

Region 2 K-12 STEM Activity Report

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K-12 STEM

- This report contains an update on the Region 2 K-12 STEM activities by Section.
- In calendar year 2013, Region 2 was active across the region in promoting and conducting STEM activities.
- Many of these are annual events.
- Sections were asked to provide info on the K-12 STEM activities they supported.
- 15 of the 20 sections in R2 responded or have STEM info posted on their Sections webpage.

K-12 STEM – R2 Sections

▣ Akron

- ▣ MATHCOUNTS contest for middle school students was held Saturday, February 2, 2013 at The University of Akron.

▣ Baltimore

- ▣ Held its 17th Annual Robot Challenge April 2013, there were 74 teams competing; plans in progress for 18th Robot Challenge.

▣ Central Pennsylvania

▣ Cincinnati

▣ Cleveland

- ▣ Judged and gave certificates and monetary awards to participants in (NEOSEF) Northeast Ohio Science and Engineering Fair.

K-12 STEM – R2 Sections

■ Columbus

- Initiated PACE funding request to sponsor 5th Grade Robotics Club
 - The purpose of the club is for students to mimic the engineering design process used by scientist and engineers in many industries.
 - Cost: \$1,200 for materials for 2 sets of equipment
 - Students benefitted 86 (current 5th Grade population at school)

■ Dayton

■ Delaware Bay

■ Erie

K-12 STEM – R2 Sections

■ Johnstown

- IEEE Section and the University of Pittsburgh at Johnstown faculty Instructed middle and high school (7-12) students in STEM related elective and exploratory courses in the Richland School District.

■ Lehigh Valley

- LVS is involved with the Pennsylvania Junior Academy of Sciences (PJAS). Some things we are thinking about are: judging, recognition of technical excellence through awards & certificates, and extending a subsidized invitation to the Engineers' Week Banquet in February.
- Last year we reached out to the local STEM and community college communities and invited about 20 High School and Community College students to the Engineers' Week Dinner as our guests. The objective of this initiative was to expose the students to the engineering profession and practicing engineers. Our success was demonstrated by the conversational interaction and the networking between professional engineers and the students during the dinner.

■ Lima

- Very good webpage for IEEE Pre-University Education!

K-12 STEM – R2 Sections

■ Northern Virginia

- The IEEE Northern Virginia section supported K-12 STEM by participating in local science fair judging as well as mentoring teams competing in the FIRST Robotics competition.

■ Philadelphia

- Supports the Delaware Valley Science Fairs, the Future Cities competition, the IEEE Real World Engineering Program, and the Philadelphia Inquirer Newspapers in Education edition on engineering.

■ Pittsburgh

- The section participated in 2012 Engineers week at the Pittsburgh 'Carnegie Science Center'. We had some circuit-building kits for people to play with, some materials showing how printed circuit boards are built, home-made (by an IEEE volunteer) photovoltaic demonstrations, and a day-long robotic car race with some 12 schools and about 60 students and teachers competing.

K-12 STEM – R2 Sections

■ Southern NJ

■ Egg Harbor Twp High School

- One section member presented a topic to classes at the HS as guest speaker
 - 4 AP Physics and 4 Pre-College classes (177 students) were taught an Astronomy lesson to dry run the first lesson plan for the OCHS Observatory Project (see next slide)

■ Jersey Shore Science Fair

- 10-12 Section members served as judges at the JSSF; 650+ students took part.
- IEEE awards prizes to 1st, 2nd, 3rd place for best EE projects.

■ The Southern New Jersey (SNJ) Chapter of Women in Engineering (WIE) has sponsored an annual South Jersey Robot Challenge. At least 10 local high schools have participated, with 15-20 student teams each year.

■ K-12 STEM Educator Workshop at FAATC May 13, 2013

- Presented OCHS Observatory Project to ~40 HS Science Teachers from several local High Schools.

■ Villanova University STEM Outreach

- Offer from VU to collaborate on STEM Outreach; More info to follow.

K-12 STEM – R2 Sections

- Southern NJ, Cont.
- OCHS Observatory Project Completed
 - The First lesson Plan was presented to 177 students at Egg Harbor Twp HS
 - Project Leader presented the OCHS Final Report at the IEEE-USA meeting in Portland, OR Aug 2, 2013
- Open to the public: 1400 people attended the New Years Eve session.
- OCHS hired an Astronomy teacher so we created a job!
- Met with Science teachers Sep 2013 to plan on use of Observatory
- TISP being planned for Fall 2014



K-12 STEM – R2 Sections

■ Susquehanna

- The Third South-Central PA Robotics Competition will be held on November 16, 2013, at the Harrisburg Area Community College (HACC) midtown campus, Harrisburg. The conference is sponsored by the IEEE, the Association for Computing Machinery (ACM), the American Society of Mechanical Engineers (ASME), PSU-Harrisburg, HACC, Phoenix Contact, Amphenol, Volvo, Johnson Control, and FCI.
- The event is organized jointly by faculty from HACC, PSU-Harrisburg, Dauphin County Vo-Tech, and Cumberland-Perry Vo-Tech schools. Competitors will work in teams of three high school students plus a mentor from one of the participating colleges. Teams will be presented with five tasks in robotic motion and control. The winning team will have to program an educational robot to perform these tasks as quickly and precisely as possible.
- High schools throughout south Central PA have been invited to participate, and approximately 80 students are expected to be there. This event is designed to strengthen relationships between the region's students and educators in STEM disciplines between the high school and college levels. Prizes will be awarded to the top three teams, and robots are provided by the sponsors, so there is no kits cost to the participants.
- IEEE is sponsoring the event with \$1,500. Total Prize money from all 8 sponsors is \$5,750.

K-12 STEM – R2 Sections

■ Washington

- Montgomery County Science Fair
- Prince George County Science Fair
- Washington DC STEM Fair
 - Shyam Bajpai, past chair of Washington Section lead this effort, three awards were give at each event and winners were invited to the IEEE NCA Awards Banquet.
- Career Day at Wheaton High School - Middle and High school participated
- Family Day at Museum Udvar-Hazy Center in Chantilly, VA
- Washington Section sponsors the IEEE DC Robotic team that meet every Saturday lead by Richard Hill, Vice Chair of Washington.
- Participates in GEMs summer program, Carolyn Carroll Washington Section Secretary and WIE chair.
- Photonics Society Wash/NoVa participates in many other Science Fairs in the area.

■ West Virginia

- Sponsors a Student STEM Awards competition; five teams were recognized for awards.

■ Youngstown