**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 November are as follows:

Teachers/Classrooms Visited – 40

Student/Instrument Interactions - 2827

**Biology Outreach**

1.) AP Biology Student Study Session (SSS) presentation November 3, 2018: Presented an AP Biology SSS on Evolution and Diversity to AP biology students at the Speer Academy, in Chicago Illinois. 120 students participated in this NMSI (National Math Science Initiative) spooned event.

2.) Charter School of the Dunes; Gary Indiana: Visited the Charter School of the Dunes, Gary, Indiana together with the Outreach Coordinator in Physics.( Physics Outreach is the Lead contact for this project). Discussed a proposed collaboration with the school’s administration and lead teachers to design and provide leadership in developing a “STEM approach to teaching/learning at the school and assist in developing professional development activities for teachers. Discussions on these topics are ongoing with School officials.

3.) Biology Outreach Weekend workshop for Teachers; Presented an AP Biology workshop on the AP Lab; “Photosynthesis” to small group of AP Biology teachers.

4.) Math Field Day; COS Outreach Event: Participated in the COS Outreach “Math Field Day” activities.

5.) Biology Outreach Community Involvement: Biology Outreach presented a hands-on science activity to 5th and 6th grade students in an after school community enrichment program at the Briarwood community center in Lafayette. This is a new initiative for Biology Outreach with a focus on an underprivileged area in our community.

6.) Attended the I-STEM Education Taskforce Fall 2018 meeting as a member of the COS Outreach team November 29th 2018. This meeting, organized by the IN. DOE was designed to provide information to stakeholders in support of the passage of the STEM plan during the coming legislative session.

**Physics Outreach**

SMAP – Saturday Morning Astrophysics

Dave Sederberg collaborated with faculty member Kyoung-Soo Lee in the creation of an all new SMAP program, Stories of Stars. The program utilizes a computer simulation and demonstrations building an understanding of how stars differ and the lives they lead. With SMAP as a field try for the lesson, Sederberg and Lee anticipate presenting this activity to HASTI teachers.

The November SMAP presented Impact Craters, with SMAPsters projecting meteorites into sand with giant slingshots. In addition to the fun, SMAP students calculated the combined potential and kinetic energy of the impacts.

PHYS 295 - Service Learning in Outreach

Work continues on two outreach projects; Modeling the AFM, and Gravitational Interferometry, both of which will carry into next semester, utilizing undergrad SL students and resources of the BIDC.

Faculty Broader Impact

Outreach Coordinator David Sederberg contributed broader impact segments to faculty grant proposals for three Physics and Astronomy faculty members, Kyoung-Soo Lee, Danny M, and Chen-Lung Hung.

Campus Visit

Outreach coordinators David Sederberg and Steven Smith collaborated to present an on-campus program to two third grade classrooms on the Planets of the Solar System. Students were guided through a scavenger hunt to learn about the planets and their moons.

Charter School of the Dunes Nov 6

Dave Sederberg and Biology Outreach Coordinator Isidore Julian traveled to Gary, Indiana to meet with 10 teachers from the Charter School of the Dunes. The fact-finding mission ended with an agreement to support classroom learning and teacher professional development across the Sciences. A priority on the list of possibilities is the development of an outdoor area dedicated to integrating science across the disciplines.

ThinkerCon Nov 17

Dave Sederberg attended ThinkerCon in Huntsville, AL, a first ever meeting for YouTube creators. The conference was an opportunity to meet the likes of Astro Katy and The Physics Girl (two YouTube channels) and to make connections in the pursuit of informal science education.

**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.
  + **GLOBE** 
    - Set up the Indiana GLOBE Virtual Science Symposium
      * Received  a number of entries!
      * This is funded through last years 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.
  + Invited to join **National Geographic Advisory Council** 
    - Meet with regional rep and other council members in Indy meeting
  + Meet with the staff at **Indianapolis Children's Museum** 
    - Discussing and exploring collaborations
  + **Indiana STEM Education Taskforce** meeting
    - Meet in Indianapolis with STEM education leaders throughout the state. We worked on the Indiana STEM Six-Year Strategic Plan which the Indiana Department of Education is about to introduce to the 2019 State Legislative session.
  + Met with **EAPS Grad students** to discuss outreach involvement.
  + **Student events:**
    - Student groups visited campus
      * Middle School LockBox activity: Weather & Climate
      * AP: Friday Kinetics
      * AP: Friday  Atmosphere
      * Math field day
      * Elementary visit with Planetary activity
      * Another Middle School LockBox Activity: Weather & Climate
    - School /event visits
      * EAPS Passport Day at Imagination Station
  + **Getting information out**
    - Made a number of posts on Facebook through <https://www.facebook.com/EAPS.out/>  and <https://www.facebook.com/PurdueSE/>

