Colorado Space Grant Consortium

Providing Student Steps To Their Space Careers

Our Plan for the Future

2006 – 2010

Colorado as viewed at 100,000 feet by a student built BalloonSat
Our Vision

Providing a diverse group of Colorado students with experiences in space to prepare them for our Nation’s future space programs.

"I spent the best two years of my undergraduate experience leading the Citizen Explorer science payload development efforts. In that time I matured more as a leader and an engineer than I had during any one of my other positions in industry internships or research that I held as an undergraduate. I gained a great deal of confidence and competence as an engineer and scientist through the valuable hands-on experience at COSGC."

Christy Predaina, 2005 COSGC Graduate (Northrop Grumman)
Our Mission

The Colorado Space Grant Consortium uses the excitement of our Nation's aeronautics and space program to inspire, educate, and develop America's future technological workforce by enabling a diverse community of college and university students to participate in space-based hands-on projects, courses, and outreach activities.

"At Space Grant, I was given the opportunity to present at conferences and during meetings and that is pretty much all I do now at my job. I came to Johnson Space Center with a lot more experience working with people, presenting in front of groups, and writing reports than most of the people that I work with. Those are some of the most important skills that an engineer can possess, in my opinion, and working with Space Grant helped me develop those skills prior to entering the work force!"

Corrissa Young, 2000 COSGC Graduate (Astronaut Trainer @ NASA's Johnson Space Center)
Our Director

The Colorado Space Grant Consortium is about helping students that are seeking a career in the challenging field of Aerospace and Space Science. We provide college and university students with the steps that will help them reach their career goals.

We offer this diverse group of Colorado students opportunities to gain valuable hands-on, real-world experiences in the field of Aerospace and Space Science. Our students leverage these experiences with their classroom learning to achieve a competitive edge as they enter the job market.

Our Nation is faced with a technology workforce crisis. Nationally, 54% of the total Aerospace workforce is over 45 years old, 33% of which will be eligible to retire in the next five years. At the Colorado Space Grant Consortium, we are equipping students with the experience to contribute to the workforce immediately upon graduation. Many of our graduating students are highly recruited by NASA and engineering companies. You can find quotes from a number of these students throughout this plan.

I was a student of the Colorado Space Grant Consortium from 1989 to 1995. The experiences I had at the Colorado Space Grant Consortium gave me the edge I needed to start my career at Lockheed Martin in 1995. In 2000, I was honored to come back to serve the current and future students of the Colorado Space Grant Consortium. It is my goal to keep the Colorado Space Grant program alive and growing. This plan creates new opportunities for students, adding more steps for them to take along their journey.

I look forward to your support in implementing this plan.

Chris Koehler
Director, NASA’s Colorado Space Grant Consortium
University of Colorado at Boulder
303-492-4750 (direct) 303-378-4765 (cell)
koehler@colorado.edu
**Our Students**

The students who participate in our programs gain valuable experience through hands-on, real-world student space missions. These experienced students are ready to contribute to the workforce upon graduation. The table below shows where some of our students are currently employed in the workforce.

<table>
<thead>
<tr>
<th>Companies</th>
<th>Student Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lockheed Martin</td>
<td>Jacob Boettcher, Linda Cuplin, Bruce Keller, Todd Mosher, Ben Mottinger, Ryan Olds, Bruce Schulz, Jason Baugher, Don Grissom</td>
</tr>
<tr>
<td>Ball</td>
<td>Zach Allen, Andrew Jarski, Paul Kolesnikoff, Adrian Nagel, Erika Norman-Grave, Kirsten Sterrett, Tim Shilling, Jasenko Alagic</td>
</tr>
<tr>
<td>JPL</td>
<td>Sue Dekany, Katie Dunn, Christopher Grasso, Peter Illsley, Byron Jones, Jeanette Martinez, Steve Matousek, Jason Muckenthaler, Kyran Owen-Mankovich, Chris Page, Jennifer Rocca, Victoria Scarffe, Kathryn Schimmels, Mike Seibert, Katlin Sherwood, Rob Sherwood, Colette Wilklow, Jason Willis, Sean Dougherty</td>
</tr>
<tr>
<td>Johnson Space Center</td>
<td>Jason Arnold, Dean Blom, Dean Brown, Andrew Busbee, Chris DeRock, Tara Ruttley, Corissa Young</td>
</tr>
</tbody>
</table>

