



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh W. White Award Proposal

Project Proposal Title	Bots with Buds
Name of School	Ithaca College
SPS Chapter Number	3183
Total Amount Requested	\$456 (w. tax)

### Abstract

Ithaca College's SPS Chapter would like to build smart robot cars alongside local student in grades 6-8. We believe that this is a critical time for students to explore fields of study, and we wish to spark and/or fan their interests in STEM opportunities.

### Proposal Statement

#### **Overview of Bots with Buds**

##### Description

SPS members will go into an after school program in a local middle school and break the interested students into groups of 2-4 based on grade level. Each group will have at least one representative from our SPS chapter. The groups will work together to build the smart cars from Elegoo kits over the course of a week. At the end of the week, an obstacle course will be set up for the students and their families to see how the machines they built operate.

##### Goals

The project will hopefully spark an interest in STEM programs, specifically physics, mathematics, and computer science, for middle school students as they begin engaging with their fields of study/hobbies.

##### Intended Audience

We will specifically target middle school age students who have an interest in STEM/robotics, or would like to do something hands on. With proper planning and outreach, we plan to impact at least 30 students.

##### Background and Motivation

The fields of physics and engineering face a stigma that only those with technical know-how or experience can create things and engage with the science, when in fact, our mission is to provide a resource for people to learn and develop those skills. We hope to break that stigma with local youth who may believe they "aren't smart enough" to study the sciences. We hope that this gives them confidence in their science classes moving forward. This would also help us to change peoples' perspectives within our college community, and possibly bring a similar project to the campus.

## How Bots with Buds Promotes Interest in Physics

Bots with Buds will promote interest in physics among students and the general public by introducing students who may never have been exposed to Arduinos, motors, and other electronics a chance to design and build a robot with their peers. This introductory opportunity could give these students the confidence to further engage with physics in the classroom, extracurriculars, and future events hosted by our SPS Chapter. This project should be funded by the Marsh W. White Award because the after school programs are already in place at these schools, and students and teachers alike are seeking unique events towards the end of the year to keep them engaged. Since Ithaca is a tight-knit community, transportation and connections are waiting to be made -- the only thing missing are the kits.

## Plan for Carrying Out Bots with Buds

- Personnel - Our SPS Chapter is comprised of a Physics Club and an Engineering Club. The executive board of the latter would be in charge of the execution of the event. Oluwasekemi Odumosu (treasurer) is willing to take a leadership role in Bots with Buds, ensuring that everything progresses according to schedule (see Bots with Buds Timeline)
- Marketing - The project will first be marketed to administrative staff at the middle schools (principals, guidance counselors, after-school program leaders) to gauge interest and viability. Once a school/program is selected, representatives from our SPS Chapter can come in to speak to interested students and their families about our workshop.
- SPS member participation - We plan on utilizing participation from our SPS Chapter, which has over 30 members. We will likely only need 10 consistent members who are interested in working with young students, as opposed to those who only have technical knowledge, since our focus is to assist students in their learning instead of showing them how to do everything. This role will likely be limited to our SPS members, as they have a foundation in problem-solving and some experience with electronics. Other members would also be recruited to build the obstacle course that the participants will use to test their robots.
- Expertise - We have a few senior SPS members who are familiar with robotics who can help guide other members as they work with students. However, expertise is not an important requirement since we would like our members to work alongside the students.

## Bots with Buds Timeline (Spring 2020)

1/21-2/21 -- Reach out to middle schools to determine a location  
2/24-3/20 -- How many/which students want to be involved and their grade  
3/23-4/3 -- Volunteer (member) interests form  
4/6-4/10 -- Finalize volunteer time commitments & schedules  
4/6-5/29 -- Volunteers make obstacle course  
5/25-5/29 -- Volunteer training session for those working with young students & the kits  
6/15-6/25 -- Reach out to students' families about attending the Obstacle Course Showcase  
6/22-6/25 -- Work with students to create the robots  
6/25 -- Bots with Buds Obstacle Course Showcase

## Activity Evaluation Plan

We will determine how well Bots with Buds promoted interest in physics among the students by having the students fill out a short survey after the Showcase asking if they would be interested in participating in more events like Bots with Buds or learning more about physics in general. We would also gauge interest of 8th graders in the robotics club at Ithaca High School and help them facilitate that connection if they will be attending that school in the fall.

## Budget Justification

The funding from the Marsh White Award would be used to purchase Elegoo UNO Project Smart Robot Car Kit. This kit would provide all the tools needed for the students to create their robots. We would like to maximize the number of kits we can obtain so we can have as many participants as possible in reasonably intimate groups. The physics department and our has a lot of tools, and our public transportation system is reliable. Our Chapter can also receive supplemental funding from Ithaca College's Student Governance Council, which helps provide funding to all student organizations on campus.