**Multi Department Activities**

Science Express-The Chemistry, Biological Sciences, Earth and Atmospheric and Planetary Sciences, and Physics Departments of the Purdue College of Science deliver research-grade instruments to high schools in 17 Indiana counties. Numbers for the month of December are as follows:

Teachers/Classrooms Visited – 16

Student/Instrument Interactions - 1122

**Biology Outreach**

          1.) Lafayette Briarwood Community Tutoring Sessions: The first session of the Lafayette Briarwood Community Outreach Tutorial program got off the ground this month with its first organizational meeting. The program plans to meet with 4th, 5th and 6th grade Briarwood students twice a month in hands – on tutorial sessions and enrichment science activities.

          2.) NMSI AP Biology Student Study Session: Presented an NMSI AP Biology Student Study Session to  25 AP Biology students from Central High School, Grand Forks, ND.: AP curriculum topics covered were: Matter and Energy; Big Idea 4 (Interactions) Lab review; Big idea 2 (Cellular Processes: Energy and Communication) Lab review; and Cellular Functions.

          3.) Began planning for Shonan High School’s (Japan) visit to Purdue in March 2019: Forty four Students from Shonan High School, Japan will be visiting Purdue University in March 2019. Hands-on laboratory activities are planned with the Departments of Biology, Chemistry and Physics participating.

         4.) Lafayette Science and Engineering Fair:  Began accepting local middle and High School students for mentoring sessions to the Regional science Fair competition. The regional Science Fair Competition takes place in March, 2019.

**Physics Outreach**

SMAP – Saturday Morning Astrophysics

Dave Sederberg collaborated with faculty member Kyoung-Soo Lee in creating materials for and presenting SMAP class, Stories of Stars. The program utilized a computer simulation and demonstrations building an understanding of how stars differ and the lives they lead.

Faculty Broader Impact

Outreach Coordinator Dave Sederberg worked with faculty member Matthew Lister to create a lesson for Saturday Morning Astrophysics on Radio Astronomy. The goal is to create an optics lesson kit that will be made available to teachers in Science Express.

Additionally, preliminary work was begun with faculty member Andrew Mugler for an activity at the 2019 HASTI conference.

Service Learning

Service learning students continue work with Coordinator Sederberg at BIDC on on-going design and 3D printing projects for SMAP and Science Express.

**Earth, Atmospheric, and Planetary Sciences Outreach**

* + **Equipment loan**
    - Our participation is Science Express is proving to be beneficial in that we have teachers of college bound students using equipment in our content areas.
    - We also have small equipment that we loan out to faculty and students.
  + **GLOBE** 
    - Set up the Indiana GLOBE Virtual Science Symposium
      * Reviewed entries and announces winners of travel support.
      * This is funded through last year’s Halliburton Foundation grant.
    - Attended meetings for the GLOBE U.S. Partner Forum. Steven Smith (EAPS K-12 Outreach Coordinator) is the U.S. At Large Representative.
  + **Collaboration:**
    - Meet with the staff at Indianapolis Children's Museum
      * Discussing and exploring collaborations
    - Met with EAPS Grad students to discuss outreach involvement.
    - Mentored EAPS undergraduate students on projects for EAPS
    - Met with faculty and staff from around campus collaborating on a STEM Summer Professional Development for educators.
  + **Student events:**
    - Student groups visited campus
      * AP: Friday Buffers
      * 4th grade GT program did Weather and density activities.
    - School /event visits
      * Weather, Climate and the tilt of the Earth at Gold Academy in Indianapolis.
  + **Getting information out**
    - **Made a number of posts on Facebook through** [**https://www.facebook.com/EAPS.out/**](https://www.facebook.com/EAPS.out/) **and** [**https://www.facebook.com/PurdueSE/**](https://www.facebook.com/PurdueSE/)

**Chemistry Outreach**

* **Outreach for Indiana K-12 Educators**
  + Hosted 2018 Indiana Virtual Science Symposium and evaluated projects that were submitted by Indiana middle and high school students. Winning topics of the College of Science Staff Choice Awards follow. **Project 1:** Effect of Road Salt on Local Water Quality. **Project 2:** Determining the Ideal Location for a Raised-bed Community Garden.
  + Selected local high school teacher, Graham Lyon (Tri-County Jr/Sr High School) to prepare a chemistry lesson to teach a group of Japanese students who will be visiting Purdue in March as part of an international collaboration.
  + Worked with Steven Smith (EAPS Outreach) on developing presentations over lockbox activities for several upcoming events: Indiana STEM Conference (January at Purdue), a one-day teacher professional development experience (February at Purdue), and the 2019 HASTI conference (February in Indianapolis).
  + Met with Becky Wolfe and Don Riefler (The Children’s Museum, Indianapolis) to plan for a summer 2019 STEM professional development for elementary teachers hosted at the museum.
* **Other collaborations**
  + Met with Megan Gunn and Julie Pluimer (College of Agriculture, Department of Forestry and Natural Resources) to discuss future collaborations with AP Friday events and teacher professional development opportunities (summer 2019).
  + Participated with the GLOBE 2019 North American Regional Meeting (NARM) planning committee to help organize the meeting scheduled at NASA Langley in early March.
  + Met with Chris Bishop (Purdue Conferences) to work on developing a registration page for teachers planning to participate in a summer 2019 workshop: Integrating STEM in the Environment. Visited Ross Reserve with Steven Smith (EAPS Outreach) in preparation for this workshop, and met with Henry Legett, ecologist-in-residence.
* **Science Express Labs and Instrumentation**
  + Consulted with Purdue Veterinary Science on the possibility of using turbidity sensors for a research project led by Dr. Ana Aghili.
  + Students from Cardinal Ritter High School and Twin Lakes High School came to Purdue to participate in an AP Friday lab session on December 7. Students used Science Express Laptops, Go! Links, Vernier pH meters, stir plates, and balances to complete a lab related to buffers.
  + Met with Steven Smith and Jordyn Miller, EAPS graduate student, to discuss development of broader impact for an NSF grant that would include the development of a lab (stable isotopes of water) that high school chemistry teachers could use with Science Express nuclear scalers.

**Computer Science Outreach**

The major event in December was CS Education Week, during which we engaged in two major efforts. First, we ran our 6th annual CS Ed Week Programming Challenge. This consists of three problems designed to challenge first year computer science students from a problem solving perspective. We had entries from all across the state, involving 10 schools and about 40 total kids. The winners get some Purdue swag, and we try to give feedback to all of the students who entered the competition. Results will be up on the CS Outreach web page this week once I get a chance to notify the winners.

During the same week, my students and I visited three Indianapolis area high schools and did a series of activities aimed at encouraging students in computing. At Westfield High School, we ran some hands-on CS activities for students in both CS and web design courses. At Hamilton Southeastern High School, we did a series of Q&A sessions so that students could learn more about Purdue CS. At Carmel High School, we helped the Carmel students run a number of stations for elementary students who were visiting for an “Hour of Code”. Our students really represented Purdue CS well this week, and I got lots of great feedback from the teachers at each school.

The MAGIC mentors wrapped up their first semester successfully. Our McCutcheon students will be presenting an app that they are designing at an event this month at the Indiana State House. The other two schools saw good progress on their own projects, and our only real negative was that we lost our club at West Lafayette due to low attendance. We’re working to replace that school with Lafayette Sunnyside Middle School and should be able to start there this month.