



DIVERSITY ACTION GRANT (DAG) REPORT

Utah State University ASME Student
Section

June 1st, 2015



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CONTACT INFORMATION

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SUMMARY OF DAG PROJECT

ASME DAG Funding: \$ 1500 Total Project Budget: \$ 2750 Total Expenses: \$ 2412.27

Funding used as follows: \$ 1500 DAG, \$ 912.27 SHPE - Total \$ 2412.27

Partnering Organizations: Society of Hispanic Professional Engineers at USU, Society of Women Engineers at USU, Institute of Electrical and Electronics Engineers at USU, USU Society of Physics Students, USU Geology Club, USU Chemistry Club, Space Dynamics Laboratory, USU College of Engineering, The Junction, Orbital ATK

Attendance: Total 203 Women 79 Minorities 11

ASME Section/Region Reps 5

PROJECT TITLE

Science and Engineering Day 2015

PROJECT DESCRIPTION

Science and Engineering Day is an event that targets students in elementary and middle school (4th through 8th grade). It is an all-day event beginning with an interactive presentation by an engineering professional. After that, students attend hands on workshops that focus on the fields of STEM; the workshops this year consisted of topics such as rocket propulsion, 3D Modeling, space exploration,

electrostatic forces, buoyant forces, geology, physics, and chemistry. In order to fit such a large group, the students were divided into different groups or “tracks” and rotated through various workshops simultaneously.

In 2014, the Science and Engineering Day event was planned and coordinated by the Society of Hispanic Professional Engineers (SHPE) at Utah State University (USU). Prior to that, the event was known as NASA Space Science Day and funding was provided by NASA (No Longer Available).

In 2015, members of SHPE who are also part of USU’s American Society of Mechanical Engineers (ASME) student section sought the opportunity for both organizations to collaborate and take part in ASME’s Diversity Action Grant (DAG) program. The objectives of the Science and Engineering Day event align very well with those of DAG. A description of the project objectives will be discussed in the following section.

The Science and Engineering Day event at Utah State University is possible through the support of ASME, SHPE, the Society of Women Engineers (SWE), Institute of Electrical and Electronics Engineers (IEEE) Space Dynamics Laboratory (SDL), the USU College of Engineering, USU College of Science, and Orbital ATK.

PROJECT OBJECTIVES

As mentioned in the previous section, the objectives of Science and Engineering Day are well aligned with those of ASME’s Diversity Action grant as the event seeks to accomplish the following

- Increase participation of women and under-represented minorities in ASME’s student section and USU’s SHPE chapter.
- Inspire K-12 students to pursue and excel in STEM careers.

In order to accomplish from the previous paragraph, the planning team set a goal to have at least 30% of the attendees be women and under-represented minorities. This goal was accomplished through marketing efforts and will be further discussed below.

EVALUATION OF PROGRAM’S SUCCESS

It is important to note that when this event was held last year, 74 students and 20 volunteers attended. Collaboration between ASME, SHPE, and other organizations this year resulted in attendance of 173 students and 30 volunteers, totaling 203 attendees; an increase of approximately 46 percent.

The goal during planning of the program was that at least 30 percent of attendees were women or under-represented minorities. In order to achieve this goal, the planning team marketed the event through different sources: Utah Public Radio, local Spanish radio station, local newspapers, social media, posting the event in the city library website, and distributing flyers during USU’s Engineering Week community night (February 18). Additionally, volunteers were recruited from SHPE and SWE given that these organizations seek to promote diversity in Engineering and many of their members are women and under-represented minorities. The USU Chapter of the National Society of Black Engineers (NSBE) was also invited to participate but no members were able to attend. The marketing and volunteer recruitment efforts resulted in 44 percent (90/203) event attendance by women and under-represented minorities which well exceeded the goal of 30 percent.

The objective of increasing participation of women and under-represented minorities in ASME’s student section was met by recruiting volunteers from SHPE and SWE who are also part of ASME. Additionally,

ASME non-members were encouraged to join ASME and informed about the first year free student membership option.

