



The Pittsburgh Professional Engineer
<http://www.PittsburghPE.Org>
E-mail PSPE@PittsburghPE.Org

Published by:
The Pittsburgh Chapter of the Pennsylvania Society of
Professional Engineers
337 Fourth Avenue, Pittsburgh, PA 15222
P. 412-391-0615 F. 412-261-1606

November - December 2011

MATHCOUNTS®

MATHCOUNTS 2012 – February 4, 2012

This year is the 29th year of the Pittsburgh Chapter sponsoring the local competition portion of the National Mathcounts Competition. For the fourth consecutive year, the competition will be held at Robert Morris University, Sewall Center. We are looking forward to another successful competition.

To secure America's global competitiveness, MATHCOUNTS inspires excellence, confidence and curiosity in U.S. middle school students through fun and challenging math programs. With the generous support of all MATHCOUNTS sponsors and volunteers, and leadership of the National Society of Professional Engineers at the local and state levels, MATHCOUNTS is providing today's students with the foundation for success in science, technology, engineering and mathematics careers.

MATHCOUNTS is a national enrichment, club and competition program that promotes middle school mathematics achievement through grassroots involvement in every U.S. state and territory.

MATHCOUNTS is one of the country's largest and most successful education partnerships involving volunteers, educators, industry sponsors and students.

The MATHCOUNTS Competition Program provides the extra incentive and the perfect atmosphere for students to push themselves to achieve more in mathematics. Consisting of fun and creative problems that promote critical-thinking and problem-solving skills, the MATHCOUNTS competitions have written and oral rounds, as well as individual and team components. Though challenging and non-routine, the competition problems focus on the 6th through 8th grade standards of the National Council of Teachers in Mathematics. Participants advance through School, Chapter and State Competitions until the final 224 students are selected from 56 states and territories to advance to the MATHCOUNTS National Competition held each May.

Why MATHCOUNTS Works

- MATHCOUNTS motivates and rewards students by fostering teamwork and a competitive spirit.
- MATHCOUNTS is more than a competition. It involves students and teachers in year-long coaching sessions and helps students at all levels improve their critical-thinking and problem-solving skills.
- MATHCOUNTS builds math skills, promotes logical thinking and sharpens students' analytical abilities.
- MATHCOUNTS provides America's middle school teachers with creative, interesting and comprehensive curriculum materials, free of charge.
- MATHCOUNTS introduces students to science, technology, engineering and mathematics careers through contacts with engineers and other professionals who serve as volunteers.
- MATHCOUNTS is educator-driven. Materials and activities are structured to meet student needs, as identified by educators. Members of the National Council of Teachers of Mathematics (NCTM) develop these materials in accordance with NCTM curriculum standards for grades 6-8.

MATHCOUNTS	1
Invitation to Serve & Sustaining Associates	2
January Meeting	3
Engineer's Week	4
Banquet	
"Energy from Trash"	5
Apprenticeship Report	6
Apprenticeship Report	7



Invitation to Serve the Pittsburgh Chapter PSPE

We should never take lightly what we have achieved in obtaining that "P.E." nor what it means to the profession and protection of our constituents.

We are always in need of volunteers for the various ongoing outreach work that President Brian Schull, P.E. mentioned in his President's Message. The Apprenticeship Program, chaired by Reyman Branting and Dave Briskey gives you a great opportunity to meet with "up and coming" young people thinking about an engineering career. The Mathcounts Program is a once-a-year competition, encouraging young math and science students to excel in their quest for recognition, both financial and literary. We need to raise funds to help maintain and grow these efforts. We are working in this area, but need volunteers to help contact and reach out to the engineering community here in Pittsburgh on behalf of these programs.

PLEASE consider volunteering to help with any of these outreach programs. The Board meetings occur once a month, and they are almost always followed by a Chapter meeting (many offering a coveted PDH). The meetings are productive and informative.

SUSTAINING ASSOCIATES

Through the years, the Pittsburgh Chapter of PSPE has had a core group of local companies, the Sustaining Associates, who, through their Sustaining Associates dues, have helped the Chapter foster and grow outreach programs. Their participation, by their company members, have also enabled the Chapter to undertake many projects that only volunteer time can sustain.

