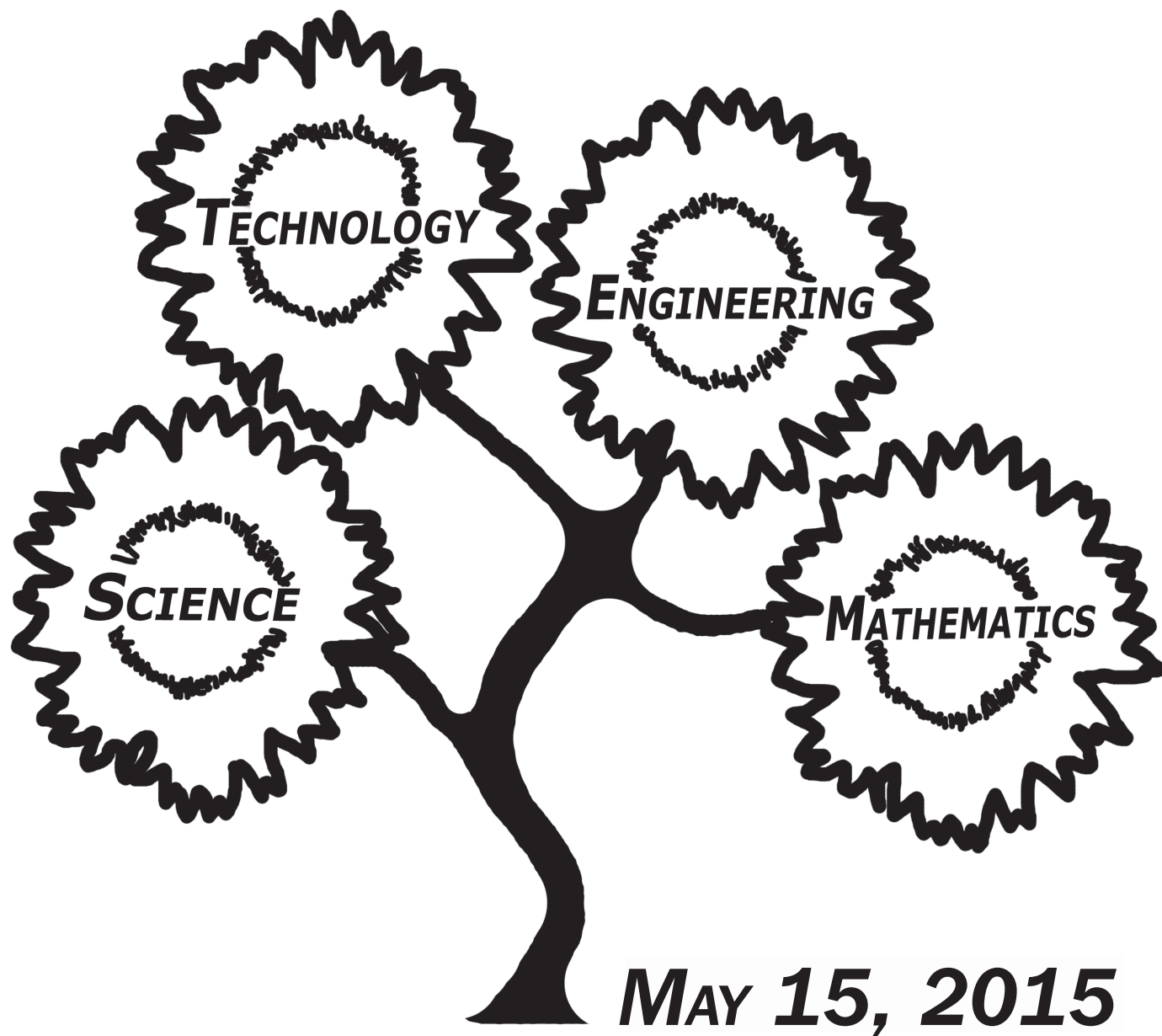


PATHWAYS TO YOUR FUTURE

EXPLORING STEM CAREERS



PENNSTATE



York

**LOGO DESIGN BY
NATHAN HAKE**

PATHWAYS TO YOUR FUTURE EXPLORING STEM CAREERS

Friday, May 15, 2015 – 8:00 a.m.-2:00 p.m.

