

Name of Consortium: New Mexico
Name of Lead Institution: New Mexico State University
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PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The New Mexico Space Grant Consortium is a Designated Consortium funded at a level of \$785,000 for fiscal year 2009.

PROGRAM GOALS

- Develop strong collaborative programs that clearly benefit NMSGC members and clients by leveraging the collective resources of the members.
- Create revenue opportunities by providing professional and educational services to the aerospace industry.
- NMSGC will be a clearinghouse for statewide space related expertise, information, facilities, and education. NMSGC will work with commercial and government organizations to leverage time, capabilities, equipment, and funding.
- NMSGC is part of an existing, larger, broader space related community that can effectively service the interests of academia, industry, education, and the public.
- NMSGC members will bring in diversified funding to support space related activities that meet identified needs.

PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

- Outcome #1 - **Internship Program:** Internship programs are instrumental in retaining students through to graduation. Research indicates students who work on real world applications through internships get a better understanding of how their academic work applies in the real world. This proves to be a retention strategy. Internships allow students to work side-by-side with NASA personnel and other interns and learn they can compete in a technical arena. 7 students received internships, 2 students were able to work on Orion Crew Escape Vehicle as part of their internship.
- Outcome #1 - **Scholarship Program:** Funding provided allows students to do NASA related research with faculty. The scholarship program supports students to attend

conferences, publish their work, and provides observatory time. 28 students received scholarships

- Outcome #1 - **Scholarship Program**: Students agree to 10 hours of community service when receiving their scholarship. The purpose of the service is to get students into the habit of giving back and to promote STEM recruitment, retention, and awareness. Scholarship recipients volunteered 472 hours during 2009 providing service to pre-college students, college students, academic organizations, and the general public.
- Outcome #2 - **Gaining Retention and Achievement for Students Program (GRASP)**: GRASP is a semester long faculty development program which increases teaching strategies proven to support student learning. The program is structured to engage faculty members on a one-to-one basis, providing individual attention at each step of the evolution away from reliance solely on lecture to an adoption of multiple ways to engage students in a dynamic learning environment, both in and outside the classroom. 14 faculty and 426 students at New Mexico State University (NMSU) and Doña Ana Community College (DACC) participated in this program in 2009. There is a 5.1% increase in student achievement at New Mexico State University (NMSU) and 7.9% at DACC. Student achievement is defined as the number of students receiving a final grade of A, B, or C in the course. Student achievement is defined as the number of students receiving a final grade of A, B, or C in the course.
- Outcome #3 - **International Symposium for Personal and Commercial Spaceflight (ISPCS-2009)**: ISPCS brought together 286 leaders in the growing global commercial space industry. The symposium provides attendees a “snap shot” of the commercial space industry at the time of the conference. This two-day conference is a focused, strategic and tactical examination of salient topics, unique and relevant to the commercial space industry. All aspects of the space industry are involved including civil, military, academia, national and international.

PROGRAM ACCOMPLISHMENTS

Outcome 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA’s strategic goals.

- **Statewide Research Scholarship/Fellowship Program**
 - On-line statewide competition is open to students enrolled in STEM at New Mexico State University, the University of New Mexico, and New Mexico Institute of Mining and Technology.
 - NMSGC campus directors facilitate the awards on their campuses
 - 35 applications for research scholarships were received
 - 19 Graduate Students awarded fellowships
 - 7 Undergraduate Students awarded scholarships
 - 2 Education Majors award scholarships
 - 15 female, 13 male; 6 minority, 22 non-minority
 - Scholarships funded were in diverse disciplines
- **NASA Academies and Summer Internships**
 - Eligible institutions: New Mexico State University, the University of New Mexico, and New Mexico Institute of Mining and Technology.

- 7 Student Placements:
 - 4 at Langley Research Center, 1 at NASA Academy, and 2 at Space Grant
 - 5 males, 2 female; 3 minority, 4 non-minority
- **NMSGC Student Research Colloquium**
 - 9 Space Grant scholars presented their research
- **Student Launch Project**
 - New Mexico student teams launched electronic payloads from Spaceport America on May 4, 2010.
 - NMSU designed, tested, and built a payload to titled “Inertial Measurement Unit”.
 - UNM designed, tested, and built a payload to titled “Programmable Connectors” in collaboration with Los Alamos National Laboratory.
- **Education Enhancement Program**
 - Supports project based STEM course development.
 - Statewide online proposal process competitively awards projects for up to \$15,000
 - Projects must indicate alignment with NASA’s Education Portfolio
 - 1 Education Enhancement Programs funded in 2009: NMSU Electronic and Computer Engineering Technology Capstone Course Development.
- **Research Enhancement Program**
 - Statewide online proposal process competitively awards projects for up to \$25,000
 - Research projects must support NASA Mission Directorates.
 - 1 Research Enhancement Programs funded in 2009: A Suborbital Flight Experiment for Validating a Satellite Inertia Identification Method

Outcome 2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.