The Chapter would like to recognize those companies that are Sustaining Associates of the Chapter. They are:

- | | |
|---|---|
| Benchmark Engineering & Construction
D & D Engineering, Inc.
Gannett Fleming, Inc.
HDR Engineering, Inc.
Michael Baker, Jr., Inc.
Roy F. Johns, Jr. & Associates
Trumbull Corporation | Camp Dresser & McKee, Inc. (CDM)
GAI Consultants, Inc.
Garvin Boward Beitko Engineering, Inc.
L. Robert Kimball & Associates, Inc.
Monaloh Basin Engineers
The Gateway Engineers |
|---|---|

The Sustaining Associates receive several "bonuses" by establishing and maintaining their Chapter membership. The benefits and "bonuses" to your company can be seen on the Chapter web site. If your company is interested in becoming a Sustaining Associate, please contact Virginia Dailey, P.E., President of D & D Engineering, at dailey@ddengr.com

2011-2012 Chapter Officers

- | | |
|--|--|
| President – Brian Schull, P.E. | Executive Secretary – Jon Drosendahl, P.E. |
| President Elect – Kirk Thompson, P.E. | Treasurer - John Broscious, P.E. |
| Vice President – Gary Chodkowski, P.E. | Financial Secretary - Reyman Branting, P.E. |
| State Director - David Briskey, P.E. | Immediate Past President – Joe Garlicki , P.E. |

2011-2012 Chapter Directors

- | | |
|--------------------------------|--------------------------------|
| Doug Beitko, P.E., 2010 – 2012 | Jason Esser, P.E.. 2012 - 2014 |
| Tom Weber, P.E. 2011 - 2013 | |



**PITTSBURGH CHAPTER
PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS**

Invites all current and prospective members to the
Thursday, January 19, 2012 Meeting

***Milton Madison Bridge – Innovative Superstructure
Replacement and Substructure Retrofit***

(Seminar attendance qualifies as 1.0 PDH)



***At the Engineers Society of Western Pennsylvania Building
337 Fourth Ave., Pittsburgh, PA 15222***

On Thursday, January 19, 2012, the Pittsburgh Chapter PSPE will proudly sponsor a seminar on the topic of the superstructure replacement and pier strengthening of the Ohio River bridge connecting Milton, KY with Madison, IN. The presenter will be Mr. Scott Zang, P.E. of Michael Baker Corporation. A new steel truss will be built adjacent to the existing truss and then slid into place atop the strengthened piers. The closure period for the bridge will be just 10 days. Come learn about this exciting project currently under construction and to be completed in September 2012.

Cocktails: 6:15 PM Social (Cash Bar)

Dinner: 6:30 PM

Presentation by Mr. Scott Zang, P.E.: 7:30 PM

Dinner Choice: Choose one of the following (if more than one attendee, indicate the number of each choice):

- Filet Mignon Medallions**, topped with Artichoke Hearts
- Chicken Caprese**, with Grape Tomato, Spinach, Garlic and Melted Buffalo Mozzarella
- Virginia Spots**, Broiled English Style with Lemon Butter Cream Sauce

You may make your reservation by filling in the form below and mailing or faxing it to Dave Teorsky, ESWP. You may also phone in all of this information to ESWP. If you choose to make your reservation via e-mail, do not e-mail your credit card information. Payment may be made by calling in your credit card information, faxing this filled in form, or mailing this form with credit card information or enclosing a check.

Phone: (412) 391-0615 Fax (412) 261-1606 E-mail: d.teorsky@eswp.com
U.S. Mail: Pittsburgh Chapter PSPE, 337 Fourth Ave., Pittsburgh, PA 15222

Name: _____ **Phone/Email:** _____
Name: _____ **Phone/Email:** _____

Reservations including payment must be received by January 16, 2012. Cost per attendee is:
\$30.00 for PSPE Members, \$35.00 for Non-Members.

Payment Options:

Credit Card: MASTERCARD VISA AMEX
Card Number: _____ Expiration Date: _____ CVV Code _____

Name (as it appears on the credit card): _____

Billing Address: _____

Check enclosed payable to Pittsburgh Chapter PSPE & mailed to 337 Fourth Ave., Pittsburgh, PA 15222
Cancellations must be received three (3) days prior to the event.



**PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS
PITTSBURGH CHAPTER**

**Invites ALL Engineers and their guests to the Annual
NATIONAL ENGINEERS' WEEK BANQUET**

On Saturday, February 25, 2012

At The Sheraton Station Square
300 West Station Square Drive
Pittsburgh, PA 15219

Please join us for a wonderful evening of fellowship, great food
and the presentation of the 2011 Engineers' Week Awards

Hors d'oeuvres and Cocktails: 6:30 p.m. (Cash bar)
Welcome & Presentation of Mathcounts Awards: 7:00pm
Dinner: 7:30 pm
Presentation of Awards: 8:30pm

You may make your reservation by filling in the form below and mailing or faxing it to the Chapter office. You may also phone in all of this information to us. If you opt to make your reservation via e-mail, do not e-mail your credit card info. Payment may be made by calling in your credit card info, faxing this filled in form, or mailing this form with credit card info or enclosing a check. **Cost of Dinner is \$60.00/person if reservations are made by February 17, 2012.** After that, the cost is \$65.00/person.

