The Vanderbilt Center for Science Outreach (CSO) is dedicated to enhancing literacy in science, technology, engineering, and mathematics (STEM) through the establishment of unique partnerships between University scientists, K-12 educators and students, and the local and global science community. The Center for Science Outreach has developed and implemented a number of educational programs in partnership with local and national K-12 classrooms. These efforts rely on volunteer efforts from Vanderbilt scientists and engineers who are undergraduates, graduates, post-doctoral fellows, and career investigators. There are opportunities for involvement in several programs, outlined on this page, at various levels of commitment, outlined on the next page. Please contact us regarding your interests in gaining teaching, mentoring, and outreach experience.

**Interdisciplinary Science & Research Program**

A partnership with Metro Nashville Public Schools to offer scientific research courses at Stratford STEM Magnet High School and Hillsboro High School

All courses are co-taught by a scientist-teacher team and benefit from interactions with Vanderbilt scientists and engineers who visit these local high schools

The program transitions students from understanding the basics of scientific disciplines in the first years to performing independent research in their junior and senior years, with some of these research projects taking place in Vanderbilt research laboratories

Contact: tiffany.e.farmer@vanderbilt.edu

**SCHOOL OF SCIENCE & MATH AT VANDERBILT**

A partnership with Metro Nashville Public Schools to offer a four-year, interdisciplinary, research centered curriculum on Vanderbilt’s campus

Highly motivated and talented students come to campus one day per week instead of their regular high school during grades 9-12, including summers

Student cohorts are on campus M-Th and are led by a team of full-time scientist instructors, but benefit from interactions with Vanderbilt scientists and engineers who visit the campus classroom or host students in their lab

The sequential curriculum begins with an introduction to various STEM disciplines through campus interactions and progresses to group projects and individual internships in research laboratories and learning to write and communicate research

Contact: angela.eeds@vanderbilt.edu

**Scientist in the Classroom**

This former NSF program identifies graduate students and post-doctorates to become science teaching fellows (STFs) who work in Nashville elementary and middle schools

STFs pair with a teacher and work in their classroom one day per week for the academic year. STFs focus on developing and implementing hands-on, inquiry-based activities according to grade standards following quarterly professional development workshops, stipends are available

Contact: virginia.shepherd@vanderbilt.edu

**Engineering Ambassadors**

Connects graduate and undergraduate student leaders in engineering with middle and high school students, prospective students, and the community

Student representatives use hands-on curriculum to help younger generations understand engineering

As an NSF funded program, it is a 1-year commitment that begins with a workshop and curriculum development followed by implementation at the K-12 level.

Contact: mary.loveless@vanderbilt.edu
### Guest Presenter or Reviewer (1 – 8 hours per semester)

**Present a lesson or lead a discussion** based on your laboratory work or scientific interests geared towards a general audience that fits within the broader context of a daily interdisciplinary theme.

**Lead a laboratory exercise** for students that introduces them in a hands on fashion to a scientific idea or concept. Examples include building a phylogenetic tree using morphology or DNA and measuring caloric content of food.

**Be a tour guide** and host a group of students in your laboratory facilities to provide an overview of your research questions and the tools your research group uses to answer those questions.

**Be a judge** for a symposium or poster session. Discuss research internship projects with rising seniors at a summer poster symposium.

**Review and edit** submissions to the high school research journal, *Young Scientist* ([www.younscientistjournal.org](http://www.younscientistjournal.org))

**Provide tutoring** for a student or group of students one hour per week (could extend to 15-20 hours per semester)

### Project Leader (10 - 30 hours per semester)

**Lead or co-lead a class-wide project.** The established curriculum at SSMV and ISR contains several research projects that benefit from leadership of current graduate students and post-docs who execute the established protocols. Projects are in various disciplines and include sequencing the GAPDH gene in plants, designing and building autonomous bots for various functions, and several forensics and cancer biology units.

**Lead a small group project during class.** Students work in small groups to carry out a project that they help design and implement over a semester. The project is conceptualized by the group leader who then leads 2-5 students each week in their investigation and analysis. Projects have included examining plastic leaching, enzyme kinetics from mushroom extracts, ELISA on various cell lines, MRI safety testing, and field research on water quality.

**Lead a small group project after school.** Develop and implement a 9-week investigation in your area of expertise with 5 students in an after-school setting. The time commitment is 3 hours per week plus planning time.

**Lead a perspectives forum.** Lead a lesson or discussion with ~8 students on a scientific technology or ethical topic, repeating the same activity 3 times with in a semester to refine and improve your teaching style based on feedback. Examples include teaching students a type of microscopy or discussing ethical concerns of gene patents.

**Lead a community-based project.** Students spend one semester working on a project that integrates and gives back to the community. Examples include developing content for the 100 Oaks Brain Matters display, assisting in building a smart phone app for managing health, and calculating energy savings from campus green initiatives.

### Extended Mentorship & Internship (100+ hours per semester or summer)

**Mentor and host a student in your laboratory** who will work alongside you and complete an independent project based on your research that will be entered in national science competitions and student research journals (3-5 hours per week during the academic year and full time during a summer).

**Work as a Scientist-in-the-Classroom** one day per week, a formal program with the Center for Science Outreach and Peabody College that provides a stipend and educator certification.

**Full-time post-doctoral positions** are periodically available with the Center for Science Outreach for 1 year terms. Inquire with the CSO for such position availability.