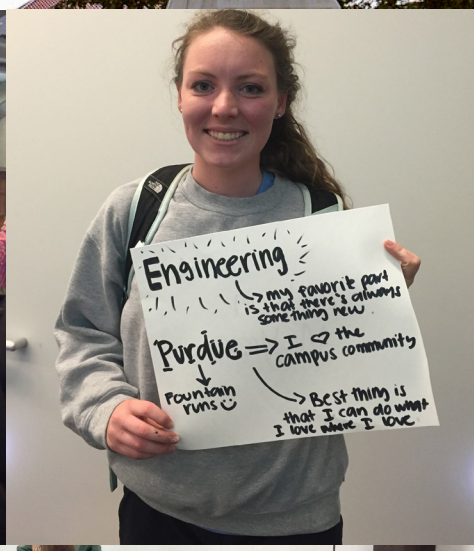
PURDUE UNIVERSITY

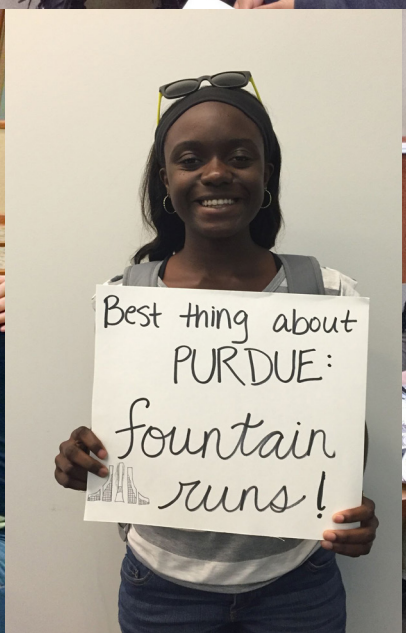
WOMEN

IN ENGINEERING PROGRAM


PURDUE UNIVERSITY


Cathy
35 YEARS


Engineering
→ my favorite part is that there's always something new
Purdue ⇒ I ♡ the campus community
Fountain runs ☺
→ Best thing is that I can do what I love where I love


Best thing about PURDUE:
fountain runs!

MISSION AND OBJECTIVES

Since 1969, Purdue's Women in Engineering Program has been committed to increasing the recruitment, retention and graduation of women engineering students. Each year, we reach out to support and inform more than 4,000 girls and young women - from elementary school through graduate school.

MISSION:

The Women in Engineering Program at Purdue University is dedicated to enriching the profession of engineering through the full participation of women. We develop and direct activities that provide:

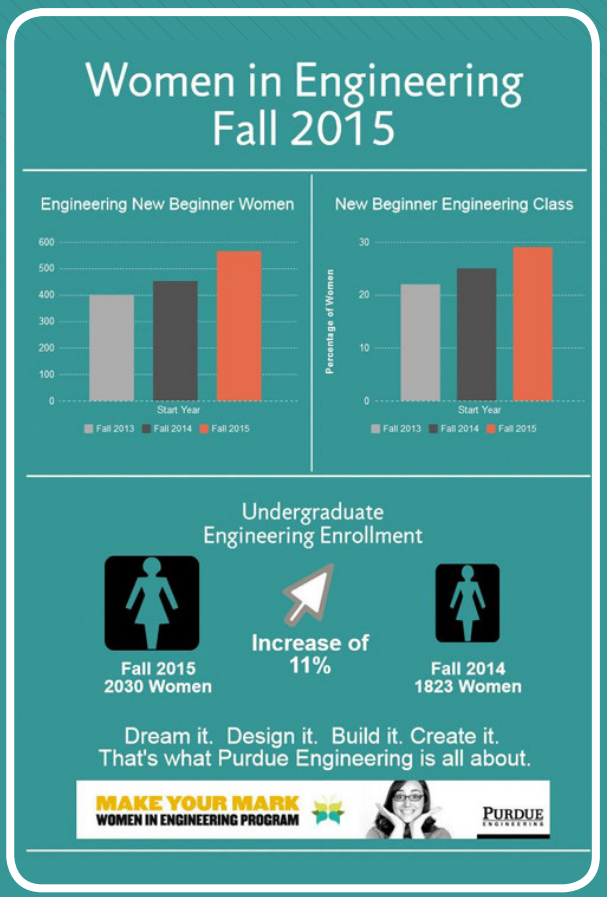
- ↗ encouragement for girls and young women to study engineering.
- ↗ information about careers and companies.
- ↗ an environment conducive to the successful completion of students' studies.

