



The Edge

ASU/NASA SPACE GRANT NEWSLETTER

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2010-2011 Events

- Homecoming
Oct. 30
- Earth & Space
Exploration Day
Nov. 6
- ASCEND! Launch
Nov. 20
- Alumni Night
Nov. 30
- ASCEND! Launch
Mar. 26
- Banquet & Symposium
Apr. 8-9
- Daedalus Competition
Apr. 14-16

What is ASU/NASA Space Grant?

The ASU/NASA Space Grant is part of a National Space Grant College and Fellowship Program that provides support for students to participate in research and creative activities in science, technology, engineering and mathematics (STEM) related disciplines.

Undergraduate internships and graduate fellowships are available to support top ASU students in a variety of disciplines from STEM to journalism and more. Interns perform research with faculty mentors or participate in team engineering projects. Graduate fellow are supported to do innovative informal and formal education activities. The program provides interns with the opportunity to apply what they learn in coursework to real research and design projects.

Interns also share what they learned through informal education and outreach events on campus, through school and after-school programs and at the annual Arizona Space Grant Undergraduate Research Symposium.

Mission

Working to expand opportunities for ASU students to participate in NASA's aeronautics and space projects by supporting and enhancing science and engineering education, research and public outreach.

Space Grant Intern Advisors

The advisors this year are Colin Ho (Team lead for the UAV project: Colin.Ho@asu.edu, Matt Summers (Team lead for Daedalus Astronautics: mhsummer@asu.edu) and Emily McBryan (Team lead for Space Grant Robotics: emcbryan@asu.edu).

Intern Advisors are advisors to other interns and to Director Tom Sharp and Program Coordinator Candace Jackson. Intern advisors have contributed greatly to the program by organizing intern volunteers for outreach efforts and other Space Grant events. If you are a student interested in learning more about Space Grant, talk to one of the advisors.



Colin Ho



Matt Summers



Emily McBryan

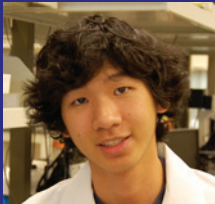
Check Out Some of Our Amazing Featured Interns!



Jim Crowell

Jim Crowell

My major is Earth and Space Exploration - Exploration Systems Design. I'm doing my Space Grant work with Dr. Mark Robinson using data from the Lunar Reconnaissance Orbiter Camera to analyze pit formation, melt pools in craters, and more. In addition, I co-founded and am the president of the ASU chapter of Students for the Exploration and Development of Space (SEDS). For more information on SEDS visit www.sedsasu.org or contact james.crowell@asu.edu.



David Ganger

David Ganger

Since October of 2009, I have been performing research on underwater robotic communications in the Center for Biosignatures Discovery Automation of the Biodesign Institute, under the direction of Dr. Cody Youngbull and Dr. Deirdre Meldrum. With the help of the NASA Space Grant, I will be working on a cost effective deep-sea capable temperature sensor that optically communicates data to a commercial underwater camera.

Director's Corner



Tom Sharp

The last year has been very successful for the ASU/NASA Space Grant Program. We submitted a new five-year proposal for the Arizona Space Grant Consortium and it was fully funded. We are excited because our NASA budget was increased. As in every Space Grant proposal, ASU must contribute a cost-share match to the NASA funding. I am very happy to report that, even in this tight budgetary time, the Vice Provost for Research, the Graduate College, the College of Liberal Arts and Sciences, the Fulton School of Engineering, the School of Earth and Space Exploration (SESE) and the Department of Electrical Engineering all pitched in to make this important cost-share match.

This year, we have been able to support 58 undergraduate interns through a combination of Space Grant funds and split funding from faculty mentors. Our interns are working on a variety of science and engineering projects as well as outreach and public relations. We are also supporting six graduate fellows with stipend, tuition and health care for a total of seven semesters. Our fellows are working on large education/outreach projects to help educate and inspire the next generation of scientists and engineers.