Penn State York – Conference Center, Main Classroom Building

Program

8:00–8:45 a.m.	Registration	11:10–11:50 a.m.	Lunch (Conference Center)
8:45–9:15 a.m.	Welcome (Conference Center)	11:55 a.m.–12:40 p.m.	Workshop III
9:25–10:10 a.m.	Workshop I	12:40–12:50 p.m.	Break
10:10–10:20 a.m.	Break	12:50–1:35 p.m.	Workshop IV
10:20–11:05 a.m.	Workshop II	1:45–2:00 p.m.	Wrap-up/Prize Drawings (Conference Center)

Making Career Choices For Your Future

Pathways to Your Future: Exploring Science, Technology, Engineering, and Mathematics (STEM) Careers is a career awareness program for seventh grade girls highlighting opportunities in science, technology, engineering and mathematics. This free program brings together young women and professional women and men from academia, medicine, government agencies, business, and industry for a day of workshops and discussion. It also provides teachers with information to guide young women toward career opportunities in these fields.

Registration

Please complete the registration forms and return them as soon as possible. Rank the workshops with a (1) for most wanted to (8) for least desirable. Groups will be assigned to workshops on a space available basis. Teachers should return the completed forms no later than Friday, April 3, 2015. Eight students, one parent, and one teacher from each school will be accepted. If you have questions, please contact us at pathways@psu.edu.

Workshop Descriptions

ASK MARILYN (OR NOT)

It's time to play the game, "Let's Make a Deal." The Mensa member, Marilyn Vos Savant claims that she knows the correct pick. Would you like to listen to Marilyn or go with your own gut-feeling? If you win, you are bound to receive some nice goodies. Otherwise, you'll just see the silly look of a goat. In any case, let's also see what a computer program picks.

Dr. Manel Wijesinha
Associate Professor of Mathematics and
Eberly College of Science Representative
Penn State York

BRAND NAME BUSINESS

Have you ever played the "logo game" where you use visual recognition to identify a company or brand? Chances are, some serious analysis of target market, cultural trends, and consumer psychology went into that simple design to make it recognizable and visually pleasing. At the heart of the creation is a graphic designer, who was charged with taking science and information and turning it into art. In this workshop, students will work with a graphic designer, turned entrepreneur, who will guide them through the creation of a design to take something average and make it bold, extraordinary, and memorable!

Cara Bonadio Casillo, B.F.A.
Managing Partner
Duckpin Design

BRIDGING THE GAP

Learn about the fundamentals of engineering with a focus on bridge building in this workshop where you will design, build and test your own virtual bridge using West Point's Bridge Design software. The workshop allows you to get a real life idea of what factors should be taken into consideration when building a bridge including cost, materials, obstacles, length, etc. Let's see who can build the most stable and cost efficient bridge!

Cathleen Barry, B.S., M.S.
Structural Engineer
U.S. Army Corps of Engineers, Baltimore District

Andrew Felter, B.S.
Structural Engineer
U.S. Army Corps of Engineers, Baltimore District

Laura Gonser, B.S.
Hydraulic Engineer
U.S. Army Corps of Engineers, Baltimore District

Alex Baldowski, B.S.
Project Engineer
U.S. Army Corps of Engineers, Baltimore District

BUILD YOUR OWN WORLD IN 3D!

3D Design is a vital tool in many industries such as architecture, industrial design, 3D printing, video game design, and so many more! In this workshop, students will learn the basics of design from someone who turned his passion for sketching and building into his career. They will be guided through creating 3D objects using SketchUp to explore the capabilities of this widely used software. Students will be able to build on the skills they learn in the workshop to continue their exploration of 3D drawing and gain valuable practice in spatial relations, proportional design, mathematics (scale), and creative design.

