fellowships to recruit/support underrepresented minority graduate student(s) at UMTC</p>	9152
<p>Matching funds from Subcontracts Match (required) on E-grant(s) to non-MnSGC Institution(s) (MD Alignment - "Competitive")</p>	5000
<p>Grand Total of Consortium Matching (prior to IDC) for 2021-2022</p>	14152

3.5. BUDGET JUSTIFICATION

The proposed budgets for Years 2 through 4 are quite similar and the utility of the funds is described in the Proposal Narrative section above. Here is a summary for each year, reading from top to bottom in the budget spreadsheets.

\$5000 is set aside each year to help cover a subscription to “Submittable” which provides software to securely collect student data, affiliate proposals, and reporting data and will help streamline MnSGC application/proposal review and our annual APD and OEPM statewide reporting.

\$14,400 is set aside for NIF and will be used to provide summer internships to students involved in preparing for eclipse ballooning during the solar eclipses of Oct. 2023 and Apr. 2024. Additional students, funded by base budgets and/or match, will be involved as well.

\$9,152 of promised match by the U of MN – Twin Cities College of Science and Engineering (CSE) Dean will be used to continue providing fellowships to help recruit incoming underrepresented minority graduate students to the CSE at the U of MN – Twin Cities. This funding will be made available for appropriate projects in all CSE departments.

\$8,000 is set aside to help offer at least one statewide challenge/competition every year which will be open to student teams from MnSGC affiliate schools and also non-affiliate schools. Topics may vary from year to year – past topics have included quadcopter challenges and high-power rocketry challenges. Future challenges might also include stratospheric ballooning and possibly other aerospace topics. Match will be optional on this funding.

\$14,296 is set aside in support of eclipse ballooning preparation, to be used in conjunction with the NIF internships mentioned above. This support will help to fund ballooning expenses such as hardware, consumables, and travel, as well as possibly additional ballooning students. This funding is for eclipse preparation. Funding for actual eclipse ballooning excursions in 2023 and 2024 will come from MnsGC base budgets, match, and/or other sources of funding currently being pursued. Match generation will be optional on this funding.

\$20,000 is set aside to fund new and innovative programs at MnSGC affiliates and will be distributed through the standard annual subcontract process. Match will be optional on this funding to prevent match from being a barrier to affiliates trying new projects, especially ones drawn from the list of “potentially-scalable” projects shared at a recent MnSGC affiliate meeting.

\$5,000 is set aside to fund proposals from one or more institutions that are interested in the MnSGC but that are not yet MnSGC affiliates, to give them an opportunity to help us accomplish our statewide goals and to confirm their commitment to becoming affiliates at some point in the future. Match will be required of these non-affiliate subcontracts, to get these outside institutions used to generating (and reporting on) value added through match.

The U of MN (lead institution) will charge \$18,304 in indirect on this budget annually at a rate of 35.0% for non-NIF expenditures. The Dean of CSE has generously agreed to return 50% of this for our use. This “Dean’s Cost Share” will be used to fund the Match fellowships mentioned above.

4. MILESTONES (MODIFIED WITH AUGMENTATION FUNDING)

Here are Milestones tables for all four years of the original proposal. New or modified entries the tables (relative to the original 4-year milestone table) are highlighted. While the basic milestones have not changed, the tasks required to be accomplished before some milestones are considered “complete” have changed. For example, the milestone titled “Graduate Student Fellowship” will still have to be completed in September of each year, but now it includes additional fellowships specifically instituted to recruit more underrepresented minority graduate students as well. The other milestone, affiliate annual proposal, will be considered complete in February of each year. However, with the Augmentation funds, we will be evaluating affiliate proposal with innovative and new activities as well as statewide competitions.

Milestones Year 1 (June 2020 – May 2021)												
Activity (Directorate Alignment)	Jun 20	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21
Summer research internships (All)	x											
Informal education program at MN State Fair (All)			x									
Graduate Fellowships (SMD, ARMD, STMD, HEOMD)				x (extra with Augm.)								
STEM Retention Awards (All)								x				
UMTC capstone Design course (ARMD, SMTD)				x								
Affiliate annual proposals (ARMD, STMD, HEOMD, SMD)									x (extra with Augm.)			
Wearable Technology Trip to JSC (HEOMD)											x	
NASA Internship assignments (All)												x

Year 2 (June 2021 – May 2022)												
Activity (Directorate Alignment)	Jun 20	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21
Summer research internships (All)	x											
Informal education program at MN State Fair (All)			x									
Graduate Fellowships (SMD, ARMD, STMD, HEOMD)				x								
STEM Retention Awards (All)								x				
UMTC capstone Design course (ARMD, SMTD)				x								
Affiliate annual proposals (ARMD, STMD, HEOMD, SMD)									x			
Wearable Technology Trip to JSC (HEOMD)											x	
NASA Internship assignments (All)												x