Our group engineering projects, ASCEND (BalloonSat), Daedalus Astronautics (Rocketry), Space Grant Robotics and Space Grant UAV are doing well. Our UAV (Unmanned Aerial Vehicle) team completed the design, construction and testing of their unmanned aircraft last year, but with a complete turnover in personnel, we are currently rebuilding the UAV team. We have started a new CubeSat project this year, led by intern Aaron Goldstein. Aaron has created the Sun Devil Satellite Laboratory on campus and is assembling a new ASU Satellite team of students and mentors.

We are looking forward to a great year of intern and fellow accomplishments. This fall, Space Grant interns made large outreach contributions at the ASU Homecoming Block Party (Oct. 30) and at the SESE Earth and Space Exploration Day (Nov. 6). We are having Alumni Night on November 30th. On Saturday April 9th, ASU will be hosting the annual Arizona Space Grant Undergraduate Research Symposium at the ASU Memorial Union. Interns from all over Arizona will give oral presentations on their research results. You are all invited to attend.



Anthony Adame: NASA Space Science Student Ambassador



Anthony Adame representing Space Grant

2010–2011 Academic Year

Being a NASA Space Science Student Ambassador has been a great opportunity to be involved with the ASU/NASA Space Grant program. The program provides great opportunities for students and opens a gateway to obtain knowledge and experience that cannot be obtained inside a classroom. As part of my activities, I gave a welcoming talk to the new Space Grant interns during orientation. I would like to thank all the Space Grant interns and staff for giving me a warm welcome and making orientation a memorable experience.

2010 Summer Interns

Every summer ASU Space Grant interns participate in summer internships at NASA Centers and other organizations.

Matt Summers: Alliant Techsystems (ATK) – Launch Systems, Utah

As a Quality Engineer Intern, Matt Summers worked on Ordinance Systems of the Shuttle RSRM and ARES RSRMV Programs. A Design Engineer along with Matt created the testing method to qualify the Nozzle Severance System for the first time in the history of the program.

Colin Ho and Evan Olson: NASA Jet Propulsion Laboratory, California

Colin Ho and Evan Olson worked with Dr. Alberto Behar on developing the initial design for a novel aquatic robot for the exploration of sub glacial lakes. Sub glacial lakes, such as those in Antarctica, are virtually unexplored environments that are too remote and difficult to access with current instrumentation. Thus, they designed the structure and propulsion components of the micro submersible to directly confront these unique environmental constraints.

Kyle Montgomery and Lauren Puglisi: NASA Johnson Space Center, Texas

Kyle Montgomery and Lauren Puglisi were selected for this internship because of their work on the RAVEN (Robotic Assist Vehicle for Extraterrestrial Navigation) as part of their SESE senior exploration project. The internship was about two months long. The first 6 weeks were at the Johnson Space Center and the last few weeks were in Flagstaff, Arizona at Black Point Lava Flow running simulated missions with current NASA technology. Kyle worked on the lunar electric rover side-by-side with NASA astronaut Chris Looper and his team.

Michael Christiansen: Department of Energy at the National Renewable Energy Laboratory, Colorado

Michael Christiansen, through a DOE program called SULI (Science Undergraduate Laboratory Internship Program), was chosen to find a more optimal heat transfer fluid for use in solar thermal power. Special mixtures of molten nitrate and nitrite salts are promising candidates. Michael tested different proportions and combinations of up to five or six salts in this experimental project.

Selisa Rollins: NASA Johnson Space Center, Texas

Selisa Rollins assisted the Payload Systems Division with performance and functional testing on Actiwatch system devices that will be utilized for on-orbit biomedical research. She also compiled and analyzed statistical data from scientific publications to determine feasibility of operation parameters for the International Space Station Urine Monitoring System ground unit.

