# Multi Department Activities

Science Express-The Chemistry, Biological Sciences, and Physics Departments of the Purdue College of Science deliver research-grade instruments to high schools in 17 Indiana counties. Through the month of August 32 school visits were made and there were 2169 student/equipment interactions.

## Biology Outreach

1. Pre-Med/Exploring Majors: Inaugural Program for high school juniors and seniors.

Purdue University’s inaugural summer program for high school juniors and seniors to explore opportunities in the pre-medical area, took place this summer. Sixty three high school juniors and seniors from across the United States took part into week long program. Students were exposed to the many science and Health related majors that are good preparation for careers in the medical science. Biology outreach held a one  day session (August 1,2019) introducing students to the study of Biology at the tertiary level focusing on those areas of the discipline that are good preparation for medical studies.

1. Meeting with stakeholders and planning Outreach activities for new school year 2019 –2020.

## Physics Outreach

### Exploratory Study Abroad

Sederberg and Lynn Bryan wrote and submitted a proposal for a 2020 summer study abroad trip to Singapore. The pair traveled to Singapore for a five day exploratory trip to scout sites of interest and meet with faculty contacts at Nanyang Technological University.

### QuarkNet

Outreach assisted in organizing a funded opportunity for five high school teachers to participate in a QuarkNet workshop during the fall semester. Teachers will attend a Saturday workshop.

### AP Friday

Outreach coordinators in Chemistry, EAPS, and Physics met with Marla Glover to create a class for the AP Friday program. Glover and Sederberg will offer the class on September 20, 2019.

## Earth, Atmospheric, and Planetary Sciences Outreach

### Goal 1: Support for K-12 science and mathematics educators

* Teacher Professional development
	+ Elementary STEM professional development experience at The Children’s Museum of Indianapolis.
	+ Collaborated with teachers from Decatur High School on their curriculum.
	+ Met with Purdue Conferences to setup registration for a one-day Teacher Professional Development opportunity that will be hosted on campus in November 2019.
	+ Working with various Purdue departments and teachers to create new AP learning experiences for our AP Friday program.
* Getting information out
	+ Created web calendar of events for EAPS K-12 outreach
	+ We have a Facebook for EAPS Outreach <https://www.facebook.com/EAPS.out/>
	+ Helped develop the Purdue Science K-12 Outreach August newsletter which went out to 490 subscribers.
* Teacher Resources:
	+ Superheroes of Science podcast! We started and released following platforms: Apple Podcasts (iTunes), Google Play, Podbean, Stitcher, Blubrry, and Libsyn.
	+ We have a EAPS K-12 Outreach Pinterest page to help teachers find resources in our content area.

### Goal 2: Create and facilitate programs that develop scientifically literate K-12 students

* Participated in GIS planning meetings for the Fall 2019 High School GIS Day
* Working with various Purdue departments and teachers to create new AP learning experiences for our AP Friday program
* Consulted with graduate student, Chris Calvelage, to help him develop a presentation for Angola Middle School students.

### Goal 3: Create opportunities for broader impact

* August 2019 released for the **Superheroes of Science Podcasts**: Professor Corey Thompson, Professor Darryl Granger, Professor Lucy Flesch.
* Created **web calendar** of events for EAPS K-12 outreach
* Participated with the Global Learning and Observations to Benefit the Environment (GLOBE) 2019 **North American Regional Meeting (NARM)** planning committee to help organize the meeting scheduled for this coming October at the University of California, Berkeley.
* Discussed **broader impacts for a grant** that is being written by Ryan Ickert, senior research scientist for the Department of Earth, Atmospheric, and Planetary Sciences.
* Attended meetings for the **GLOBE U.S. Partner Forum**. Steven Smith (EAPS K-12 Outreach Coordinator) is the U.S. At Large Representative and Chair of the forum.
* Steven Smith is serving on the advisory board for **National Geographic Education** for Indiana
* Personal Growth:
	+ Received General Class Certification in amateur radio through the Wabash Valley Amateur Radio Association.

## Chemistry Outreach

### Professional Development and Support for K-12 Educators

* Elementary STEM professional development experience at The Children’s Museum of Indianapolis.
* Added a calendar of events for Chemistry Outreach to my webpage: <https://www.chem.purdue.edu/outreach/Calendar.php>
* Consulted with teachers from Decatur High School who needed help with planning their curricula.
	+ Met with Purdue Conferences to setup registration for a one-day Teacher Professional Development opportunity that will be hosted on campus in November 2019.
	+ Helped develop the Purdue Science K-12 Outreach August newsletter
		- Theme: Technology Updates for Your Classroom!
		- Newsletter currently has over 490 subscribers.