The objective of inspiring K-12 students to pursue and excel in STEM careers was met by developing a program curriculum that was very hands-on and allowed the students to fabricate and test prototypes while being taught engineering principles. A screen shot of the schedule containing the workshops and activities presented can be found in Figure 1 below:

TIME	ACTIVITY	GREEN TRACK (Middle School)	RED TRACK	BLUE TRACK	YELLOW TRACK	ORANGE TRACK	Purple Track (JIC*)
9:45 AM	Check-in	Check-in	Check-in	Check-in	Check-in	Check-in	Check-in
10:30 AM	Opening Ceremony	Opening Ceremony	Opening Ceremony	Opening Ceremony	Opening Ceremony	Opening Ceremony	Opening Ceremony
11:30	Workshops 1	3D Modeling (Computer Lab)	Chem/ATK Demo	Boat Workshop	Parachute Workshop	Geology Demo	IEEE Workshop
11:55	Rotation time	3D Modeling					
12:00	Workshop 2	3D Modeling	Boat Workshop	Chem/ATK Demo	Build a Rocket	Parachute Workshop	Geology Demo
12:25	Rotation time	3D Modeling					
12:30	Workshop 3	Chem/ATK Demo	Physics Demo	IEEE Workshop	Boat Workshop	Build a Rocket	Parachute Workshop
12:55	Rotation time						
1:00 PM	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
2:00	Workshop 4	Geology Demo	IEEE Workshop	Parachute Workshop	Chem/ATK Demo	Physics Demo	Build a Rocket
2:25	Rotation time						
2:30	Workshop 5	IEEE Workshop	Parachute Workshop	Build a Rocket	Geology Demo	Chem/ATK Demo	Boat Workshop
2:55	Rotation time						
3:00	Workshop 6	Build a Rocket	Geology Demo	Physics Demo	IEEE Workshop	Boat Workshop	Chem/ATK Demo
3:25	Rotation time						
3:30	Workshop 7	Physics Demo	Build a Rocket	Geology Demo	Physics Demo	IEEE Workshop	

Figure 1 – Science and Engineering Day Schedule

3D Modeling – Volunteers that previously took a Solid Modeling course using Solid Edge CAD Software assisted the course instructor, John Devitry, in teaching a workshop in which the K-12 students designed various parts on the computer.

Chemistry Demo – Students learned about safety in a laboratory setting, mixed different chemicals and observed reactions.

Orbital ATK Demo – Two engineers from Orbital ATK taught the students about space exploration, the company’s products, and discussed their roles as engineers in the company.

Geology Demo – Students attended USU’s Geology museum and observed rocks and learned about their origins and formations of different soil types.

Parachute Workshop – Students built and tested small parachutes and learned about drag and reaction forces.

IEEE Workshop – Students learned about electrostatic forces and raced an electrostatically charged balloon across tables.

Build a Rocket – Students build a rocket from paper and were taught about propulsion and reaction forces. Students launched their rockets and measured the distance achieved and how designs could be improved

Physics Demo – Demonstration with mirrors, lights, static electricity ball.

Boat Workshop – Students learned about buoyancy, surface area, and designed optimization. They competed to see which design could hold the most weight.

ADDITIONAL COMMENTS AND INFORMATION (PICTURES, MARKETING MATERIALS, ETC.)

Elementary and Middle schools that had students participating in the Science and Engineering Day event were:


- Wellsville Elementary
- Bear River Charter School
- White Pine Middle School
- Birch Creek Elementary
- North Cache Junior High
- Cedar Ridge Middle School
- Providence Elementary
- Mount Logan Middle School
- Renaissance Academy
- Edith Bowen Laboratory School
- Spring Creek Middle School
- South Cache Middle School
- Wilson Elementary
- Greenville Elementary
- River Heights Elementary
- Thomas Edison Charter South
- Adele C. Young Intermediate
- Lincoln Elementary
- North Cache 8-9 Center
- Home School
- Summit Elementary
- Mountainside Elementary
- Willow Valley Middle School
- Lewiston Elementary

Pictures of the event are shown below:







—FIFTH ANNUAL—
 SCIENCE AND 
ENGINEERING DAY

 Formerly known as NASA Space Science Day 

February 21
10:30 a.m. to 4:00 p.m.
Utah State University

TOTALLY FREE



{ Event targeted to students between 4th and 8th grade }

LUNCH WILL BE PROVIDED!

● PRIZES ● RAFFLES ● WORKSHOPS ● DEMOS ●

More info at
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Required online registration
at shpeusu.wix.com/shpeusu