Year 3 (June 2022 – May 2023)												
Activity (Directorate Alignment)	Jun 20	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21
Summer research internships (All)	x											
Informal education program at MN State Fair (All)			x									
Graduate Fellowships (SMD, ARMD, STMD, HEOMD)				x								
STEM Retention Awards (All)								x				
UMTC capstone Design course (ARMD, SMTD)				x								
Affiliate annual proposals (ARMD, STMD, HEOMD, SMD)									x			
Wearable Technology Trip to JSC (HEOMD)											x	
NASA Internship assignments (All)												x

Year 4 (June 2023 – May 2024)												
Activity (Directorate Alignment)	Jun 20	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21
Summer research internships (All)	x											
Informal education program at MN State Fair (All)			x									
Graduate Fellowships (SMD, ARMD, STMD, HEOMD)				x								
STEM Retention Awards (All)								x				
UMTC capstone Design course (ARMD, SMTD)				x								
Affiliate annual proposals (ARMD, STMD, HEOMD, SMD)									x			
Wearable Technology Trip to JSC (HEOMD)											x	
NASA Internship assignments (All)												x

5. SUMMARIZED TABLE OF S.M.A.R.T GOALS, OBJECTIVES, AND PERFORMANCE METRICS (MODIFIED WITH AUGMENTATION FUNDING)

Here are SMART Goal tables for all four years of the original proposal. Changes made in response to Augmentation funding are highlighted.

Strategic Alignment	Space Grant Objective Alignment	Consortium Year 1 Performance				
		Goal	Objective	Metrics	Target Number	Deadline
1, 2, 3	5 & 6	Enhance diversity in the STEM workforce (Goals 1.1, 2.1 & 3.1)	Provide STEM Retention Awards and fellowships (Objectives 1.1A, 2.1A & 3.1A)	Fraction of awards made to women and students from underrepresented groups	50% for women. 22% for students from underrepresented groups	March 2021 (STEM Retention Awards) January 2021 (Fellowships)
1, 2, 3	2,3,5,6,7	Contribute to STEM workforce development (Goals 1.2, 2.2, 2.3 & 3.2)	Offer STEM Retention Awards and graduate student fellowships for students (Objectives 1.2A, 2.1A, & 3.1A)	Number of awards made	25 STEM Retention Awards 3 Fellowships	March 2021 (STEM Retention Awards) January 2021 (Fellowship awards)
			Offer awards to support students to participate in NASA summer internships activities (Objective 1.2B)	Number of awards made	6 NASA internships	June 2021 (NASA internships)

			Promote higher education STEM course develop. in areas of interest to NASA. (Objectives 2.2A, 2.2B, 2.3A, 3.2A & 3.2B)	Number of courses and hardware projects sponsored	1 aerospace engineering capstone course at UMTC. 4 hardware projects incl. JSC Wearable Tech. project	December 2020 (UMTC course) August 2021 (hardware projects)
1, 2, 3	1,4,5,6	Enhance the teaching of STEM topics by pre-college teachers, especially in schools with high underrepresented populations. (Goal 4.1)	Support at least one formal, multi-day workshop annually for K-12 teachers (Objective 4.1A)	Number of attendees at workshops	10 attendees per event	June 2021
			Promote the teaching of mathematics, science and pre-engineering courses at schools with large underrepresented populations	Number of schools served	3 Schools	
1, 2, 3	1,7	Promote familiarity with, and interest in, aerospace and space-related STEM fields and career opportunities by offering informal education activities around Minnesota (Goal 5.1)	Promote aerospace and space-related informal education activities	Number of attendees per event with positive response	75% positive response	June 2021

Strategic Alignment	Space Grant Objective Alignment	Consortium Year 2 Performance				
		Goal	Objective	Metrics	Target Number	Deadline
1, 2, 3	5 & 6	Enhance diversity in the STEM workforce (Goals 1.1, 2.1 & 3.1)	Provide STEM Retention Awards and fellowships (Objectives 1.1A, 2.1A & 3.1A)	Fraction of awards made to women and students from underrepresented groups	50% for women. 22% for students from underrepresented groups	March 2022 (STEM Retention Awards) January 2022 (Fellowships)
1, 2, 3	2,3,5,6,7	Contribute to STEM workforce development (Goals 1.2, 2.2, 2.3 & 3.2)	Offer STEM Retention Awards and graduate student fellowships for students (Objectives 1.2A, 2.1A, & 3.1A)	Number of awards made	25 STEM Retention Awards 3 Eclipse Ballooning Awards 3 Fellowships	March 2022 (STEM Retention Awards) January 2022 (Fellowship awards)
			Offer awards to support students to participate in NASA summer internships activities (Objective 1.2B)	Number of awards made	5 NASA internships	June 2022 (NASA internships)
			Promote higher education STEM course develop. in areas of interest to NASA. (Objectives 2.2A, 2.2B, 2.3A, 3.2A & 3.2B)	Number of courses and hardware projects sponsored	1 aerospace engineering capstone course at UMTC. 4 hardware projects incl. JSC Wearable Tech. project	December 2021 (UMTC course) August 2022 (hardware projects)