Other Companies Where Our Alumni Are Building Careers:
- Ames Research Center (NASA), Boeing, Design Net Engineering, General Dynamics,
- Kennedy Space Center (NASA), MicroSat Systems, Motorola, Northrop Grumman,
- RT Logic, Space Development

“It's amazing how I am doing the same thing here at work that I did while I was overseeing the Three Corner Satellite Mission Operations effort at Space Grant. My experience at Space Grant made it possible to jump right in after graduation.”

Ryan Olds, 2004 COSGC Graduate (Lockheed Martin)
Who We Are

The Colorado Space Grant Consortium is a state-wide program and is part of a national program funded by NASA that was formed in 1988. There is a Space Grant Consortium in every state plus Washington, D.C. and Puerto Rico. The 52 Space Grant Consortia support undergraduate and graduate students in over 700 higher education institutions in the areas of research, hands-on engineering, teaching, and public outreach.

The Colorado Space Grant Consortium consists of 12 higher education institutions and one foundation. COSGC is headquartered in Boulder.

We offer our students fellowships and scholarships and/or course credit. Through hands-on space programs, we engage over 1,000 students each year providing them with experiences that will aid them in their future academic courses and careers.

"I thought you might like to see how far some of our old Space Grant alumni have gotten. Yes, that's me by the Space Shuttle! I totally credit my experience at Colorado Space Grant for getting me where I am today."

Jesse McEnulty, 2000 COSGC Graduate (NASA's Kennedy Space Center)
We partner with many of the Aerospace companies in Colorado and across the nation to provide mentorship and project ideas to our students. Our industry network includes Analytical Graphics, Inc., Boeing, Broad Reach Engineering, Composite Technology Development, Design Net Engineering, Edge of Space Sciences, Inc., General Dynamics, Interface and Control Systems Inc., IOSTAR, Lockheed Martin, MCAD Design, MicroSat Systems, Spectro Lab, Starsys Research, and many others.

We also work with many NASA centers, utilizing the expertise of their engineers and scientists. These include: the Jet Propulsion Laboratory, Ames Research Center, Kennedy Space Center, Glenn Research Center, Goddard Space Flight Center, Marshall Space Flight Center, Wallops Flight Facility, and NASA Headquarters.

"I left COSGC in 1996 to pursue a career at NASA's Jet Propulsion Laboratory. Not only did my background and experiences at COSGC give me a technical leg up, they also allowed me to make new contacts with folks in industry and to foster those contacts as I began my career. I am currently in my 10th year of employment at JPL."  
Kathryn Schimmels, 1996 COSGC Graduate (NASA's Jet Propulsion Laboratory)
What We Do

Everything we do is based on providing hands-on space experiences for our students. We focus on teaching, outreach, and hands-on research experiences.

We offer several “Gateway” courses to expose students to the field of Aerospace and Space Science. We hold workshops annually for educators from around the nation to help them get their own student hands-on space programs started.

We have an excellent K-12 Education and Public Outreach program, reaching over 17,000 teachers and students in our communities each year. With our consortium, we do a wide vary of programs to reach these students and teachers. They include Planetarium programs, Aerospace tours, Adopt-a-School programs, workshops and math and science fairs. We provide content, resources, and services for teachers and students.

We provide students opportunities to work on hands-on space missions. These missions are offered in stages beginning with high altitude balloon experiments called BalloonSats to more advanced low Earth orbiting satellites like Citizen Explorer. We also have telescope programs and robotics programs.
Since 1989, the students of the Colorado Space Grant Consortium have launched three sounding rockets (CSOAR, CSHARP, HOMER), three Space Shuttle payloads (ESCAPE I and II, DATA-CHASER), over 200 BalloonSats, and two low Earth orbiting satellites (3CS-Ralphie and 3CS-Sparky). These programs have involved over 10,000 students from across the state of Colorado.
Where We Are Going

The Colorado Space Grant Consortium has four primary goals for the next five years that, when completed, will enhance the overall student experience and better equip the student for the workforce.