We also strive to maintain strong relationships with alumnae, friends and employers who generously support our program.

OBJECTIVES:

- ↗ To provide career information and encouragement to pre-college girls and young women to continue achievement in math and science and consider engineering as an appropriate career choice.
- ↗ Encourage women to matriculate at Purdue University in the College of Engineering.
- ↗ Ensure a climate in the College of Engineering that allows young women to reach their full potential.
- ↗ Provide opportunities for women engineering students to develop leadership skills that can be utilized in their future lives.
- ↗ Encourage women to consider graduate education and academia among their options upon graduation.
- ↗ Maintain open communication with alumnae and their employers to encourage their continued participation in and support of the Women in Engineering Program.

Purdue Engineering Sets New Women's Enrollment Record!!



The Women in Engineering Program could not achieve its mission to enrich the profession of engineering through the full participation of women without the generous support of our donors. We offer our sincerest thanks to all who continue to support our programs. To make a contribution, please visit *giving.purdue.edu* or contact Hilary Butler at 765.494.6383 or *habutler@prf.org*.

CHANGE THE CONVERSATION

› HOW IS WIEP CHANGING THE CONVERSATION ABOUT ENGINEERING

In the last newsletter, we shared information about recent research-based efforts* by the engineering community to more effectively share what the profession is about and how diverse populations are who practice it. In this spotlight, let us share with you some of the ways WIEP uses this information to inspire the next generation of engineers.

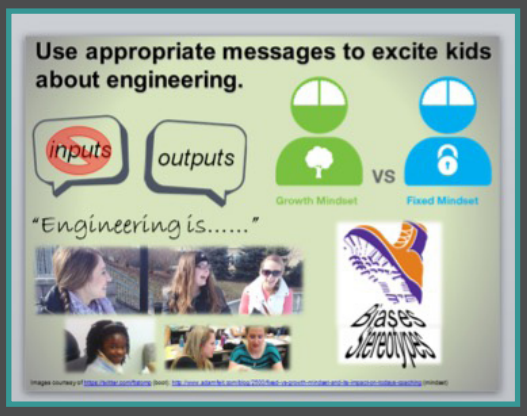
The following are some of the key messages used by WIEP:

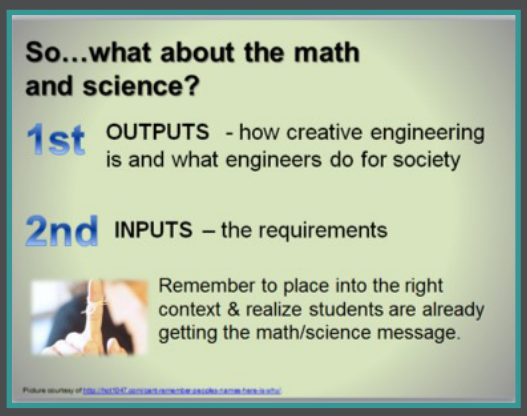
- ***"Be an engineer to use your creativity to help change the world!"*** – Focus on the **OUTPUTS** of engineering first (e.g., helping to make a difference in the world; opportunities to be creative and work on teams) – just as medical professionals talk about the outputs of their work (i.e., healing others and saving lives) before taking about the inputs (e.g., the competition to get into medical school; the long hours in the profession; the math and science requirements).
- ***"Be sure to take as many math and science classes as your school offers to help prepare you for college."*** – Place emphasis on the **INPUTS** of engineering (the need to take and perform competently in math and science courses) **AFTER** sharing the outputs. Avoid telling students they must "love" and "excel in" these courses. Some students, especially those who are underrepresented in engineering, may inaccurately assess their performance and enthusiasm for these courses by the standards you share and prematurely decide they are not suited for engineering.
- ***"That's OK! I didn't get it right the first time either!"*** – Encourage a growth vs. a fixed mindset – that failing at times is a normal part of the design process and we can learn great things along the way!
- ***"I know engineers just like you!"*** – Share how engineering is embraced by people of all backgrounds and cultures who have interest in all the things kids care about too! Be knowledgeable about and avoid stereotypes and unconscious bias in your messages (both verbal and non-verbal).