**Chemistry Outreach**

* **Outreach for Indiana K-12 Educators**
  + Worked with Steven Smith (EAPS Outreach) to host students from Grant Middle School for a Purdue Admissions focus visit. Students participated in a Weather and Climate lockbox activity that Steven and I developed together.
  + Participated in discussion regarding the development of a ticketing system (Suite CRM) for use by the College of Science Outreach team to facilitate requests made to the Outreach team. This system will help Outreach to more efficiently answer requests and connect k-12 teachers and other interested parties with appropriate resources.
  + Observed pre-service elementary teachers participating in an Argument-Driven Inquiry science lesson to learn more about this type of instruction.
  + Attended the Fall 2018 Indiana STEM Education Taskforce meeting at IUPUI with other members of the Purdue College of Science K-12 Outreach team.
  + Worked with Steven Smith (EAPS Outreach) to host students from West Lafayette Middle School for a Purdue Admissions focus visit. Students participated in a Weather and Climate lockbox activity.
* **Faculty collaborations**
  + Provided student feedback to Gaurav Chopra and his research team about the MINT platform. This feedback was collected from students that had participated in the AP Friday lab session held in October.
  + Met with Bill Bayley, Isidore Julien (Biology Outreach), John Gipson (Director of Summer College), and Elizabeth Casebeer (Summer College Coordinator) to discuss activities that can be offered during 2019 Summer College at Purdue: Exploring University Majors: Planning for Medical, Veterinary, and Other Professional Schools after College: July 28 – August 2.
  + Worked with K-12 Outreach team to help Professor Rachael Kenney with Purdue Math Field Day for area middle school students.
  + Students from Ben Davis High School and Marion High School came to Purdue to participate in an AP Friday lab session over Atmospheric Chemistry on November 16. Students heard from various professors including Professor Alexander Laskin.
  + Attended a meeting at the Indianapolis Children’s Museum to discuss opportunities for potential future collaborations between the museum and Purdue faculty members.
* **Science Express Labs and Instrumentation**
  + Worked with Steven Smith (EAPS Outreach) to host a group of Homeschool students for a science focus visit. Students participated in a lockbox activity that Steven and I developed to potentially use as part of the Science Express program.
  + Students from South Central High School came to Purdue to participate in an AP Friday lab session on November 9. Students used Science Express Laptops and Spectrovis Plus spectrophotometers to complete a kinetics lab.
  + Added Exploring Electricity lab kit (specifically for ICP teachers) to the Science Express schedule.

**Computer Science Outreach**

The ROCS service learning group engaged in only two events this month, working with the CoderDojo at the Anvil in West Lafayette, and hosting a small group of students on a snowy evening post-Thanksgiving for a “Family Code Night”. Despite the weather and a trend of diminishing attendance at on-campus events, the Family Code Night was a success and our undergraduate students did well in their interaction with the locals that braved the snow. The event was designed to engage parents and kids together over a computer science task. The parents in attendance liked seeing their students in action, and I got quite a few nice compliments for the nature of the event and the hard work of our undergraduate students. This week, the students will be joining me at a number of schools for CS Ed week as we do our annual visits.

The MAGIC mentoring group had a consistent month of work at our partner schools. The only negative came from West Lafayette HS, where our sponsoring teacher decided to abandon the after-school coding club. We have elected to replace this school with Sunnyside in Lafayette which should allow us to meet more of our diversity goals. I should mention here that I am currently doing a qualitative study of the MAGIC students and how mentoring shapes their identity in CS. I will share interesting outcomes from the study after I have a chance to review the data.

My CS180x course will wrap up the second module this week and we will be taking a break until the middle of January when we will resume. The course has gone well, and there is nothing significant to report outside a generally smaller audience than we had in previous years.

This past month, Susanne asked Lillian Evans and I to address the needs of faculty as they write grants that require BPC plans and “Broader Impacts” sections. The materials we have produced for faculty are almost completed, with only one document left incomplete at this juncture. I will work on completing that document (a sample BPC plan) during the winter recess when I have more time to concentrate on it.

Another project that I am assisting with is the revitalization of the Peer2Peer mentoring program for undergraduate students with Nicole Towner and Lillian Evans. This program began in 2015 with Scott Nelson and I leading the charge, but has fallen off the radar of those running it in recent years. Our goal is to spend more time training mentors in an effort to create a strong support for all of our freshman and sophomore students, and our underrepresented students in particular. We were not able to get our course approved for training these mentors, despite our efforts, and so we will be running the course informally in the Spring during evening sessions. The program will re-launch in Fall 2019 and we hope that if the training materials are successful that we will be able to use those with teaching assistants in the department going forward.