Office Phone number (412) 391-0615 e-mail: d.teorsky@eswp.com
Office fax (412-261-1606) Mailing Address: PSPE, 337 Fourth Avenue, Pittsburgh PA 15222

Dinner Choice : Choose one of the following:

Dinner includes a glass of house wine and chocolate layer cake for dessert

- Chicken Picatta**, with lemon butter, white wine and caper sauce
 Tilapia, with lemon butter sauce
 London Broil, with mushroom sherry sauce

Name : _____ Dinner Choice: _____

Name : _____ Dinner Choice: _____

Payment Options:

MASTERCARD VISA AMEX Check Enclosed

Card Number: _____ Expiration Date: _____ CVV Code _____

Name (as it appears on the credit card): _____

Billing Address: _____

Check enclosed payable to Pittsburgh Chapter PSPE & mailed to 337 Fourth Ave., Pittsburgh, PA 15222

Phone Number: _____ E-Mail: _____

Cancellations must be received three (3) days prior to the event.

U.S. missing out on energy from trash, study says

by [Candace Lombardi](#) October 12, 2011 10:40 AM PDT

Columbia University researchers assert that tech breakthroughs in recent years now make sending trash to landfills a waste of energy.

While recycling and energy recovery from plastics is on the rise, about 86 percent of used plastics are still sent to landfills. It's a big waste considering its energy potential, according to the 33-page report, "[Energy and Economic Value of Non-recycled Plastics and Municipal Solid Wastes that are Currently Landfilled in Fifty States](#)" (PDF).

About 28.8 million tons of non-recycled plastics were sent to landfills in 2008, the energy potential equivalent of 36.7 million tons of coal or 139 million barrels of oil, said the report.

The study, co-authored by researchers at the university's Earth Engineering Center, determined that if the U.S. took all the non-recycled plastic currently sent to U.S. landfills each year and instead sent that trash to a waste-to-energy (WTE) power plant, it would produce enough electricity for 5.2 million U.S. homes annually.

If that plastic was separated by type, enough petroleum-based plastics could be recovered and sent to a pyrolysis conversion facility, a plant that converts non-recycled plastics into fuel oil, to produce 3.6 billion gallons of oil. That's enough to power 6 million [cars](#) for a year.



The comprehensive study also broke down how much waste is being recycled or reused and how much is sent to landfills in each state.

Some states are taking advantage of the latest waste management technology. Connecticut, for example, has the best record for this, achieving a recovery of 65 percent on plastic waste when including both recycling and waste-to-energy conversion. Other states with the best record for capitalizing on the energy of waste include (in order) Massachusetts, Hawaii, Maine, Virginia, Minnesota, New Jersey, New York, Maryland, and Pennsylvania. The energy potential is even greater when you expand beyond plastic.

"Hypothetically, if 100 percent of the landfilled municipal solid wastes were diverted from landfills to new waste-to-energy power plants, they would reduce coal consumption by 108 million tons and produce 162 million MWh of electricity, enough to power 16.2 million households for one year," said the report.

The report's assertion that the tech for this is already available is evident.

Oregon-based Agilyx raised a lot of money and attention after it announced it had developed an [efficient process for converting plastics into synthetic oil](#). Even more notable is that Waste Management, one of the largest garbage management companies in the U.S., was recently estimated to be [producing more electricity annually than the entire solar industry](#). And it's not all just incineration. Among its many trash-to-treasure endeavors in recent years, the company has begun producing [liquefied natural gas from landfill gas](#), and converting organic waste into gardening products or using it to make biogas via anaerobic digestion.



ENGINEERING APPRENTICESHIP PROGRAM

From time to time in the newsletter, we share the reports that the students are required to write and submit after their visits. Please read the very interesting and interested details they provide.

Apprenticeship Report From
Emily Bigler
Group 3
Keystone Oaks High School



Michael Baker Apprenticeship

Founded in 1940 in Rochester, PA Michael Baker Corporation provides a wide variety of architectural, aviation, defense, environmental, geospatial information technologies, homeland security, municipal planning, civil, oil and gas, transportation and water management services. Michael Baker is ranked among the top 50 design firms nationwide because of their proficiency in each of these fields. Because of their history of success in each of these disciplines, they are able to offer a variety of career opportunities, each calling for a different field of expertise. For instance, just the environmental area offered by Michael Baker branches into chemical issues, waste water treatment, and protecting wildlife before constructing a new project. Another area further discussed was the unfamiliar GIT. This technology is a way of mapping existing infrastructure to provide a basis for planning and developing improvement projects, such as a new highway alignment or determining where best to locate a new dam. One technology Michael Baker uses to capture this information is LiDAR, which relies on light detection and ranging to accurately determine distance and elevation of existing structures and geography. Michael Baker's expertise in several aspects of engineering has played a critical role in many significant projects locally, nationally and globally.