WIEP uses the messages from the research studies in three key ways:

- In creation and implementation of engaging hands-on activities related to engineering. Activities which relate to broad interests are carefully selected. Examples include: activities which help people and animals through health and medicine or natural disaster prevention and response.
- In training our student leaders and alumni to conduct pre-college outreach. Alongside the activities that the students love when they participate in WIEP events, WIEP delivers appropriate messages through diverse engineering role models. Our aim is for each pre-college participant to see herself or himself in the shoes of one of our engaging outreach leaders.
- In educating influential adults through interactive workshops about the importance of messaging alongside fun STEM-related activities. Examples of audiences to date include parents, alumni, afterschool providers, and librarians.

Sample slides from messaging workshops for parents, afterschool providers, and outreach volunteers



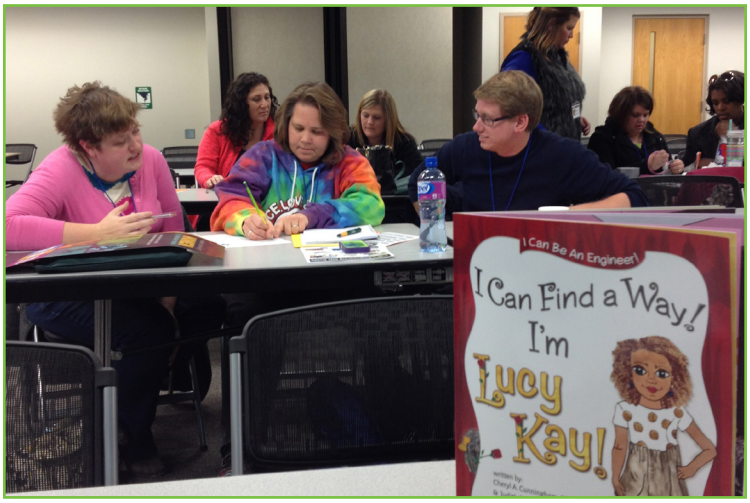


For more information about appropriate messages and activities for pre-college outreach, contact Dr. Jennifer Groh, WIEP Associate Director – jgroh@purdue.edu

*Visit the National Academy of Engineering website at: Messaging for Engineering: From Research to Action.

OUTREACH — MULTIPLYING THE IMPACT

Picture of out-of-school childcare providers learning about a simple circuts activity for engaging kids in STEM at the 2015 Bona Vista's Child Care Solutions Early Childhood Conference in central Indiana.



Featuring how to incorporate story books into STEM activities at our workshop with Bona Vista's Child Care Solutions Early Childhood Conference in central Indiana. The book featured is co-authored by Purdue alum and WIEP EOP, Cheryl Cunningham.

› OUTREACH — MULTIPLYING THE IMPACT

With the national, public out-of-school time initiatives starting to focus on enhancing STEM (Science, Technology, Math and Science) education for kids, WIEP is strategically positioned to contribute in a big way. One avenue for which this contribution is coming to fruition is by presenting our message and best practices to out-of-school time providers as well as librarians at regional and statewide training events and conferences. Dr. Jennifer Groh and Sue Bayley have given interactive workshops engaging providers and librarians with research and activities. The research addresses reasons the gap exists between the number of girls and other underrepresented groups participating in STEM career paths when compared to boys, laying a foundation for why it is important to recognize and alter biased messages our culture unconsciously sends about who can and cannot be an engineer. The workshops also alleviate anxiety many providers and librarians have about teaching students about STEM when they don't have a STEM background themselves. While participating in fun hands-on STEM activities in these workshops, these influential adults see how they can make a difference in fostering an interest in STEM at a critical age in a diverse group of students. To visualize the impact, imagine our most recent workshop for Bona Vista's Child Care Solutions Early Childhood Conference in central Indiana where Jennifer and Sue worked with 87 providers who will reach over 2,000 children in 14 counties.