### Programs to Develop Scientifically Literate K-12 Students

* Consultation with Emily Hintz, 2019 Summer College of Science Teacher Fellow, to complete site setup and lesson plans for a new AP Friday lab session: Carbon Cycle; that is being developed.
* Participated in two GIS planning meetings for the Fall 2019 High School GIS Day.
* Held an AP Friday planning meeting for a new physics AP Friday session that is being developed with Outreach Coordinators: David Sederberg and Steven Smith, and graduate research assistant from the Department of Curriculum and Instruction, Marla Glover.
* Consulted with graduate student, Chris Calvelage, to help him develop a presentation for Angola Middle School students.

### Opportunities for Broader Impact

* Presented to Chemistry graduate students about opportunities with K-12 Chemistry Outreach.
* Helped develop the Superheroes of Science Podcast and published to the following platforms: Apple Podcasts (iTunes), Google Play, Podbean, Stitcher, Blubrry, and Libsyn.
	+ August 2019 released podcasts: Professor Corey Thompson, Professor Darryl Granger, Professor Lucy Flesch.
* Participated with the Global Learning and Observations to Benefit the Environment (GLOBE) 2019 North American Regional Meeting (NARM) planning committee to help organize the meeting scheduled for this coming October at the University of California, Berkeley.
* Discussed broader impacts for a grant that is being written by Ryan Ickert, senior research scientist for the Department of Earth, Atmospheric, and Planetary Sciences.
* Received my General Class License through the Wabash Valley Amateur Radio Association.

## Computer Science Outreach

One of the transition challenges that I knew I would be facing involved service learning in computer science. My ROCS class was dissolved and the MAGIC course was faced with a similar fate if an instructor could not be found. Despite the prospect of some in-department candidates like Lillian Evans or one of our graduate students taking over the course, we are now running the class with Jenni Montes of the undergraduate advising office. She is taking on mostly a procedural role, while one of my undergraduate students, Sasha Kipnis, runs the weekly meetings. Sasha and I are in constant contact to organize MAGIC mentoring efforts at our four partner schools (Jefferson and McCutcheon high schools, and Wea Ridge and Lafayette Sunnyside middle schools). I have hired her officially to help in this capacity, and thus far she has been able to manage the demands of the course with Jenni’s support. The undergraduates have been on two recruiting trips thus far to bring new students to the coding clubs where MAGIC engages with the K-12 students. We should begin our regular sessions in mid-September

As the ROCS course does not have the same structure, I hired Megan Walsh and Carl Landskron to help with the minimal set of outreach activities that we’ll engage in this semester. This will include some upcoming student visits from George Washington High School in Indianapolis and Merrilville High School that have been arranged by Lillian Evans. Megan is also going to assist with transportation for MAGIC.

In August, I managed to hire undergraduate teaching assistants for CS180x, which was launched this past Tuesday. As of today’s date, we have 934 students (29.3% female) from 77 countries (59.8% USA). I have made special arrangements with a number of schools to support new AP CS A teachers, including at Fishers High School where they had their classroom teacher leave during the second week of school. I expect the number of students to continue to rise in the next few weeks as we push enrollment via social media and through the CSTA.

I recently met with members of the national CSTA to try to further development of the Indiana CSTA chapter. This will involve a rebranding and a new website. We are also looking at cultivating smaller “hubs” within Indiana to provide local support along with the statewide chapter that tends to meet in the Indianapolis area. I will continue to update our progress as we move through the early part of the semester when some of the state CS conferences are occurring.

Before I left Indiana, I did record an episode of the College of Science “Superheroes of Science” podcast which is hosted by two of my outreach colleagues, Sarah Nern and Steve Smith. I haven’t listened to it, but I am including it here in case anyone is interested to hear some of my thoughts on the direction of CS education in Indiana. The podcast is aimed at teachers in Indiana, and so most of my effort on the podcast is focused on pointing out resources and encouraging teachers to connect with K-12 Outreach at Purdue when they encounter issues. You can listen to it at the following link (<https://purdue.libsyn.com/episode-4-phil-sands>)