These four primary goals are:
1. Increase diverse student participation
2. Full implementation of our staged hands-on programs
3. Student intern Edusourcing with our industry partners
4. Mutually beneficial research faculty partnerships

These four goals will build upon the strengths of the current COSGC program and address its weaknesses.

“My years with Space Grant extended my engineering training to working with people in all subsystems. In addition to hands-on work, it taught me the interpersonal aspect of engineering, which has proven to be an integral part of my job in industry.”
Brian Sanders, 2001 COSGC Graduate (Boeing/NASA’s Johnson Space Center)
Goal 1: Increase Diverse Student Participation

Purpose:
Recruit, enable, and engage students from all backgrounds and genders in our programs and opportunities.

Targets:
Total student participants at all COSGC schools shall meet or exceed their institution’s underrepresented student percentages. COSGC plans to meet this target by the end of 2007.

Description:
A diverse community is a stronger community. A diverse student program creates a more complete student experience. The Colorado Space Grant Consortium understands the value and need for a diverse student community. Through the implementation of this goal, the needs of our student participants, our affiliate institutions, and our industry and faculty partnerships will be aligned, training the diverse workforce of the future.

“I signed onto Colorado Space Grant in 1993. I learned absolutely priceless lessons – how to troubleshoot an enigmatic and balky flight computer with unfamiliar equipment; how to work in a team environment; how to manage my time effectively; how to liaise with manufacturers of high tech items, and yet still manage to pass my classes. I was hired immediately upon my graduation in 1997!”
R. Weston Bradley 1997 COSGC Graduate (Analytical Graphics, Inc.)
Implementation:
Each affiliate shall determine their institution’s student demographics and develop a recruitment and retention strategy for their student population. Each affiliate shall create a plan for enabling and engaging their students in their programs and opportunities. Affiliate programs that are already successful in engaging underrepresented students will be asked to share best practices.

Evaluation:
Each affiliate shall include their institution’s demographics and their program’s actual student demographics as part of their annual report. A plan of action shall be submitted if diverse student participation in COSGC is below overall institution levels. Each institution’s demographics will be reviewed and updated each year.

Sustainability:
This goal will be sustained through recruitment, retention, and financial support from each COSGC member.

- Increased Involvement of Students From All Backgrounds
- Recruit, Enable, and Engage Each Student
- Meet or Exceed Institution Demographics

<table>
<thead>
<tr>
<th>Data Collect</th>
<th>Action Plan</th>
<th>Recruitment</th>
<th>Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

△ = Report 2006 2007 2008 2009 2010
Goal 2: Staged Hands-On Programs (SHOP)

Purpose:
Create and sustain four stages of hands-on programs for the Colorado Space Grant Consortium students.

Targets:
First three stages of hands-on programs state-wide by 2010.
All four stages of hands-on programs at select schools by 2010.

Description:
Students develop their skills and knowledge in stages. Whether they are learning to walk or learning calculus, they are learning in stages. The Colorado Space Grant Consortium believes that this approach will enhance student learning and experiences. With the implementation of this goal, COSGC will create four stages of hands-on programs. Each stage will challenge students at a different level. These stages are named Walk, Run, Jump, and Fly. Each stage represents a stepping stone to the next stage with each step providing students experiences of increasing complexity until they make the final step to their career. A student starting at the Walk stage as a Freshman and ending with the Fly stage as Senior will have launched two BalloonSats, one RocketSat, one Colorado CubeSat (CO$^3$Sat), and worked on one LEOSat (Low Earth Orbit Sat) resulting in an impressive resume of experience.

Walk, Run, Jump, Fly
- Steps to Career
- Numerous Flight Experiences
- Student Growth and Confidence

"Through my four years working at COSGC I enjoyed experiences not available in the classroom. It was my work and experience in COSGC that gave me an edge in industry. Experience with an organization like COSGC is invaluable and exactly what companies desire."
Ben Mottinger, 2001 COSGC Graduate (Lockheed Martin)
Evaluation:
Each stage will be evaluated annually. The evaluation will include input from students, mentors, and faculty involved with the programs. Changes to each stage will be made as necessary.