Krystal Mike: NASA Marshall Space Flight Center, Alabama

Krystal Mike worked on Thrust Vector Control System Integration and components on the project “Thrust Vector Control (TVC) Learning Center”. A team of four designed a 2-axis inverted pendulum mechanical system to demonstrate TVC. She was also responsible for writing a mathematical model of the system using Lagrangian Mechanics and LQR control with LabView in order to drive the system.

Daedalus Astronautics

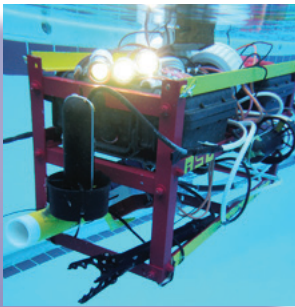
Daedalus is a completely student run organization dedicated to the design, manufacture, and launching of sounding rockets. In addition, Daedalus performs math, science, and engineering educational outreach in the community. More recently, the efforts of Daedalus has been expanded to presenting successful research at propulsion and student-focused conferences, such as the AIAA Regional VI Student Conference and the AIAA Joint Propulsion Conference.

The 2009-2010 school year resulted in many successes; however, because of these achievements our members weren't able to compete at our regular competitions. However, we did produce five conference papers and obtained summer internships all over the country for more than 80% of our senior members.



Space Grant Robotics

The ASU/NASA Space Grant Robotics team retained their status as finalists in the National Underwater Robotics Competition (NURC) this summer. Founded in 2008, this young team has consistently done well in underwater robotic competitions. Over the summer the team competed and placed 2nd at NURC and 6th at the international Marine Advanced Technology Education (MATE) competition, beating MIT and Georgia Tech. At the MATE Competition, the theme was the Loihi Seamount, the rising new island of Hawaii. The competition involved exploring a simulated underwater volcano. The robot had to collect crustaceans, rock samples, take temperature readings from a volcanic vent, as well as take precise measurements of a thick bio-mat on the bottom of the sea floor. Besides the performance of the robot, teamwork is important in these competitions. The team was evaluated on a technical report of the robot given in oral and poster presentations before a panel of engineers.



The team has accomplished a great deal in its first two years, but they are far from finished. They are now in their third year with ambitious goals. The ASU/NASA Space Grant Robotics Team plans on diving deeper into the water by switching from a remote controlled robot to a fully autonomous vehicle. It will feature custom thrusters that will allow it to venture into a more unique design and away from the limits of off the shelf parts.

ASCEND! (Aerospace Scholarships to Challenge and Educate New Discoverers)

This will be an exciting year for the high altitude ballooning ASCEND team. There are a few returning students and a few new students. We have been building upon previous designs for the last two years so this year's payload should be one of the most exciting we have done. With an HD video camera and high resolution imaging camera on board, the pictures take from 15 to 20 miles up and should be spectacular. To accompany the cameras, we will have temperature sensors and accelerometers recording throughout the duration of the flight.

We are focusing more on the design and layout of the payload structure this year. With half of the team well trained in machining, an innovative design is possible. We hope to get our payload down to a repeatable design so that we can use the same structure for a variety of experiments on many flights. Our initial launch took place on November 20th in Quartzite and we recovered our payload in the mountains just west of Prescott, Arizona.



Earth and Space Exploration Day, a Success Once Again

Every fall, the School of Earth and Space Exploration (SESE) puts on Earth and Space Exploration Day, a public outreach event intended to share science and engineering with the local community and especially with kids. This fun family event provides hands-on educational activities, the latest images of our solar system in the Space Photography Lab, great mineral and fossil displays in the Geology Museum, public lectures on Earth and Space Exploration and more. Several other campus groups joined the SESE community, including ASU/NASA Space Grant Program, The Institute for Human Origins, The School of Sustainability's Ecology Explorers and more. The event was held at the ASU Tempe Campus Bateman Physical Sciences F-building on November 6th from 9 a.m.- 3 p.m. This year's lecturer was SESE's new faculty member Jim Bell, who presented two lectures on recent imaging and spectroscopic results from Mars.