Another way WIEP is multiplying our impact is by engaging our alumnae (as individuals or in representing their company) in pre-college outreach within their own communities, linking them to school clubs or programs seeking role models, speakers, activity leaders and mentors known as Engineering Outreach Partners (EOP). This past year several of our our fantantic engineering alumnae visited schools and events reaching nearly 1500 pre-college students. These wonderful EOPs who donate their time and energy are among the Valued Volunteers listed in this newsletter. WIEP plans to launch this pilot initiative more broadly in the next few months...stay tuned and contact us if you would like to participate individually or on behalf of your place of work as a WIEP EOP!

".....thank you so much for bringing a Marathon team to Guerin Catholic! We enjoyed hearing about the benefits of working for your company - congratulations on being the happiest company to work for! The activity was perfect! .....The wrap-up suggestion questions were a great idea for stimulation conversation. Please thank all your co-workers for helping as well.....everyone was challenged but had a lot of fun!

-Quote from the student organizers of an event at which WIEP EOPs from Marathon engaged with high school students.

WIEP ALUMNAE/PARTNER FEATURE

Alumnae Feature — Anita Mathew & Tracey Stone — Co-Founders of girlSPARC™

We are excited to spotlight our first and ongoing Engineering Outreach Partnership! Remembering their days at Purdue and the WIEP outreach programs, Anita Mathew (BSCHE 1993) and Tracy Stone (BSECE 1997) contacted our office seeking collaboration with their new venture. This one phone call blossomed to a full partnership between Purdue WIEP and girlSPARC™.

"We try to create an environment where math and science is exciting. It's our job to showcase math and science in everyday life and pique the girls' curiosity for a lifelong interest in the field. Engineers and scientists are creative problem solvers and we need to expose girls more often to these career possibilities."

-Anita Mathew, Co-Founder of GirlSPARC™,
Purdue University, BSCHE '93

girlSPARC™ (A Girls Science Plus Arithmetic Club) is dedicated to increasing the number of girls exposed to science, technology, engineering and math (STEM) in grades 2-6. Their goal is to inspire girls to embrace STEM in a real world, hands-on setting. The program helps girls build problem solving skills, increased their confidence and exposed them to these subjects in a fun and collaborative environment. girlSPARC™ approaches learning through hands-on experimentation while emphasizing the design and creative process. Sometimes the girls' design works, sometimes it doesn't, but the objective is to have fun, build the girls' confidence and teach them that there are many alternatives to solving challenges.

Anita and Tracey foster this by creating hands-on experiments that provide exposure to the different fields of engineering, encourage creativity, and promote reasoning and problem solving skills. They also provide the girls with women role models, mentors and other leaders who can help them explore their scientific interests in a positive and encouraging environment. The collaborative setting lets the girls see how individuals from several engineering disciplines work together when solving real world challenges in the work place — all while reinforcing their girlSPARC™ guiding principles: ***be yourself, believe in yourself, recognize each other's strengths, celebrate the failures, don't give up, solve problems — there is more than one way, learn from one another and have fun!***

I want my girls to have the same options as my son. Math and science careers are growing and we need to ensure girls have the confidence and exposure to these options."

