



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	\$300

Abstract

We are seeking funding for our chapter's annual event titled Lab for Kids - a one-day physics program for students from Westbury High School (Westbury, NY) at the Cradle of Aviation (a local aerospace measuem). This event offers a series of fun and interactive hands-on experiments for the high school students where the learning is facilliated by undergraduate students from Adelphi's physics club. We aim to promote interest in and encourage futher explorations of physics to high school students.

Proposal Statement

Overview of Proposed Project/Activity/Event

Lab for Kids is an annual event we have started at Adelphi with our previous chapter advisor Dr. Sean Bentley. For this event, we invite students from Westbury High School to the local aerospace engineering museum, The Cradle of Aviation, for a day of exploring physics through a series of interactive labs and projects. Each year, around 50-70 students attended the event. The students are split into 5 groups and rotate around five stations. Each station has a theme with various mini labs and interactive demonstrations. The titles of last year's stations are Optics, Acoustics, Electric Circuit, Static Electricity and Build Your Own Electric Motor. ...

The goal of this project is to promote physics in a fun, interactive, and educational way to show the students that the study of physics is not only an incredibly powerful and useful tool, but also personally enriching and rewarding. This is successful because our workshop stations are hands on and are led by undergraduate students. The high school students see firsthand that they can be successful doing a college physics experiment, the experiments can be fun, and they belong. Our majors also share their college experiments with the high school students. These projects are also incredibly enriching experience for our team members. They get to practice communicating physics. (Faculty members and high school instructors monitor the event for safety and help out when asked by students.)

Our chapter is well-positioned to carry out this project – with members equipped with proficiency in physics to carry out and experience to ensure smooth running of the program. In addition, very positive feedback from both the advisors and the students of Westbury High School in the past is a strong affirmation of our ability to carry out the project.

How Proposed Activity Promotes Interest in Physics

Lab for Kids promotes interest in physics first by giving the students a hands-on and interactive experience, as opposed to classroom learning. We demonstrate simple physics concepts that the students will be able to understand and even connect to their daily lives. Additionally, we converse with the students about their views on the sciences and share our own experiences. Our event gives students some insight about how rewarding physics can be. We hope to give the students an experience that positively affects their outlook on the study of physics and other sciences.

Plan for Carrying Out Proposed Project/Activity/Event

We are lucky to 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, Brumsic Brandon, to inform the students about the event. Our chapter advisor, Dr. Matthew Wright, will also advise and assist us in planning the event.

We are offering the volunteer opportunity to all of our active members. In the past, we have had around 10-15 volunteers at this event (about 2-3 per station). Adelphi SPS E-board, in charge of planning and coordinating event:

- Brian Kaufman (President)
- Tracy Paltoo (Vice-President)
- Nikolette DeBenedictis (Treasurer)
- Yuhao Qiao (Secretary)
- Tara Pena (Public Relations)

For our event we organize five stations about 30 minutes each so that each student gets the opportunity to explore the various areas of physics. The students are split into 4-5 groups and rotate around the five stations. The stations are:

- Optics Station—Students will have the opportunity to see the laws of reflection and refraction in action. We bring several lasers from our optics lab and a refracting medium so they can easily follow the paths of the beam and the geometry that lies beneath what's happening. It's very similar to the same project undergraduates do in their freshmen labs. To enhance this station, we integrated SPS's SOCK 2014-2015 kit.
- Circuit station—Students will get the chance to build and test their own circuits. After explaining the theory and give a demonstration, we guide them as they build a simple circuit that lights a light emitting diode
- Van de Graaf Station & Gyroscope—A favorite among students and undergraduates, we offer high school students a look into the fascinating world of electrostatics in a “shocking” display. We invite the students to experiment with static electricity and tell them a little bit more about other things about electromagnetism.
- Build Your Own Electric Motor—Part arts and crafts, part engineering, we teach students more about electric motors and provide some common materials for them to build one during the session. We feel that this is one of the best stations for student learning. This workshop is where a majority of the requested funding is spent, it is excellent partly because the students get to take a working motor home with them.

The integration of last year's SOCK kit was a success. We are eagerly hoping we receive this year's SOCK kit on acoustics. If we do, we are likely to build a station on acoustics.

Project/Activity/Event Timeline

The exact date of Lab for Kids is in large part dependent on the students' schedule, although it is usually held in mid-April. We will work with the project director Mr. Brandon and Mrs. Trongone from Westbury High School to settle on a date as planned in our timeline.

Time	Stage
Mid-December (Last Meeting of Fall)	Discuss rough plans, stations, materials; plan subsequent discussion meetings
January	Plan and decided on the stations; order of materials; start contacting the advisors from Westbury High School
February-March	Recruit volunteers; paper work at Adelphi University; confirm date and details with Westbury High School
Early April	Trial run of experiments and volunteer training
Mid-April	Lab for Kids happens!

Activity Evaluation Plan

Essentially we gather feedback from 3 sources- the students themselves, their school teacher and project director, and our chapter advisor Dr. Matthew Wright- to evaluate how well Lab for Kids promotes interests in physics. Typically towards the end we have a short debrief with Mr. Brandon and Mrs. Trongone to discuss the success of the event. As the experiments are carried out, we often see curious and impressed expressions on the students' faces. Many students ask questions and readily participate- a clear indication of interest. Adelphi requires us to write a holistic event evaluation, which includes the number of people, what we have done to meet our goals, and what we can do better next year. This would also help us evaluate how well Lab for Kids promotes interests in physics.

Budget Justification

We request the Marsh White Award to fund us on the materials required for the project, as some are depletable. The 'Build Your Own Electric Motor' usually requires the greatest budget. It requires considerable effort to build but the students are able to each bring their own motors home as a souvenir. We hope that through this activity and the supplies the students will have a sense of achievement that physics is fun and do-able (within their abilities). Other materials, such as the gyroscope and Van de Graaf generator are borrowed from the physics department.

The details on the budget request are estimated from past years and also current prices available online where we will get our supplies. We included the essentials needed to ensure basic success of the event.