



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Future Faces of Physics Award Proposal

Project Proposal Title	Charging the Next-Generation of Physics Students: Inspiring and Educating Underserved Youth
Name of School	Wellesley College
SPS Chapter Number	7911
Total Amount Requested	\$500.00

Abstract

Wellesley College's SPS chapter will provide weekly one-on-one STEM mentoring for selected sixth grade students from underserved communities. College volunteers will deliver hour-long sessions that combine homework tutoring with physics demonstrations and educational games to facilitate physics outreach and promote STEM accessibility.

Proposal Statement

Overview of Proposed Project/Activity/Event

Wellesley's Society of Physics Students organization is creating a tutoring-mentoring program which pairs Wellesley College students with sixth grade students from UP Academy Holland, a K1-6 school in Dorchester, MA, for weekly one-to-one mentoring sessions. UP Academy Holland is a historically under-resourced school in turnaround serving students who are systemically the furthest away from opportunity.

Each 60-minute session is structured to include 30 minutes of personalized homework assistance and concept tutoring, followed by 30 minutes of physics demonstrations or STEM games. The program will run from the week of January 26th to the week of April 20th, not including break weeks (ex. spring break), in the spring semester, with mentors working with students during a designated academic period.

We aim to provide individualized academic support and inspire interest in science to students who face the greatest barriers to reaching those goals. We hope to achieve this through positive mentorship relationships as well, and demonstrate that these fields can be accessible and exciting for all interested students, regardless of background. Furthermore, the program seeks to build confidence in scientific thinking and problem-solving, and participants will gain a better understanding of the possibilities subjects to study in high school or afterward. The program will serve an estimated 40 sixth grade students in the Boston area, selected based on demonstrated interest in science and teacher recommendations. Each student will be matched with a dedicated college mentor according to their pre-program survey responses.

Research has demonstrated that early exposure to STEM and mentorship experiences significantly influences career trajectories; however, students in underserved communities frequently lack access to these opportunities. The one-to-one format encourages more personalized discussions and sustained relationships between students and mentors, allowing us to deepen our community impact. Several chapter members possess experience in tutoring and physics education, positioning us well to provide quality mentoring and create a welcoming community to students who may not interact regularly with college students or physics professionals.

How Proposed Activity Promotes Physics Across Cultures

Through this program, we hope to directly address systemic barriers that may have prevented students in underserved communities from accessing STEM education and envisioning themselves as future scientists. This mentoring initiative will provide critical support during a pivotal age when interest in science frequently declines, particularly among underrepresented groups. Through individualized support, the program will facilitate the development of trust and meaningful connections between college students and middle school students who have expressed interest in STEM to influence long-term career outcomes. By featuring diverse college students from various backgrounds and educational pathways, we wish to demonstrate that physics is accessible to anyone and welcomes

diverse perspectives. The integration of academic tutoring with engaging physics activities makes science approachable and fosters curiosity for further exploration.

Plan for Carrying Out Proposed Project/Activity/Event

SPS members will serve as project coordinators, overseeing program logistics, mentor recruitment, and maintaining communication with school administrators throughout the duration of the program. Noel Hong, the STEM Dean of Curriculum and Instruction at UP Academy Holland, will coordinate scheduling, provide academic coursework samples for tutoring sessions, and identify students to participate in the program. We have recruited 15-20 Wellesley students interested in STEM or education as mentors through the Wellesley chapter's SPS newsletter and informational material distributed across the school campus. Mentors will participate in a training session that covers mentoring best practices and safety procedures before the beginning of the program. They will also confirm availability during two weekly one-hour time blocks and request a Massachusetts Criminal Offender and Record Check (CORI) before their commitment is confirmed. Additional volunteers will assist with activity preparation, supply management, and program coordination.

Teachers will provide samples of students' academic work in math and science, homework assignments, and current curriculum topics to be given to mentors prior to each session. Mentors will review these materials to tailor tutoring to each student's needs and align with classroom learning, and feedback will be given through surveys and communication with teachers and administrators.

Project/Activity/Event Timeline

November/early December 2025: Finalize partnership agreement with UP Academy Holland, confirm scheduling during school hours; mentor recruitment at Wellesley and create matching surveys

December 2025: Conduct mentor training sessions covering program expectations, tutoring strategies, and safety protocols; request CORIs; school administrators select students and prepare samples of academic content

Early January 2026: Purchase necessary supplies for physics demonstrations; create student-mentor pairings

Week of January 26, 2026: First sessions of program

Mid-March 2026: Conduct check-in meeting with mentors to assess progress, gather feedback, and implement changes

Week of April 27, 2026: Final mentoring session, complete program evaluation surveys with students and mentors; compile results for final report

Activity Evaluation Plan

Program success will be evaluated through pre- and post-program surveys administered to both students and mentors, biweekly reflection forms completed by mentors, and feedback from school partnership coordinators. Student surveys will need to be conducted at the beginning and conclusion of the program to determine changes in interest in physics and STEM subjects, likelihoods of continuing physics activities, and perceived barriers to STEM

participation using scaled questions. Mentor surveys will assess their perceptions of the program's effectiveness and changes in students' engagement and understanding of STEM concepts. Throughout the program, mentors will complete biweekly reflection forms that document session activities, academic progress, and any challenges encountered. These reflections will help program coordinators monitor implementation quality and make adjustments to improve. At the program's conclusion, school partnership coordinators will provide comprehensive feedback on its alignment with school goals and community needs, its impact on participating students from the school's perspective, and recommendations for future iterations.

Budget Justification

The requested amount will be allocated to purchase demonstration materials and cover transportation costs necessary for program implementation, and will be combined with current Wellesley SPS funds. We are requesting \$200 for physics demonstration supplies, which include Snap Circuits kits, materials for electromagnets, a maglev train model, and center of mass birds. These specific demonstrations would be engaging to middle school students and effective in illustrating fundamental physics concepts in a hands-on manner. These supplies would allow for demonstrations and educational STEM games over the duration of the program. Transportation costs (\$300) will cover mileage reimbursements and rideshare services for volunteer mentors traveling to the partner school, offsetting personal expenses to encourage participation at little or no additional cost.