Anthony Billet, B.A.
Owner, Design Director
abSketches, LLC

CAN YOU KEEP A SECRET?

Cryptography is the science of secret communication. People have been sending hidden messages since ancient times, to protect everything from personal letters to government secrets. These days, cryptography plays a crucial role in computer science where it is used to keep e-mail communication private and Internet shopping secure. Come learn how people use mathematics to keep prying eyes from reading their messages, and, in some cases, how to uncover their secrets!

Dr. Sara Miner More
Associate Professor of Computer Science and Chair,
Mathematics and Computer Science
McDaniel College

CELL-A-BRATION

GO CELLULAR...but leave your phone at home. Come scope out some of the building blocks of the human body - the good, the bad, and the ugly cells that are the basis of life. Discover how tiny cells can cause big changes in the body. See the cells. Learn about their functions. Perform lab tests to judge whether the cells are behaving badly or earning an A+. This workshop will include a tour of laboratory science: clinical chemistry, immunology, microbiology, immunohematology, and hematology. Become a laboratory scientist and see how much fun it can be.

Edwin Beitz, MHA, MLSC (ASCP)
Program Director
York Hospital Medical Laboratory Science Program

DIGITAL CRIME SCENE INVESTIGATOR (CSI)

Perform crime scene investigation into data trails left by suspicious activities of targeted criminals in a digital environment. Follow digital bread crumbs by using forensic techniques to catch the crook by scouring data sets. Process the computer crime scene by combing the evidence of the criminal's illegal activity. By some estimates, cybercrime costs businesses in the United States over \$100 billion annually. Learn how to use the power of databases and Big Data sets to become a digital CSI detective.

William P. Cantor, P.E.
Senior Instructor in Information Sciences
and Technology
Penn State York

Natalie Anthony, B.S.
Northrop Grumman
Software Engineer

DNA DETECTIVES

Did you know that the complexity of human chromosomes (the "stuff" from which we are made) reduces to four very simple repeating units? Amazingly, these same four repeating units define the diversity of all life, both plant and animal, on earth. Participants will gain insight into the nature of these DNA building blocks and at the same time learn how scientists and mathematicians isolate, study, and formulate mathematical models to relate the deoxyribonucleic acid (DNA) from different organisms to each other. This workshop will be conducted in the Penn State York biology laboratory, and will be set up as a forensics-style investigation in which students must use DNA statistical information to identify a criminal.

Dr. Robert Farrell
Director of Academic Affairs and Associate Professor of Biology
Penn State York

FROM TV TO EGGS: THE WIDE WORLD OF WEATHER

Most everyone can identify their local TV meteorologist, but did you know there are many other jobs meteorologists do ranging from being on the radio to doing CSI-type investigating to flying into hurricanes? Participants will learn about the many opportunities available to female meteorologists, will find out how something simple like an egg can help meteorologists understand the atmosphere and will make their own thermometer.

Kristina Pydynowski, B.S.
Senior Meteorologist and
Forecaster Hiring Assistant
AccuWeather.com

Dr. Stephen K. Lentz
Instructor of Meteorology
Penn State York

GETTING "PHYSICAL" WITH MATH AND SCIENCE

Which math and science courses should I take in high school to prepare for a career as an occupational therapist, a physical therapist or as a physical therapist assistant? How will geometry, anatomy, and physics apply when treating an adult with a total knee replacement or a child with spina bifida? We'll answer these questions and help you test your strength, fine motor skills, balance, and ability to maneuver a manual wheelchair.