-Tracey Stone, Co-Founder of GirlSPARC™,
Purdue University BSECE '97

WIEP ALUMNAE/PARTNER FEATURE

girlsparc

Engaging girls in Science, Technology, Engineering, and Mathematics

> **“girlSPARC™ aims to create a shift in mindset where Science, Technology, Engineering and Mathematics are no longer seen as subjects where only boys excel.”**

Girls in STEM disciplines need encouragement especially as they are underrepresented in these fields today according to the US government. Through girlSPARC™, instructors demonstrate real life examples of science, math and engineering. The curriculum is based on Purdue's Women in Engineering's K-12 outreach program, which introduces young students to a variety of hands-on engineering challenges and reinforces the concept that redesign is necessary either to get a design working, or to improve the original functionality.

Activities focus on Science, Technology, Engineering and Math and are highly engaging lessons.

For example, have you ever thought about:

- How do different foods stay fresh and not get damaged?
  Food and packaging engineers solve this.
- What helps diapers absorb water? What makes pudding thick?
  Chemical engineers research this.
- What makes bridges and buildings safe and reliable?
  Civil Engineers and Mathematicians calculate this.
- What enables a bike helmet to protect your head in a collision?
  Biomedical and Materials Engineers determine this.
- Why are passwords encrypted and decrypted?
  Computer and Electrical engineers crack this.

Girls have the opportunity to experience this and more in girlSPARC™.

> **“Learning is fun when done in a meaningful and impactful setting.”**

VALUED VOLUNTEERS

ALUMNI AND CORPORATE PARTNERS

PROGRAM	NAME	PURDUE DEGREE(S)	COMPANY
ENGR 194	Sue Abreu	BS IDE	US Nuclear Regulatory Commission
ENGR 194	Lauren Bakalyar	BS IE	NASA
SEE PU	Stephanie Bartz	BS IE	UnitedHealthcare
Next Step Coach	Michelle Cox	BS ABE	Eli Lilly
Next Step Coach	Elizabeth DeFreese	MS ABE & PHD ABE	Novozymes North America Inc.
Access Alum	Mallory Elbert		Bechtel
SEE PU	Andrea Falk	BS IE & BS SCI	Honeywell
SEE PU	Madeleine Fogler	BS MSE	Cummins inc.
ENGR 194; Access Alum	Janet Goings	BS EE	General Motors Company
ENGR 194	Sara Greer	BS CE	Marathon Petroleum
Next Step Coach	Emily Gullotti	PHD BME	Merck
Next Step Coach	Kelly Harless	BS IE	Roche
SEE PU	Thiwasha Harper	BS ABE	Eli Lilly and Company
ENGR 194	Cree Harris	BS IE	PepsiCo
ENGR 194	Domenica Hartman	BS MSE	Hartman and Hartman, P.C.
Access Alum	Cindy Heckman		Raytheon
Access Alum	Sara Hoffman	BS CE	GE Transportation
ENGR 194	Laura Hotchkiss		US Navy
SEE PU	Rachael Janney	BS ME	General Motors
SEE PU	Amanda Johnson	BS CE	American Structurepoint, Inc.
ENGR 194; Access Alum	Paige Johnson	BS ME	Accenture
SEE PU	Elizabeth Jones	BS CHE	Vera Bradley
Next Step Coach	Cindy Lamper	BS IE & MS IE	Roche
Next Step Coach	Melissa Lavella	BS ECE	Roche
SEE PU	Brittany Leigh	BS ME	Ford Motor Company
ENGR 194; Access Alum	Sharon Marchinski	BS ME	Accenture
SEE PU	Melissa Marcum	BS CHE	Eli Lilly and Company
Next Step Coach	Savannah Marstall	BS NE	Enercon
SEE PU	Meghan McKendry	BS IE	E.C. Styberg Engineering
Next Step Coach	Corttney Mudrush	BS CHE	PepsiCo
Access Alum	Erin Murphey	BS ME	3M Corporation
SEE PU	Lauren Neder	BS IE	Frito-Lay
Next Step Coach	Shay Ogebule	PHD CHE	Intel Corp.
SEE PU	Beth Peregrine	BS BME	Zimmer Biomet
ENGR 194; Access Alum; Next Step Coach	Bich-Van Pham	PHD CHE	PepsiCo
SEE PU	Jessica Pilotte	BS CE	TranSystems
Next Step Coach	Meagan Pollock	PHD ENE	National Alliance for Partnerships in Equity
Next Step Coach	Marci Pool	PHD BME	University of Illinois
SEE PU	Sarah Reiff	BS ME	The FPI Consortium
ENGR 194	Jennifer Roach	BS CHE	Procter & Gamble
SEE PU	LouAnn Rone	BS IE	NIPSCO (division of NiSource)
ENGR 194	Alex Schnieders		US Navy
M&M	Wendy Shotts	BS IE	Downtown Highland Park Alliance
Access Alum	Bridette Smith	BS ME	3M Corporation
ENGR 194	Sarah Soboleski	BS ME	General Motors
Next Step Coach	Rebekah Steele	BS CHE	Air Liquide
ENGR 194	Lisa Talarico	BS ME	General Motors
SEE PU	Andrea Taylor	BS ABE	Colorcon, Inc.
Access Alum; Next Step Coach	Morgan Thome	BS IE	Accenture
ENGR 194; Access Alum	Krista Toler	BS ME & MS BME	Biomet Biologics
Access Alum	Lisa Wichmann	BS ME	GE Power & Water
Access Alum; Next Step Coach	Valerie Wiesner	PHD MSE	NASA Glenn Research Center
Next Step Coach	Rachel Winger	BS CHE	ADM
SEE PU	Lisa Wink	BS IE	Toyota Motor Manufacturing Indiana
SEE PU	Blakely Winstead	BS ME	Microsoft
SEE PU	Jenny Wiseman	BS IE	Eli Lilly and Company
Next Step Coach	Jenny WIseman	BS IE	Eli Lilly and Company
SEE PU	Marissa Zon	BS ME	Spraying Systems Co.

