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

Marsh W. White Award Proposal

Project Proposal Title	Lab for Kids
Name of School	Adelphi University
SPS Chapter Number	0020
Total Amount Requested	$315

Abstract

Annually, our chapter works with Westbury High School and the Cradle of Aviation on a scientific outreach project. Our physics club volunteers present different physics experiments to first year high school students at the Westbury high school. The entire day is led by Adelphi students. It gives students the chance to apply what they have learned in their classrooms. The goal of this event is to present physics to these high school students in a fun, interactive, and informative manner.

Proposal Statement

Overview of Proposed Project/Activity/Event

Lab for Kids is an annual event that Adelphi's physics club organizes with our previous chapter director Sean Bentley. For this event, we invite students from Westbury High School to the local aerospace engineering museum The Cradle of Aviation to interactive and present them with different physics experiments and projects. Westbury High School offers their students to take physics their freshman year, therefore this event has always received good attendance. We work with the teachers to ensure these projects and experiments align to the material the students are learning in class.

Our event will be organized into five/six stations that last about 30 minutes each, the students will be in groups and rotate through the stations accordingly. These stations include:

- Optics

- A well-designed flow of various experiments from SPS SOCK Kit 2015, using lasers, diffraction gratings, optical fibers and polarizers that the students have previously learnt in class.

- Homemade Holograms

-Using transparency sheets the students will cut, we can led them to make a structure which will make temporary holograms when placed on a phone with light. We also found videos on YouTube that will reflect the light in a clear manner; this will demonstrate basic optics principles.

- Spectroscopy

- A short lecture that reviews Bohr's model and discrete energy level, followed by using discharge tubes of 6 different compositions.

- Static Electricity (Van de Graaff)

- The Van de Graaff generator has always been a favorite among the students. Students had a lot of fun learning about static electricity while getting themselves 'shocked'.

- LED Circuit

- With a brief explanation, we review the theory of circuits and demonstrate how to build one that lights up a light emitting diode. The students are then given materials to build their own.

- Build Your Own Motor (A.C. generator)

- Probably the most challenging station, the making of an A.C. generator requires more patience and carefulness. The simple motor is created with rubber bands, coils, magnets, pins, and a battery; students get to see their knowledge on electromagnetism applied with the spinning coils. · Acoustics

A new addition with the help of the 2016 SPS SOCK Kit. The students enjoyed learning about acoustics and making music from the various tubes.

How Proposed Activity Promotes Interest in Physics

The goal of Lab for Kids is to present physics in an exciting and interactive manner so the students can see immediate real world applications. Students often lose interest in topics when

exams, grades, and stress engulf the experience in class; hopefully with this event we can show the students the fun and applicable side of physics. Physics means a lot to us all, and to be able to share that appreciation with high schoolers who may potentially feel the same.

Former volunteers and members of our Physics club all notice the change in mood from the students from before and after the events. Initially the students seem exhausted from the idea of participating in a physics event, however they become quickly engaged and intrigued once the experiments are demonstrated and they have an opportunity to try it by themselves.

Plan for Carrying Out Proposed Project/Activity/Event

We are lucky to still have a wonderful relationship with an Adelphi alumnus who just happens to be the physics teacher of Westbury High School, Mrs. Patty Trongone. Our executive members (listed below) will collaborate with her and the director of the project, Mr. Brumsic Brandon, to tell the students about the event. Our chapter adviser, Dr. Matthew Wright, will also advise us and assist us in planning the event.

We are offering the opportunity to all of our active members. In the past years, we have had around 10-15 volunteers at this event (about 2-3 per station). However, we have a much bigger member base this year so we hope we can attract more members to assist us. Listed below is the Adelphi SPS executive board, in charge of planning and coordinating event:

- Yuhao Qiao—President
- Tara Pena—Vice President
- Egla Ochoa - Madrid —Secretary/Co-Vice President
- James St. John—Treasurer
- Chloe Ong—Public Relations

Project/Activity/Event Timeline

This event will be held sometime in the spring—most likely in April. Exact details on the date will be according to when the student from Westbury High School will be able to be bussed to the Cradle of Aviation. With that being said, planning will begin as soon as possible and will be conducted as follows:

- By 2/10: We will have placed calls to Westbury High School to begin the conversation on the event and find a date
- By 2/28: Reserve space at the Cradle of Aviation Museum for the event.
- By March 14th: Have an exact and detailed schedule of what labs we will present to the students. We may add or remove stations depending on availability.
- Mid-April: Our event begins!

Activity Evaluation Plan

The volunteers are encouraged to hear the students' feedback and how they felt about their experience. We also want to help the students apply what they have learned in the classroom and hopefully become more confident in the material.

In addition, though no less important, hearing the teacher's evaluation (and the principal's) is crucial to evaluating our success. She is generous enough to offer her class time to allow these students to come out and learn physics in a very different way. We intend on keeping a close and consistent relationship with faculties from Westbury High School.

Budget Justification

The funds will be primarily used for ordering materials for individual projects. Many of our demonstrations such as the Van de Graaf generator or refraction lab are already owned by the university. However, we want to offer the students something they can build and take home as well—an engineering project if you like.

One project we've come to like over the years is building a simple electric motor. The project is simply a battery, a coil of wire, and magnet (as well as an apparatus to hold it all together). More details are provided in the attached budget.

This is the limit of our monetary needs to make our event a success.