- **GRASP:** The purpose of the GRASP program is to retain students in STEM disciplines by improving STEM teaching. This program is offered to STEM faculty in the Colleges of Engineering, Arts and Sciences, and Agriculture at NMSU. 14 faculty and 426 students at New Mexico State University (NMSU) and Doña Ana Community College (DACC) participated in this program in 2009.
- **Advancing Leaders:** Develops positive individual leadership among NMSU staff and faculty for the purpose of empowering and supporting the university community and beyond. 3 male and 7 female faculty participated.
- **Statewide Education Scholarship Program:** The purpose of this program is to provide funding & resources to student teachers to prepare NASA curriculum and activities for teaching space related science. All recipients were required to prepare NASA curriculum and use when student teaching. Two students received education scholarships in 2009.
- **Public Service Enhancement Program**
 - Supports public service based STEM programs.
 - Statewide online proposal process competitively awards projects for up to \$5,000
 - Projects must indicate alignment with NASA’s Education Portfolio Strategic
 - 1 Public Service Enhancement Programs funded in 2009: New Mexico Best

Student Launch Project

- New Mexico student teams launched electronic payloads from Spaceport America on May 4, 2010.
- Hot Springs High School from Truth or Consequences, NM participated.

Outcome 3: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

- **International Symposium on Personal Spaceflight (ISPCS)**
 - 286 people attended ISPCS-2009 from NASA, other federal and non-federal agencies, industry and academia. The purpose of ISPCS to bring together the community involved in all aspects of personal and commercial spaceflight to help grow the commercial spaceflight industry. NASA participants included Alan Ladwig, Deputy Associate Administrator for Public Liaison at NASA Headquarters; Wayne Hale, Deputy Associate Administrator, Strategic Partnerships; Ryan O'Connor, Chief, Safety and Mission Assurance; Michael Lopez-Alegria, Assistant Director, ISS; Bruce Pittman, Director, Flight Project at the Space Portal, NASA Ames Research Center; Yvonne Cagle, Program Manager, Commercial Suborbital Research Program; and Frank Benz, Manager, White Sands Test Facility.
- **ISPCS Public Forum**
 - 81 people attended the ISPCS Public Forum, held annually to help inform the public about the progress of the business of space. Agenda included the role of government, business, and education in building a spaceport community This event is the kick off to the International Symposium for Personal Spaceflight.

PROGRAM CONTRIBUTIONS TO PART MEASURES

- **Longitudinal Tracking:**
 - 97 Total awards; 24 awards to underrepresented minority students; 38 awards to female students; 19 students in working STEM employment; 65 still enrolled in their STEM program at an NMSGC institution.
- **Matching Funds:** NMSGC provides 1:1 matching funds.
- **Minority-Serving Institutions:**
 - New Mexico State University (HSI) is the lead institution for NMSGC. NMSU participates in our scholarship program, internship program, Research Enhancement Program, Education Enhancement Program, GRASP, Student Launch Project, Reduced Gravity Student Flight Opportunity Program, Advancing Leaders, and Student Research Colloquium.
 - University of New Mexico (HSI) participates in NMSGC scholarship program, internship program, Research Enhancement Program, Education Enhancement program, Student Launch Program, and Reduced Gravity Student Flight Opportunity Program.
 - New Mexico Highlands University (HSI) participates in NMSGC scholarship program and Student Launch Program.
 - Central New Mexico Community College (HSI) participates in NMSGC scholarship program and Student Launch Program.

- Dona Ana Community College (HSI) participates in NMSGC scholarship program and Student Launch Program.
- Southwestern Indian Polytechnic Institute (Tribal College) participates in NMSGC scholarship program and Student Launch Program.

IMPROVEMENTS MADE IN THE PAST YEAR

- **Student Launch Program**
 - NMSGC held our second student launch in 2009. The rocket reached a 75 mile altitude, landed safely, and experiments were recovered. We worked with UP Aerospace and Lockheed Martin to re-design the rocket recovery system in order to have a successful launch. Lockheed Martin provided this service to NMSGC at no charge.
 - New Mexico student teams launched their electronic payloads from Spaceport America on May 4, 2010
 - 2 universities, NMSU and UNM designed, tested, and built separate payloads
 - 1 high school, Hot Springs High School in Truth or Consequences successfully built the RockOn Experiment.
 - All student teams completed their payload by March-2010 for integration into the rocket. Student teams attended the launch at Spaceport America on May 4, 2010.
 - An event company coordinated the Launch Day Event. This event was open to the public. 170 people attended this exciting event.
 - The Student Launch Program received 17 news articles, 2 TV reports, and 3 radio reports from the press.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

- Research Universities: New Mexico State University (HSI); University of New Mexico (HSI); New Mexico Institute of Mining & Technology
- Comprehensive Universities: Eastern New Mexico University (HSI); New Mexico Highlands University (HSI)
- Community Colleges: Dona Ana Community College (HSI); Southwestern Indian Polytechnic Institute (Tribal College); San Juan Community College, Central NM Community College (HSI)
- Partners recruit and follow-up with scholarship students, teach courses for the Student Launch Program, and offer educational programs through the Education Enhancement Program, and research programs through the Research Enhancement Program.