PURDUE FACULTY, STAFF AND STUDENTS

PROGRAM	NAME
SEE PU	ABE - Ambassadors
SEE PU	Paul Branham
I2R	Alex Bruce
I2R	Chen Chen
I2R	Viktor Cybulskis
SEE PU	Anthony DeSalvo
M&M	Nathalie Duval-Couetil
SEE PU	Abby Engelberth
ENGR 194	Kendra Erk
SEE PU	Brandon Fulk
GMP	Allison Godwin
I2R	Rajamani Gounder
SEE PU	Jeff Gray
Mother/Daughter	Sarah Hacker
M&M	Barron Hewetson
SEE PU	Alanie Hooton
SEE PU	John Howarter
SEE PU	Chad Jafvert
Mother/Daughter	Rebecca Kramer
I2R	Ankush Kumar
SEE PU	Corey Linkel
I2R	Amy Marconnet
SEE PU	Kate Marrero
I2R	Liang Pan
SEE PU	Mary Pilotte
SEE PU	Karissa Raderstorf
SEE PU	Jon See
SEE PU	Patrick Skrodzki
I2R	Hong Sun
SEE PU	Pervin Taleyarkhan
I2R	Kit Valone
I2R	Luize Vasconcelos
I2R	Anna Walter
I2R	Xiaosai Wang
SEE PU	Rebecca Whitley
SEE PU	Chongli Yuan
I2R	Kejie Zhao

Thank you to all of our valued volunteers. The success of our Fall 2015 semester programming wouldn't have been possible without the outstanding support from the following alumni, faculty, staff, students, and friends who graciously volunteered their assistance to WIEP.

