



Marsh White Award Proposal

Project Proposal Title	Lab for Kids
Name of School	Adelphi University
SPS Chapter Number	0020
Total Amount Requested	\$287.01

Abstract

Lab for Kids is an outreach program conducted by the Adelphi University physics department. We invite underrepresented high school physics students to the department for a day of fun physics experiments and department/lab tours to, all run by our volunteers from the physics department.

Proposal Statement

Overview of Proposed Project/Activity/Event

Brief description: Lab for Kids is an outreach program that will take place in the Adelphi University physics department. We invite local high school students to participate. We will set up several stations for small groups of students to rotate through. The first station will demonstrate principles of optics. The second station will demonstrate the effects of gravity, as well as angular momentum. The third station will focus on sound and electrostatics. The fourth station will focus on electronics, where students will get to make their own circuits and motors using LED lights and DC motors to take home. The last station will be lab tours, where we will give students a tour around the department and our labs.

Goals of the project: This project is intended to promote interest in physics amongst high school students. We intentionally use a lot of hands-on materials in the stations to make learning physics exciting for the students. We want students to be engaged in the activities they are performing so that they are actively learning physics. Our goal, which has been achieved in the past, is for the students to leave with a greater passion for physics

Intended audience: Local high school students. Last year we hosted around 30 students, and we expect the number to be similar this year.

Background and motivation: The Adelphi physics department has hosted Lab for Kids for several years now, and it is one of our most successful events. Last year, students left the program feeling excited about what they learned that day. We have continually received feedback that this program promotes students' love of physics and other STEM fields. We want to keep reaching out to more and more students so that we may spread the knowledge and fun of physics.

How Proposed Activity Promotes Physics Across Cultures

Our current public education overlooks the field of physics; it is often not required or heavily focused on for standardized tests. The statistics from American Institute of Physics show that underrepresentation of certain groups in physics starts as early as high school. Thus we find it very important to bring fun and accessible lessons in physics to young students from underrepresented backgrounds who may seek further education in this field. Additionally, we aim to impart a curiosity and drive to learn in these students by providing them with hands-on and active learning. This plays a crucial role in encouraging these students to enter challenging STEM fields, such as physics. Through the program “Lab for Kids” we get a chance to give back to communities and provide a fun, casual atmosphere in which students— many of whom are underrepresented— can become inspired by physics. We plan to have Westbury high school physics students attend this program. According to the New York State Education Department (<https://data.nysed.gov/>), 97% of Westbury High School students are from underrepresented groups in physics (68% Hispanic/ Latino and 29% Black/ African American). We want to reach out to these students to inspire them to fall in love with physics. Inspiring these students can create a snowball effect, where their activities in STEM can create a huge impact and empower others in future generations. We hope that our assistance to the community will extend beyond merely our chapter.

We have been running Lab for Kids for several years, and we have received feedback that it is having a positive influence on the students; they become inspired by physics. We have found that students have a want to get more involved and invested in what they are learning when they are allowed to explore and test science by themselves.

This program is also a very important experience for our diverse population of volunteers. Many of our volunteers are from underrepresented groups. We are always striving towards the goal of bringing constructive experiences to build upon the minds and characters of our own students. This program helps our members become comfortable with communication skills needed for outreach programs. For the high school students, Lab for Kids may be the igniting spark that creates their love for science.

Plan for Carrying Out Proposed Project/Activity/Event

Personnel: Our SPS Chapter will be in charge of planning this project. Progress will be monitored by making sure the following are being done properly before the actual day of the project: first, we will contact the school and teacher who we typically coordinate with and agree upon a day for this project to take place. Afterward, physics demonstrations will be organized and broken down by topic and then assigned to volunteering students and Executive Board members. A brief training will be done so that the volunteers are well informed on what they are presenting and know what physics topics to talk about. Finally, on the day of the event, the participating high school students will be broken down into groups and assigned to different stations for the project to flow smoothly.

Marketing: After contacting the teacher we are working within the high school they will inform the students of this project that is happening. At the university, emails will be sent to students in the physics department asking for volunteers to assist the Executive Board in this project. Professors will also ask upperclassmen to assist in this event as well.

SPS member participation: We are expecting approximately 25 students from the participating high school to attend the event. We are also expecting about 10 non-Executive Board and 5 Executive Board members to volunteer for this event to assist in setting up the experiments, in addition to spending time teaching and performing the experiments with the high school students.

Expertise: Many members of the Executive Board and volunteers have participated in this event in previous years so they are well trained and are knowledgeable in the field they are assigned to. Additionally, they can easily train people who are participating in this project for the first time. The teacher we are collaborating with has also worked on this project multiple times in the past with us so we are well connected with them.

Project/Activity/Event Timeline

The date of the project will be held approximately mid-April 2020. After agreeing upon the date with the high school, our first major deadline is 2 months prior to the event. This is when we would generate a list of all the activities we want to do on the day of the project. Two weeks after that, we would make sure we have all the necessary materials order any extra materials as necessary. Then, we will begin to mention this project to potential volunteers and send out emails to those in the physics department so that we can get a list of those who are volunteering. Finally, 3 weeks before the actual event, those volunteers will train accordingly for their stations so that on the day of the event they will be prepared.

Activity Evaluation Plan

As our project aims to increase engagement and interest in physics for high school students, the students we interact with will provide the most important feedback. In order to measure this feedback, we will monitor both their behavior as they perform the experiments and their responses to our questions during the activities. Having them reflect throughout the different experiments will enable us to determine which experiences were engaging, challenging and educational. We will also speak to the students' teacher(s) to receive feedback and recommendations about the program, so we may reflect and adapt this program for future years. As aforementioned, another goal of this project is to offer experiences to underrepresented groups in physics. To ensure we have reached these groups, attendance of the high school students and our volunteers will be recorded.

Budget Justification

We are requesting \$287.01 to buy two metal slinkies, bubbles, sandpaper, ceramic magnets, electrical tape, five packages modeling clay, two packages of D batteries, 160 marbles, a tuning fork set, and pizza. The slinkies and tuning fork set will be used during our simple sound experiment. The bubbles will be used during Van de Graaf experiment. The sandpaper, ceramic magnets, electrical tape, modeling clay, and D batteries will be used in the DC motor experiment where the students are able to build their own motors to take home and show friends and family. The marbles will be used in our gravity experiment. The pizza will be given to the volunteers during lunch for working with the students. The equipment we will be buying will help the members of our chapter accomplish our goal to provide a stepping stone to future STEM careers for high school students. Because of these experiments the students will be able to share their experiences at home and continue their passion.