Sustainability:
New students will begin at the first stage just like the students before them. Therefore, each stage will be sustained beyond 2010. Important to each stage’s success is development of a funding strategy that keeps the increasingly more complex stages affordable and solvent.

Pages 15-18 describe each of the stages in detail.

“I would like to thank the Colorado Space Grant Consortium for the insight and direction that I received from the program. Without the help of the program I would not be where I am today. I fully believe that the future of aerospace in Colorado depends on programs like the Colorado Space Grant Consortium.”
Bruce Keller, 2005 COSGC Graduate (Lockheed Martin)
Implementation:

COSGC currently has an excellent Walk stage that will be continued for the next five years. Walk will provide students access to the edge of space for approximately two hours at an altitude of 100,000 feet. This stage is primarily focused around the BalloonSat program and the teaching of that program to others. We will continue to teach our Gateway to Space courses at various schools in the Consortium. We will continue our national teaching workshops Starting Students Space Hardware Programs (SSSHP) for NASA and the Student Hands-On Training (SHOT) for the Air Force. Our state-wide and NASA supported BalloonSat program called DemoSat-B (B = BalloonSat) started in 2003 and will continue. Gateway, SSSHP, SHOT, and DemoSat-B each include BalloonSat launches. We anticipate launching up to 10 balloons per year as part of this stage. A state-wide robotics program (CO-Rover) will be added. The combined ground and flight aspects of CO-Rover creates a unique challenge for students. In addition, we will bring together the many different telescope projects currently being developed around our Consortium to form a Colorado Telescope Network (COTeN) for students use. Students will complete Walk projects from start to finish.
Implementation:
The Run stage is a revitalization of the COSGC’s sounding rocket program. Run will provide students with access to the zero-g space environment for five minutes at an altitude of 60 to 140 miles. The primary focus of this stage will be a new program called RocketSat. This will create additional costs to implement due to the expense of launching to sub-orbital altitudes. Once successful, the program will be scaled to a state-wide program and will be called DemoSat-R (R = RocketSat). DemoSat-R will be modeled after the DemoSat-B program and students will demonstrate technologies and concepts from NASA, industry, and academia. RocketSat and DemoSat-R will be a revolving 9 to 12 month program. An additional Gateway to Space (Gateway II) course will be developed centered around the RocketSat program as funding permits. We will also develop a national educator workshop called Starting Student Rocket Programs (SSRP) which will be similar our successful Starting Student Space Hardware Programs (SSSHP). We anticipate launching two to four RocketSats per year. As part of this stage, we will also build upon our COTeN (Colorado Telescope Network) program with a new program called Advanced Telescope Observation Studies (ATOS) that will utilize this network to conduct more challenging and cooperative observations of the cosmos. Students will complete Run projects from start to finish.
Implementation:
The Jump stage is a new stage for COSGC. Jump will be the first stage to provide students with a long term presence in space. This stage is focused on a national program called CubeSat. We will utilize this concept in creation of our Colorado CubeSat (CO3Sat) program. The CO3Sat will be a revolving 12 to 24 month program with a launch every two years. The most significant challenge with this stage will be finding affordable access to space. Each CO3Sat will be controlled by students at COSGC’s Mission Operations Control Center (MOCC) located at COSGC’s lead institution. Students from each school involved will be able to participate in the MOCC activities. This program will be leveraged with Senior Design projects at the colleges and universities involved. CO3Sat will involve faculty and industry through the solicitation of experiments and mentors. This program will be scaled to a state-wide program and will be called DemoSat-C (C is for CO3Sat). Like the other stages, a national teacher and professor workshop will be developed based on this concept. Students will typically complete only a portion of a Jump project before graduation.
Implementation:
The final stage of the Staged Hands-On Program is called Fly. COSGC currently has an active Fly stage with the Citizen Explorer (CX) satellite and previous programs like DINO and 3CS. It is anticipated that CX will be completed in 2006 and launched by 2008. A new Fly program called LEOSat will be a revolving two to three year program with a launch every four years. LEOSat will provide students with the ultimate hands-on experience and they will draw upon all their previous experience with Walk, Run, and Jump to make the Fly stage and LEOSat successful. Students involved with the Fly stage will typically work on the program for a year unless they advance quickly through the other three stages or continue on to graduate school. Missions for the LEOSat will be solicited from faculty, NASA, industry and will hopefully lead to collaborations that will help fund the LEOSat program. The growth of the FLY stage will be limited by the ability to find launches for the LEOSat satellites.