OPPORTUNITIES FOR ENGAGEMENT WITH WIEP

SCHOOL/DEPARTMENT

Department of Agricultural & Biological Engineering
School of Nuclear Engineering
School of Materials Engineering
School of Mechanical Engineering
School of Chemical Engineering - Catalysis Center
School of Mechanical Engineering
Technology, Leadership, and Innovation
Department of Agricultural and Biological Engineering
School of Materials Engineering
Division of Construction Engineering and Management
School of Engineering Education
School of Chemical Engineering - Catalysis Center
School of Electrical and Computer Engineering
School of Mechanical Engineering
Department of Agricultural and Biological Engineering
Department of Agricultural and Biological Engineering
School of Materials Engineering
Lyles School of Civil Engineering
School of Mechanical Engineering
School of Mechanical Engineering
Biomedical Engineering
School of Mechanical Engineering
Weldon Biomedical Engineering
School of Mechanical Engineering
School of Engineering Education
School of Chemical Engineering
Lyles School of Civil Engineering
School of Nuclear Engineering
School of Mechanical Engineering
Purdue Research Foundation
School of Materials Engineering
School of Mechanical Engineering
School of Materials Engineering
School of Mechanical Engineering
School of Aeronautics and Astronautics
School of Chemical Engineering
School of Mechanical Engineering

There are many ways for you to get involved with WIEP, e-mail us at wiep@purdue.edu if you have an interest in assisting with one of these valuable programs. Opportunities include:

- ***Access Alum*** – informal chats with current students while on campus visiting, recruiting, etc.
- ***Exploring Engineering at Purdue*** – one-day on-campus program for high school juniors and seniors. Needed: panels of recently established engineering professionals to talk about what they do in the "real world"; faculty & grad students to lead interactive sessions on engineering disciplines; Purdue faculty, students, staff, and alumnae to network, guide and informally speak with high school seniors and their parents.
- ***ENGR 194 (Women in Engineering seminar for first year students)*** – Needed: motivational speakers who share college experiences and relate those to where they are now and what they do in their positions. ***Fall only.***
- ***ENGR 494 (Women in Engineering Senior Seminar - Gender in the Workplace)*** – Needed: motivational speakers to share experiences and solutions for internal and external barriers which can prevent women from reaching their greatest potential in the workforce. ***Spring only.***
- ***WE Link – c***onnecting with high school seniors as they apply and ultimately decide whether Purdue engineering is the place for them. Needed: guest bloggers sharing experiences that encourage and inspire. Visit The Engineering Experience Blog.
- ***Mentors & Mentees (M&M)/Graduate Mentoring Program (GMP)*** – Undergraduate and Graduate student mentoring programs. Needed: facilitators of interactive/workshop style topics including but not limited to: life skills, engineering roles, non-traditional paths, life/work balance, finances, Entrepreneurship, and global etiquette. Also needed: Next Step Coaches – graduates now in industry, academia, and government positions to provide more personalized interaction preparing participants for their careers.
- ***Innovation to Reality (I2R)*** – on-campus after-school program for 6th-8th graders. Needed: faculty and graduate students to be guest speakers, provide lab tours, and hands-on engineering activities.
- ***Introduce a Girl to Engineering Day (IGED)*** – one-day on-campus event in February design to increase interest in engineering among high school freshmen and sophomores. Needed: Purdue faculty, students, staff, and alumnae to mentor young high school students, lead hands-on activities, and to network, guide and informally speak with students and their parents.
- ***Engineering Outreach Partner (EOP) Initiative*** – sharing our outreach model, best practices, training and other resources nationally. Needed: alumni partners who can help share WIEP's vision and passion for advancing youth education.
- ***Engineering For Your Imagination (FYI)*** – one-day on-campus summer event for rising 7-9th grade students. Needed: Purdue faculty, students, staff, and alumnae to mentor students, lead hands-on activities, and to network, guide and informally speak with students and their parents.
- ***Mother/Daughter Engineering Event*** – one-day hosted by the YWCA for mothers and daughters to learn more about engineering. Needed: Purdue faculty, staff, and alumnae to mentor students, lead hands-on activities, network, guide and informally speak with students and their parents.

PURDUE UNIVERSITY
WOMEN
IN ENGINEERING PROGRAM

WiE CONNECT 2016 SPRING

Designed by: HMC 2016
EA/EOU

design life.*engineer.*

Women in Engineering Program
Neil Armstrong Hall of Engineering, Room 1245
701 W. Stadium Avenue
West Lafayette, IN 47907-2045

wiep@purdue.edu
www.purdue.edu/wiep
www.purdue.edu/designlife

PURDUE
ENGINEERING