"This event would not be possible at this scale without the hard work and enthusiastic participation of our Space Grant interns", says ESE Day Coordinator Tom Sharp. Young people are essential to our outreach efforts because kids can see themselves as potential scientists and engineers when they see young people working as scientists and engineers. This event allows kids to interact with real scientists and to see what they are like. The SESE community promotes this event in order to educate the public about the basic concepts of science and engineering.



Anthony Adame representing Space Grant



Dr. Rock examining a child's rock sample



A water rocket being launched with help from a member of Daedalus



A young boy masters the robotic arm



Interns at the water rocket table



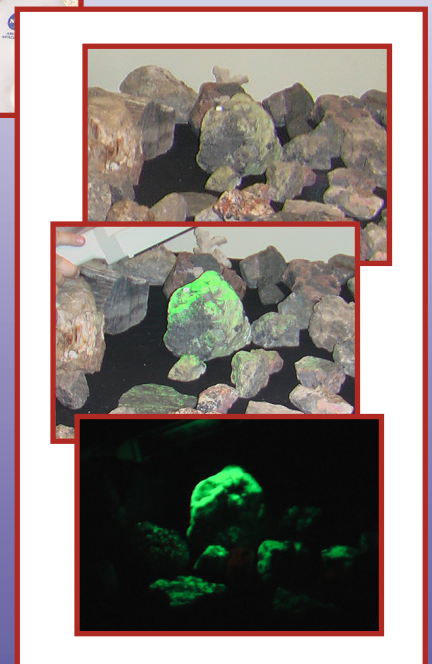
A Robotics Team member helps a girl control an underwater robot



GeoClub members at the welcome table



The ASCEND Team's balloons with a camera on board taking videos of all the action below



Fluorescent minerals

2nd Annual Alumni Night November 30th, 2010

On Tuesday, November 30, 2010, the ASU/NASA Space Grant Program will hold its 2nd Annual Alumni Night at the Sheraton Hotel Phoenix from 6:00 pm - 8:00 pm. The purpose of this event is to bring back some of the many ASU Space Grant alumni to update them on the Space Grant Program. It will also allow our current interns to meet and network with our alumni. We hope that this event will lead to additional opportunities for our interns and additional participation of our alumni in our intern projects.

Dr. Thomas Sharp will give a brief summary of the current Space Grant program and intern projects and Aaron Goldstein will introduce the new Sun Devil Satellite Laboratory. Our alumni keynote speaker for the evening is R. Shea Ferring, Propulsion Engineering Manager, Launch Systems Group, Orbital Sciences Corporation.

The Sheraton Hotel Phoenix is located at 1600 South 52nd Street, Tempe, AZ 85281. To see more information about the hotel visit: <http://www.sheratonphoenixairport.com/>

Please consider making a gift to support the ASU/NASA Space Grant Initiatives

As one of our Space Grant alumni, you know firsthand the positive impact that this program had on your educational experience at Arizona State University. We invite you back to visit and also welcome your continued support for today's students who are benefiting from these opportunities through Space Grant.

Please consider making a gift, becoming involved with one of our projects, providing summer internship opportunities and promoting the program to your industry contacts. Your gift will provide support for the ASU Space Grant program expenses that are in addition to those funded by our NASA Space Grant funds. If you would like to make a gift, you may do so online at www.asufoundation.org/SpaceGrant. Checks, made payable to the ASU Foundation, may be sent to:

ASU/NASA Space Grant Program
Attention: Candace Jackson
PO Box 876305
Arizona State University
Tempe, AZ 85287-6305

All funds will be deposited with the ASU Foundation, a separate non-profit organization that exists to benefit ASU. This amount may be considered a charitable contribution. Please consult with your tax advisor regarding the deductibility of charitable contributions. 30004839

For more information on Space Grant please visit <http://nasa.asu.edu/>
For questions, or to share your own success story contact nasa@asu.edu
If you have an interesting Space Grant story to add to the newsletter contact stephanie.m.miller@asu.edu