<table>
<thead>
<tr>
<th>CX</th>
<th>LEOSat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>

| ![Image](image4.png) | ![Image](image5.png) |
| ![Image](image6.png) | ![Image](image7.png) |

<table>
<thead>
<tr>
<th>CX</th>
<th>LEOSat</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image10.png" alt="Image" /></td>
<td><img src="image11.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image12.png" alt="Image" /></td>
<td><img src="image13.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image14.png" alt="Image" /></td>
<td><img src="image15.png" alt="Image" /></td>
</tr>
</tbody>
</table>

- **CX**: 2006
- **Launch**: 2006
Goal 3: Edusourcing

Purpose:
Create and support opportunities for COSGC students to work with engineers and scientists from Colorado Aerospace companies. The students will work with industry mentors to develop, design, and demonstrate each company's technologies, concepts, and ideas.

Targets:
Successfully fill and complete 150 student Edusourcing positions by 2010.

Description:
The COSGC provides students with real-world and hands-on experiences with student space and near space missions. During the development of these missions, many of our students interact with engineers and scientists from NASA and local Aerospace companies. The Edusourcing program allows some of these same students an opportunity to work on a company space mission similar to a summer internship. Students will work side by side with engineers and scientists to develop, design, and demonstrate company technologies, concepts, and/or ideas. This is all done at low-cost and low risk to the company. A portion of each Edusourcing position will support COSGC program. The companies involved benefit from this relationship by gaining exposure with students at each of the COSGC’s 12 campuses, essentially building a workforce recruitment pipeline directly to the students.

Edusourcing Industry Benefits
- Low Cost and Low Risk
- Great Exposure to Future Workforce
- Builds a Recruitment Pipeline
- Great Employee Motivator

Edusourcing COSGC Benefits
- Involve More Students
- Enhanced Student Experience
- Build Infrastructure for Future Projects
Implementation:
The COSGC Director will meet with the numerous Colorado Aerospace companies that are currently associated with the COSGC to introduce the Edusourcing concept. Each company will assess their needs for student help and will provide the Director with position descriptions. Students will be recruited to fill these positions. The Edusourcing program will begin in 2006 involving two companies offering six student positions. The program will expand to four companies and 15 positions by the end of 2006. Beginning in 2007, the program will add more companies and positions to the program. By 2010 it is expected that at least 12 companies will be involved offering 48 student positions per year.

Evaluation:
Each student will be evaluated during the Edusourcing process. Feedback from engineers and scientists working with each student will be requested. An annual meeting will be held to discuss ways to improve and grow the Edusourcing program.

Sustainability:
As long as there is a need at each company, this program will be sustained by the funds it generates.
Goal 4: Research Faculty Partnerships (RFP)

Purpose:
Partner our students and their programs with faculty and their research at each of the COSGC campuses through solicitation of experiments, space flights and seed grants.

Targets:
Fly 10 cooperative experiments on BalloonSat, RocketSat, CO3Sat, and LEOSat missions and award two rounds of seed grants by 2010.

Description:
At COSGC, every studentÛªs experience is centered around a hands-on project. Many of these balloon, rocket, and/or satellite projects need assistance with their mission purpose. Research Faculty Partnerships will connect students with research being done on their campus. This will give students a mission and a customer. Faculty will get an opportunity to take their research to the edge of space or beyond. Additionally, faculty may be able to win grants based on this flight opportunity and in turn help the student programs at Space Grant. Funds will also be awarded competitively to faculty in the form of seed grants to help with the development of certain areas of research.