While exploring the transportation department with Office Principal Greg E. Cerminara, I got a chance to see appreciate first-hand what civil engineering can accomplish and what Michael Baker specifically has accomplished. One example of this is the 'missing ramps project', which civil engineer Laura Volle worked on. Other projects include the Trenton Train Station, the New River Gorge Bridge, the infrastructure of the North Shore and the new Pittsburgh International Airport. During our apprenticeship we visited the Route 28 project currently under way near the Saint Nicholas Church. Considered to be a green project, this began in 1996 and is expected to be completed in 2014. The scope of this project includes widening the roads to improve traffic safety. Some of the challenges include working around existing bike paths, gas lines, water lines and sewer lines all while still allowing traffic to flow.

Speaking with Greg Cerminara and Edward Telega gave me a unique opportunity to understand and appreciate civil engineering and I will definitely be speaking with the Michael Baker Corporation again to gain even more information.



University of Pittsburgh Apprenticeship Visit

Apprenticeship Report Provided by:
Joshua M. Dalton
Group #1

On the morning of October 26, 2011, I walked into room G28 of the Swanson School of Engineering and was warmly welcomed. Lauren Byland, M. Ed. gave a brief introduction to the day's activities and then gave a presentation informing us all about Pitt's engineering program.

First, she informed us of many facts. Pittsburgh's first engineering professor was in 1846. Pitt had one of the first chemical, petroleum, electrical, and civil engineering programs. The program has a retention rate of 85% and there is a 17 to 1 student to faculty ratio. There are 494 Pitt freshman engineering students this year, and their average SAT scores were 1362. Pitt offers nine different types of engineering fields to choose from; bioengineering, chemical/petroleum engineering, civil and environmental engineering, computer engineering, electrical engineering, industrial engineering, mechanical engineering, material science, and engineering science. Also, there are many advantages to the freshman engineering curriculum. For example, as a freshman engineering student your schedule is already worked out for your first year to give you the basic knowledge for a career in all the different engineering fields. Also, you are not forced to declare a major until your sophomore year, giving you time to choose the correct field for you. Another advantage to being a freshman engineering student at Pitt is that there are many advisors to help you. Advisors meet monthly with Integrated Curriculum Faculty. They will work closely with you and will help set up tutors and anything you need to ensure your success. Also, there are many Co-op, or Cooperation Education, programs for engineers. They will work out schedules with you so that you will get your school work done and still have experience working in the field of your choice with pay.

After Lauren was done with her presentation she passed us on to the student counselors. A Junior Bioengineer, Anthony Pollio informed us on many topics. He informed us of programs like the Pitt EXCEL program, which will set up tutors to help engineering students in their studies. Also, he talked of SPACE, or students preparing for academic careers in engineering, where students will live together in dorms and will be around other students going through the same thing they are going through academically. Also, we were informed of programs like the PLUS 3 program, where you can spend semesters abroad and learn of your engineering field in different countries while experiencing different cultures. There are also 400 plus clubs offered at Pitt and finding one that pertains to your interests is no difficult task. After the brief tour of some of the different labs and classrooms in the Swanson School of Engineering building and learning a little of the student life we were able to ask any questions we wanted of the student advisors.

They were very helpful and generous throughout the day and I would like to thank them as well and Lauren Byland and the AIU program for the wonderful experience.

The Pittsburgh Professional Engineer

Published by

Pennsylvania Society of Professional Engineers

Pittsburgh Chapter

337 Fourth Avenue

Pittsburgh, PA 15222

(Return Service Requested)



PSPE, Pittsburgh chapter – <http://www.PittsburghPE.Org>

2011-2012 CALENDAR

MEMBERSHIP EVENTS & MEETINGS

Date	Time	Description	Location
January 19, 2012	5:30pm	Board of Directors Meeting	ESWP
January 19, 2012	6:15pm	Chapter Meeting	ESWP
February 4, 2012	8:00am	MATHCOUNTS	RMU
February 16, 2012	5:30pm	Board of Directors Meeting	ESWP
February 25, 2012		National Engineers' Week Banquet	Sheraton Station Square
March 15, 2012	5:30pm	Board of Directors Meeting	ESWP
April 19, 2012	5:30pm	Board of Directors Meeting	ESWP
May 17, 2012	5:30pm	Board of Directors Meeting	ESWP

All BOD meetings are to be held @ 5:30PM @ the ESWP Building pending further notice.