Shannon Kern, PT
Lincoln Intermediate Unit No.12

Julia Lehman, PTA
Hanover Rehab Centers

Pam Krise, OT
Hanover Rehab Centers
Pediatric Specialty Therapy Services

IT'S WHAT'S ON THE INSIDE THAT COUNTS

Bacteria and other microbes are all around us. Commonly, we think of bacteria as 'bad guys' that we want to get rid of. But did you know that the majority of microbes are GOOD for you and other animals? In fact, without the good bacteria that live in our mouths and gut, we wouldn't be able to digest our food fully, or make the vitamins we need for growth. This lab-based workshop will allow students to look at everyday 'good microbes' under the microscope, including the bacteria found in yogurt that promote healthy digestion. We will also learn about a beneficial relationship between termites and a small, flagellated protist. This exercise will include a termite dissection to find the hairy little protists in the termite's gut.

Dr. Anne M. Vardo-Zalik
Assistant Professor of Biology
Penn State York

LICKS FOR BRICKS

Trade candy for bricks and build a structure that will withstand the elements. Challenge your mind while stimulating your taste buds, as your building is put to the test with simulated snow, wind, and ultimately...an earthquake!

Brittany Pavelko, EIT
Structural Designer
Carney Engineering Group, Inc.

MAKIN' TRACKS

Hit records are now being produced in homes all over the world. Take this journey to creating music using a computer. Combine technical know-how with your creative, artistic side. Learn to record music tracks, do basic mixing, use standard audio effects and burn your song to a CD.

Marcia L. Englar, A.S., B.M.E., B.M.U., M.M.
Instructor of Music
Millersville University
Applications Developer Administrator
Pennsylvania Department of Revenue

MARINE SCIENCE EXPLORATION: HOW IS A SQUID ABLE TO SURVIVE IN THE OCEAN?

Obtain information about an unusual mollusk, the squid, through discussion and dissection. This hands-on lab emphasizes how the form and function of the squid's basic anatomy helps this efficient predator survive in the ocean.

Kathy Siegfried Fuller, B.S.
Youth Programs Coordinator
National Aquarium

ROBOGIRL

Learn about teamwork in this fun, hands-on workshop. First, you will build your own robotic Lego™ car and then you will get to set it in motion! You will use the computer to tell the robot what you want it to do. It can travel in a straight line, go in circles, or even bump into the wall and back up. This workshop combines engineering and computer science skills for a unique experience.

Frances M. Hopple, A.S., B.S.
Developer
Computer Aid, Inc.

Michael L. Marcus, A.A.S., B.S.E.E., M.S.E.E.
Associate Professor of Engineering
Penn State York

SIXTH SENSE

Can you see in the dark? Would you like to experiment with technologies of the future? In this workshop, we will use infrared imaging, ultrasonic testing, and radiological monitoring instruments to see and hear things that are normally invisible. Join us and learn how these instruments are used to predict failures and events!

Denise Ingoe
Training Support Manager
Exelon Generation
Peach Bottom Atomic Power Station

SPARKLING WITH CHEMISTRY

The science of chemistry governs the breathtaking fireworks display that we see on the Fourth of July. In this hands-on workshop, participants will learn about the chemical composition of sparklers, by examining the compounds that can be used to produce a variety of colorful sparks. They will then apply this knowledge to make and ignite sparklers of their own.

Dr. Andy Landis
Assistant Professor of Chemistry
Penn State York

SPINNING THE WEB

Find out how programmers create Web pages in this hands-on workshop. We'll take your picture with a digital camera, and you'll use it to create your own Web page. You'll learn how to turn a simple text file into a Web page, how to get images to display, how to change background and font (type) colors, how to use different fonts, and how to use an image for a background. You'll go home with a copy of your own Web page and lots of references to helpful websites where you can get more images and information...for free!

Sean Breach, B.S.
Programmer/Analyst
Dentsply International
Courtney Spamer, B.S.
Meteorologist
AccuWeather.com

Kim Gross, A.S.
Development Coordinator
York County Economic Alliance

STARTING FROM SCRATCH - LEARN TO CODE!