1, 2, 3	1,4,5,6	Enhance the teaching of STEM topics by pre-college teachers, especially in schools with high underrepresented populations. (Goal 4.1)	Support at least one formal, multi-day workshop annually for K-12 teachers (Objective 4.1A)	Number of attendees at workshops	10 attendees per event	June 2022
			Promote the teaching of mathematics, science and pre-engineering courses at schools with large underrepresented populations	Number of schools served	2 Schools	
1, 2, 3	1,7	Promote familiarity with, and interest in, aerospace and space-related STEM fields and career opportunities by offering informal education activities around Minnesota (Goal 5.1)	Promote aerospace and space-related informal education activities	Number of attendees per event with positive response	75% positive response	June 2022

Strategic Alignment	Space Grant Objective Alignment	Consortium Year 3 Performance				
		Goal	Objective	Metrics	Target Number	Deadline
1, 2, 3	5 & 6	Enhance diversity in the STEM workforce (Goals 1.1, 2.1 & 3.1)	Provide STEM Retention Awards and fellowships (Objectives 1.1A, 2.1A & 3.1A)	Fraction of awards made to women and students from underrepresented groups	50% for women. 22% for students from underrepresented groups	March 2023 (STEM Retention Awards) January 2023 (Fellowships)
1, 2, 3	2,3,5,6,7	Contribute to STEM workforce development (Goals 1.2, 2.2, 2.3 & 3.2)	Offer STEM Retention Awards and graduate student fellowships for students (Objectives 1.2A, 2.1A, & 3.1A)	Number of awards made	22 STEM Retention Awards 3 Eclipse Ballooning Awards 3 Fellowships	March 2023 (STEM Retention Awards) January 2023 (Fellowship awards)
			Offer awards to support students to participate in NASA summer internships activities (Objective 1.2B)	Number of awards made	5 NASA internships	June 2023 (NASA internships)
			Promote higher education STEM course develop. in areas of interest to NASA. (Objectives 2.2A, 2.2B, 2.3A, 3.2A & 3.2B)	Number of courses and hardware projects sponsored	1 aerospace engineering capstone course at UMTC. 4 hardware projects incl. JSC Wearable Tech. project	December 2022 (UMTC course) August 2023 (hardware projects)

1, 2, 3	1,4,5,6	Enhance the teaching of STEM topics by pre-college teachers, especially in schools with high underrepresented populations. (Goal 4.1)	Support at least one formal, multi-day workshop annually for K-12 teachers (Objective 4.1A)	Number of attendees at workshops	10 attendees per event	June 2023
			Promote the teaching of mathematics, science and pre-engineering courses at schools with large underrepresented populations	Number of schools served	2 Schools	
1, 2, 3	1,7	Promote familiarity with, and interest in, aerospace and space-related STEM fields and career opportunities by offering informal education activities around Minnesota (Goal 5.1)	Promote aerospace and space-related informal education activities	Number of attendees per event with positive response	75% positive response	June 2023

Strategic Alignment	Space Grant Objective Alignment	Consortium Year 4 Performance				
		Goal	Objective	Metrics	Target Number	Deadline
1, 2, 3	5 & 6	Enhance diversity in the STEM workforce (Goals 1.1, 2.1 & 3.1)	Provide STEM Retention Awards and fellowships (Objectives 1.1A, 2.1A & 3.1A)	Fraction of awards made to women and students from underrepresented groups	50% for women. 22% for students from underrepresented groups	March 2024 (STEM Retention Awards) January 2021 (Fellowships)
1, 2, 3	2,3,5,6,7	Contribute to STEM workforce development (Goals 1.2, 2.2, 2.3 & 3.2)	Offer STEM Retention Awards and graduate student fellowships for students (Objectives 1.2A, 2.1A, & 3.1A)	Number of awards made	22 STEM Retention Awards 3 Eclipse Ballooning Awards 3 Fellowships	March 2024 (STEM Retention Awards) January 2024 (Fellowship awards)
			Offer awards to support students to participate in NASA summer internships activities (Objective 1.2B)	Number of awards made	4 NASA internships	June 2024 (NASA internships)
			Promote higher education STEM course develop. in areas of interest to NASA. (Objectives 2.2A, 2.2B, 2.3A, 3.2A & 3.2B)	Number of courses and hardware projects sponsored	1 aerospace engineering capstone course at UMTC. 4 hardware projects incl. JSC Wearable Tech. project	December 2023 (UMTC course) August 2024 (hardware projects)

1, 2, 3	1,4,5,6	Enhance the teaching of STEM topics by pre-college teachers, especially in schools with high underrepresented populations. (Goal 4.1)	Support at least one formal, multi-day workshop annually for K-12 teachers (Objective 4.1A)	Number of attendees at workshops	10 attendees per event	June 2024
			Promote the teaching of mathematics, science and pre-engineering courses at schools with large underrepresented populations	Number of schools served	2 Schools	
1, 2, 3	1,7	Promote familiarity with, and interest in, aerospace and space-related STEM fields and career opportunities by offering informal education activities around Minnesota (Goal 5.1)	Promote aerospace and space-related informal education activities	Number of attendees per event with positive response	75% positive response	June 2024