ÛÒIt was my experience and recommendations from COSGC that directly enabled me to enter that exact type of career after college.ÛÓ
Kyran Owen-Mankovich, 2000 COSGC Graduate (NASAÛªs Jet Propulsion Laboratory)
Implementation:
COSGC will prepare an announcement of opportunity and distribute this announcement to each the COSGC affiliates. Affiliates will distribute and collect proposals for experiments to fly on student payloads. This process will be initiated as needed and as mission capability allows. This process will be completed twice during this plan. COSGC will also prepare and distribute an announcement of opportunity to faculty for seed grants. These seed grants will help faculty on each of the COSGC campuses to develop their research programs. Plans are to award two rounds of seed grants through this plan period. Each seed grant will require a 1 for 1 non-federal match of COSGC funds and a plan for future funding. This plan shall include COSGC as a financial partner in a future proposal.

Evaluation:
Surveys of faculty, students, and affiliate leads will be conducted at the completion of each proposal review, award, and mission or grant completion. Comments and concerns will be addressed during the next competition.

Sustainability:
The request for experiments will be sustained as long as there are funds to support flying student missions. The seed grant competition will be sustained by the success of the faculty in taking their research to the next level and proposing for additional funds from outside sources. It is expected that these proposals would include COSGC. It is also expected that the matching support on seed grants will generate support to keep this program viable.

<table>
<thead>
<tr>
<th>RFP COSGC Benefits</th>
<th>RFP Faculty Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Increase Faculty Involvement</td>
<td>- Development of Research Ideas</td>
</tr>
<tr>
<td>- Research Missions</td>
<td>- Launch Opportunities</td>
</tr>
<tr>
<td>- Proposal Collaborations</td>
<td>- Connection to Students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RFP (Science) Evaluation</th>
<th>RFP (Seed) Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td></td>
<td>2010</td>
</tr>
</tbody>
</table>
Funding Summary

The funding requirements associated with the implementation of this plan in 2006 – 2010 are summarized below. As with many student programs, without adequate support program growth is uncertain. However, the students of the Colorado Space Grant Consortium are in a unique situation. They are the future workforce that our Nation needs to remain dominant in the Aerospace and Space Science industry. The proposed programs in this plan will provide students with more experience, more skills, and more confidence in themselves to keep our Nation’s technological workforce the best.

Goal 1: Increase Diverse Student Participation:
The estimated cost for the first year of this goal is $20K for 2006. The majority of these funds will support the additional effort to create recruitment plans at each COSGC affiliate. Implementation of these recruitment plans is estimated to cost $60K per year.

Goal 2: Staged Hands-On Programs (SHOP)
The estimated cost for the Staged Hands-On Program is $92K 2006, $237K 2007, $412K 2008, $412K 2009, and $612K 2010, for a total cost of $1.765M over five years. This includes 46 balloon launches, 11 RocketSat launches and one CO^3Sat launch. $800K of total cost will support COSGC students and staff. The remaining $965K will pay for materials and launches.

Goal 3: Edusourcing
The estimated cost for this program is $90K per year for staff support. Each Edusourcing position provides funds for this position. Based on a target of 150 Edusourcing positions (30 per year), this cost will be covered.

Goal 4: Research Faculty Partnerships (RFP)
The estimated cost to implement RFP is $30K per year in staff and student support to administer the program. Seed grants are estimated to cost $40K for the first round and $60K for the second round.

“I hope that more students will become enriched in their engineering and science careers by getting involved with COSGC. Only working with other student engineering disciplines and outside industry partners do students truly gain the knowledge of the engineering craft.”
Peter Illsley, 1997 COSGC Graduate (NASA’s Jet Propulsion Laboratory)
You Can Help

Support from our former students who are now successful engineers and scientists is increasing every year. So is the support from our industry partners. We would like to support an additional 10 students every year through this fund-raising effort. A typical student working the entire year at Space Grant receives about $10,000 in paid wages. Every contribution, no matter how little the amount, contributes toward this goal and is tax deductible in most cases. If you would like to support the students at the Colorado Space Grant Consortium, please complete the card on page 26 and send it today.

