



Marsh W. White Award Proposal

| | |
|------------------------|------------------------------------|
| Project Proposal Title | Physics for All. |
| Name of School | University of Southern Mississippi |
| SPS Chapter Number | 6626 |
| Total Amount Requested | \$500.00 |

Abstract

The SPS chapter at the University of Southern Mississippi promotes physics in the community through educational outreach. The primary audience for our outreach activities are mostly students in grades K-12. One of the events at which we do outreach is Hubfest, an event organized by the city of Hattiesburg which draws attendees from all over Mississippi and surrounding states. Through the Marsh W. White award we hope to perform various demonstrations regarding waves, optics, and thermodynamics to the general public.

Proposal Statement

Overview of Proposed Project/Activity/Event

- Brief description – Hubfest is a day-long street fair located in downtown Hattiesburg, Mississippi. Our outreach to the general public during Hubfest consists of various demonstrations relevant to waves, optics and thermodynamics. We set up in a booth and usually start with a demo of instantaneously cooled marshmallows, using liquid nitrogen. The vapors from the nitrogen and free marshmallow treats usually draw people towards our booth and give us a chance to explain the science behind the instant cooling. We then present our demonstrations involving lasers, diffraction gratings, wave propagation and pressure.
- Goals of the project – Through this outreach, we hope to stimulate public curiosity and interest in physics, and share our knowledge in topics relevant to our demos. Our secondary objective is familiarizing the general public with our organization, Society of Physics Students.
- Intended audience – Hubfest draws around 25,000 attendees through the day. We get to interact with people from various age groups and walks of life, but our target audience is mostly young children and adults to whom we can instill interest in physics and the sciences in general.
- Background and motivation – Our chapter has participated in Hubfest for almost a decade and we have felt it to be a very rewarding experience overall in terms of showing people how fun physics can be and explaining the actual science behind it, something we love to share. We have also received strong support from our University's School of Mathematics and Natural Sciences and the College of Arts and Sciences. They are also eager to further support us by providing us with liquid nitrogen, tables, a canopy and free University of Southern Mississippi materials to distribute.

How Proposed Activity Promotes Interest in Physics

Hubfest is organized by the city of Hattiesburg. It will be filled with vendors, and attendees from the state of Mississippi and even neighboring states. This will in turn create a diverse group of attendees with whom we can directly interact and share our love for science. We will be able to convey the need for a basic understanding of science in general, and how it can be fun and not just informational. The demonstrations we perform will promote an understanding of applied physics and illustrate concepts found in both classrooms and the natural world.

The attendees will also have children, who will mostly be attending schools in the area that have few resources, or curricula designed to stimulate an interest in physics. Our educational outreach will provide them with much needed exposure to scientific ideas and applications. Participation in this activity will further strengthen our chapter by refining our experience in outreach and helping boost our positive relationship with the community.

The experiments that we plan on performing show a variety of phenomena, which not only entertain but also educate. When people interact with experiments that engages their curiosity, it leads to them wanting to know the science behind it. By encouraging general interest in the sciences, we hope to ultimately increase the chances of young people pursuing STEM related academia and careers.

Plan for Carrying Out Proposed Project/Activity/Event

- Personnel – The event committee under the chairmanship of the chapter secretary will be thoroughly planning out the event while members will be involved in carrying it out.
- Marketing – Our group will be engaged in advertising the event through our school while the city of Hattiesburg itself will be advertising it in different locations through different media.
- SPS member participation – Every member in the chapter will be involved in some form. We have also requested volunteers from the student organizations for the American Chemical Society and the Society for Industrial and Applied Mathematics which are active in our school. We plan on doing multiple shifts for our members during the event with at least one executive or faculty member in each shift.
- Expertise – Our chapter boasts several active members who are experienced with outreach and the demonstrations we perform, all of them were involved with planning and carrying out the event last year.

Project/Activity/Event Timeline

December 5, 2019: Register for Hubfest and start formulating plans for the set of demonstrations we'll be doing and if we want to add something new to it by building new demos through the winter break.

February 7, 2020: Assign respective projects to the Demo Committee if any new demonstration is proposed. Finalize a T-shirt design and send it for printing.

March 6, 2020: Start filling up time slots for the event, recruit volunteers as necessary explaining the objectives of the activity and their role in it. Have a finalized list of demonstrations that are ready, along with write ups.

April 27, 2020: Finish preparations, send out reminders and contact information for possible carpooling and emergencies. Load up a university vehicle with necessary demonstrations.

April 28, 2020: Day of Hubfest

8am: Drive to the location, set up booth (usually aided by faculty advisor).

9am: Hubfest starts. Members will work in shifts of 2-3 students at a time.

5pm: Break down booth and haul equipment back to the USM campus.

Activity Evaluation Plan

The number of people that pass by our booth can be monitored by keeping a running count on the number of people stopping by and interacting with us. The executive member present will be tasked with this. We will also be providing comment cards for anyone interested, which will be helpful in receiving feedback for the event.

Another statistic is the number of pamphlets we give out, containing information about SPS, our chapter and our university in general.

Budget Justification

1. Hubfest registration - This is the cost to rent a booth from the year 2019.
2. Portable High-powered Laser- We will use this to pop the balloons from a distance further away than our current lasers can.
3. T-shirts – This will indicate our affiliation to the public and will encourage participation of our society members.
4. Batteries - The lasers we use to pop the balloons are powered by batteries, other equipment we use.
5. Marshmallows - The marshmallows attract a younger crowd which helps get children interested in science early on.
6. Flowers - The flowers are dipped in the liquid nitrogen and crushed.
7. Racquet Balls - We cool racquet balls in liquid nitrogen and smash them on the floor (away from the crowd in a safe distance). This sound from the demo attracts a lot of people easily as they find it amusing.