SOCIETY OF PHYSICS STUDENTS
An organization of the American Institute of Physics

Marsh White Award Proposal

Project Proposal Title	Lab for Kids
Name of School	Adelphi University
SPS Chapter Number	0020
Total Amount Requested	$500.00

Abstract

Each year our chapter at Adelphi University conducts an outreach program called Lab for Kids. We invite underrepresented high school physics students to the department for a day of interactive physics experiments and department/lab tours. The success of the program stems from volunteers from our very own physics department.

Proposal Statement

Overview of Proposed Project/Activity/Event

Brief Description: The physics department at Adelphi University hosts a Lab for Kids outreach event. Yearly, local high school students are invited to join. Several stations will be set up for small groups of students to rotate through. The first station will show how to use optics to solve problems. The effects of gravity, as well as angular momentum, will be demonstrated at the second station. Sound and electrostatics will be the focus of the third station. The fourth station will be dedicated to electronics, with students creating their own circuits and motors to take home using LED lights and DC motors. The final station will be lab tours, where students will be given a tour of the department and our laboratories.

Goals of the Project: This goal of this project is to encourage interest and enjoyment of the physics world amidst young high school students by hosting various hands-on activities to show that physics is more than just calculations. Using Hands-on activities peaks a student's interest in physics and makes learning those concepts much more exciting and engaging while actively learning the ideals behind the experiments side by side. Similarly to the past, we hope that these students create a liking and a passion for physics.

Intended Audience: About 30 local highschool students. Last year we hosted this event via zoom due to university covid policy but this year we will host it in person in our department. We expect a slightly smaller number due to social distancing regulations.

Background and Motivation: For several years, the physics department at Adelphi has organized Lab for Kids, which has proven to be one of our most successful programs. Students left last year's program ecstatic about what they had learned that day. We've heard time and time again that this program encourages students to develop skills in physics and other STEM subjects. Just to see the students' eyes light up when they see the results of each experiment, even if the event was held through zoom last year, is a tremendous motivation to continue to host this program. 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 Interest in Physics

Physics is not as prioritized in our high school educational system as other STEM fields, such as biology and chemistry. In the “Lab for Kids” program, we will take high school students and guide them through fun and enriching physics demos. This will serve to expose high school students to the beauty of physics earlier on in their academic careers, allowing an interest in physics to have time to blossom and grow. In some cases, students who get the opportunity to interact with physics in “Lab 4 Kids” may otherwise not get to touch physics in their time in high school. By presenting the beauty and joy of physics to the students of the local high school, we will be sparking interest in physics in students who otherwise may never experience physics or will experience physics much later in their academic careers.

Plan for Carrying Out Proposed Project/Activity/Event

Personnel: Our SPS and executive board members will monitor progress and ensure that all members are doing their designated parts prior to our Project. We will be in communication with the high school and appropriate staff to find a date and time that works for both parties. The next step will be to coordinate which physics demonstrations and assign them to different volunteers. To make sure that our members are equipped to work and present their designated station, we are providing training. It will help the volunteers have a greater understanding of the physics topics. When the day of the event arrives, we will have a certain number of volunteers working in a specific station with a group of students ensuring that the event is being carried out efficiently and the participants are enjoying their time.

Marketing: To ensure participation in our event, we will be promoting our event in many ways. Externally, we are going to be in contact with the high school. We want the students to be aware of the project and give them the initiative to learn more about it. Internally, students will be notified about the opportunity to volunteer with our Executive Board Members on this project. If students from outside our Physics Department are interested, we definitely encourage them to come and volunteer with us.

SPS Member Participation: We are expecting approximately 25-30 students from the participating high school to come and attend our event. In regards to our volunteers, around 10 non-Executive Members and 5 Executive Members will be available to volunteer. They will be helping set up the experiments prior to the event. At the event, the volunteers will be teaching and performing those experiments with their assigned students.

Expertise: We have several participating members that have prior experience in running this event. These members will help ensure success for our project because they are well trained and have the knowledge of previous work that they can share with the new members. By training and working together, all the members are actively involved in the project and everyone is performing their part to the best of their abilities.

Project/Activity/Event Timeline

This project will be held during the spring of 2022 around mid or late April. For the drafting and groundwork aspect of this project, we are gathering the needed equipment for the experiments we plan on doing. The project date will occur after about 2-2.5 months upon reaching out to the high school for a specific date. We will create a list of potential experiments to send to the school and after agreement we will create an exact list of experiments and check to see if we need any more supplies and equipment. Once we have the experiments, date and time set, we will reach out to prospective volunteers via email and a sign-up sheet/form, in which about two students will run and oversee each activity. The potential volunteers will then receive a training session for the activity they will be working about a week or two before the project date so that they know and understand the information about each activity as well as the knowledge needed to use the necessary equipment.

Activity Evaluation Plan

The aim of this project is to engage the high school students with physics so they can explore more about their interests in physics. Thus, for this event, the participants will provide better feedback than anyone. If we monitor their participation while they are performing the experiments, it can be used as a great source of feedback; it'll let us know which activities were more challenging, engaging or easy. We can monitor their responses to our questions and explanations. We can also ask them to fill out a questionnaire about how they felt.. We will also ask teachers for their feedback about the experiments and the works of their students as they know them better than we do. Their feedback will enable us to improve the activities for future events. We will also take attendance of the participants and the volunteers. As one of our goals is to offer physics experience to underrepresented students, taking attendance will help to monitor underrepresented students' participation.

Budget Justification

We are requesting $500 to purchase electrical tape, scotch tape, batteries, magnets, clay, insulated wires, large eyed sewing needles, plastic and pizza. We would use the magnets, electrical tape, clay and batteries for the high-school students to make DC motors to keep. The plastic and the scotch tape would be used to produce holographic displays that use smartphones to work. The pizza will be used to feed the volunteers working with the students during the event. The equipment we would purchase allows us to provide a tactile, fun, hands on experience that would encourage high school students to pursue STEM careers and spread that enthusiasm to their communities.