We have many different support levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balloon</td>
<td>$1-$99¹</td>
</tr>
<tr>
<td>Rocket</td>
<td>$100-$299²</td>
</tr>
<tr>
<td>CubeSat</td>
<td>$300-$499³</td>
</tr>
<tr>
<td>Satellite</td>
<td>$500-$749⁴</td>
</tr>
<tr>
<td>Moon</td>
<td>$750-$999⁵</td>
</tr>
<tr>
<td>Mars</td>
<td>$1,000 &amp; up⁶</td>
</tr>
</tbody>
</table>

¹ Includes newsletter and Space Grant tour.
² Includes items above plus a T-shirt.
³ Includes items above plus a coffee mug.
⁴ Includes items above plus a COSGC Space Pen.
⁵ Includes items above plus the donors name and year on the Student Support Plaque.
⁶ Includes items above plus a special lunch with students in your honor.

"Today I work for a NASA contractor at the Johnson Space Center in Houston and use much of the experience I gained at Space Grant, from technical experiences to working in engineering teams, in my job on a daily basis. While I very much value the education I obtained while attending the University, it most certainly would not have been the same experience without having the opportunities that were afforded to me by the Colorado Space Grant Consortium."

Jason Arnold, 2001 COSGC Graduate (NASA's Johnson Space Center)
Join Us...

The Colorado Space Grant Consortium is moving forward into a new phase of development and growth. This plan is a summary of our roadmap. We believe we are making a significant difference to students from all backgrounds and areas of study through our current programs. We believe this plan will enhance the experiences of our current and future students. With additional support, we can fully implement this plan and do much more for current and future higher education students in Colorado. We would be pleased to explore ways to collaborate with you.

Our Nation needs good engineers and scientists with degrees from great colleges and universities to fill the vacancies being created by the “graying of the workforce.” Through our student hands-on programs and partnerships with Colorado colleges and universities, NASA, and Aerospace companies, COSGC can help give our Nation the best. Please join us in making this happen.

“The experience and hands on knowledge I acquired through Colorado Space Grant have helped and furthered my career at the Jet Propulsion Laboratory more than any other single class or Lab that I was involved in at CU. Due to the experience gained at Space Grant I have been able to distinguish myself from my peers, being promoted to Senior Engineer within 3 years of my graduation from CU.”

Jason Willis, 1998 COSGC Graduate (NASA's Jet Propulsion Laboratory)
Please mail the forms below to the following address.

Colorado Space Grant Consortium  
Discovery Learning Center  
520 UCB  
Boulder, CO 80309-0520

You will be mailed a receipt so please include a return address and thank you.

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td></td>
</tr>
<tr>
<td>Phone:</td>
<td></td>
</tr>
</tbody>
</table>

Please send your support by making your tax-deductible gift today:

☐$50  ☐$100  ☐$300  ☐$500  ☐$750  ☐$1,000  ☐Other ______

Please make your check payable to: CU Foundation  
Or charge:  ☐Visa  ☐Discover  ☐AMEX  ☐MasterCard

Account Number:                     Exp. Date: __________________________

<table>
<thead>
<tr>
<th>Name on Card</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐My company will match this gift</td>
<td>☐My spouse's company will match this gift</td>
</tr>
</tbody>
</table>

Where are you working now?

What is your title?

Are there any additional ways you would like to support Space Grant? (Please check all that apply)

☐Student Advisor / Mentor  ☐Symposium Speaker / Judge  
☐Space Grant Advisory Board  ☐Equipment Donations  
☐Seminar / Class speaker  ☐Support of a Graduate Student  
☐Support of an Undergraduate Student  ☐Partner in an educational or research endeavor  
☐Provide EduSourcing positions to students  ☐Other? (Please describe)  

Would you like to receive “The Colorado Space Grant News” twice a year?  ☐Yes  ☐No

Thank you for your time and support.
This Page Intentionally Left Blank.
**Directions To The COSGC Headquarters**

The headquarters for the Colorado Space Grant Consortium are located on the Boulder campus of the University of Colorado. Our offices are in the Discovery Learning Center, room 270. Please stop by for a visit. If you would like directions to one of our affiliate locations, please contact us at 303-492-3141.
If you are interested in working with our programs and students, please contact Chris Koehler.

**Colorado Space Grant Consortium**
Discovery Learning Center
University of Colorado at Boulder
520 UCB
Boulder, Colorado 80309-0520

303-492-3141 (main) 303-492-5456 (fax)
koehler@colorado.edu

spacegrant.colorado.edu