Writing computer programs teaches skills in computational thinking and problem solving that are essential skills for all professions! In this workshop, students will be introduced to coding using the MIT-developed programming platform, Scratch. They will be guided to develop a simple program highlighting the basic coding structure and options available. They will then be given time in the workshop to develop their own projects where they could choose to animate a story, develop a simple interactive video game, or who knows what else they could create! Students will be able to save their creations so they are accessible to share with their parents, teachers and friends, and hopefully, will inspire them to take it further, and engage even more kids to code!

Joseph P. Royer, M.S.
Assistant Director of Information Technology
Adjunct Faculty in Information Sciences and Technology
Penn State York

TECH-SAVVY GIRLS

Have fun creating computer animation using the Alice programming language (<http://www.alice.org/>). Along the way we will learn some basic object-oriented programming principles and talk about a few information technology careers.

Bob Bartell, B.S., M.S.
Instructor in Information Sciences and Technology
Penn State York

Jerri Mulholland, B.S.
Senior Engineer - Software
BD Diagnostics

THE SCIENCE OF COLOR IN COSMETICS

Why do certain nail polishes change color in sunlight? What puts the sparkle in eye shadow? How do you know that yellow is really yellow? Is your red the same as your friend's red? How many different colors can we see? Is it a definite number and what is the science behind the color perception? Pigments color the world around us! Discover the science behind the special effects. Participants will be exposed to how the visual perception of color is used in branding and advertising. Through the use of mathematics and the color wheel, participants will have an opportunity to practice their formulation skills and make their own brand of nail polish.

Dr. Fulgentius Lugemwa
Assistant Professor of Chemistry
Penn State York

THE SCIENCE OF WEDDING PHOTOGRAPHY

How do you create a photo that'll make other people go wow! It's a little bit of instinct and some math and science. In this workshop, you'll learn to use the math and science techniques that Petronella Lugemwa has applied to her photography business to consistently deliver beautiful photos.

Petronella Lugemwa
Owner and Principal Photographer
Petronella Photography

THE STEM OF FASHION

Before you become a celebrity fashion designer on the show, Project Runway, you will have to learn the basics! The best designers know about different types of fabrics, how to create and use patterns, how to use a sewing machine, and how to assemble a work of art! Sewing requires knowledge and skill in mathematics, the sciences, and design. Come learn about the tools of the trade and basic sewing techniques, as you sew a plushie of your very own!

Stephanie Diaz, M.L.I.S.
Reference and Instruction Librarian
Penn State York

Dawn Oswald, B.S.
Library Supervisor
Penn State York

THIS IS A HOLD UP!

Columns hold up things as varied as bird feeders and the roofs of Greek temples. Structural engineers design columns to meet many different needs. Learn how to predict the load that a simple column can support. Also, apply loads of up to a couple of hundred pounds to a few columns to see exactly how they begin to fall.

Dr. Charles Gaston, P.E.
Assistant Professor of Engineering
Penn State York

Amanda Niebuhr, A.S., B.S.
Senior Test Engineer
BD Diagnostics

WHEN YOU CAN'T BREATHE NOTHING ELSE MATTERS

Respiratory therapists make a lifetime of difference to those who need help breathing. Join us for a glimpse into a career as a respiratory care practitioner. Learn about the situations that respiratory care practitioners assist with, skills learned in training, career mobility, credentialing and specialty options, and anticipated salary ranges. You'll also gain a little hands-on experience with respiratory therapy equipment like an Ambu bag, inhaler, spacer, endotracheal tube, trach, nebulizer, oxygen mask, peak flowmeter, and Incentive spirometer.

Justine Galentine
Registered Respiratory Therapist
Memorial Hospital

Visit us on the web:
<http://sites.psu.edu/pathways>
Email us at pathways@psu.edu

Traveling to Penn State York

1031 Edgecomb Ave.
York, PA 17403

Penn State York is located in Spring Garden Township adjacent to the city-owned athletic and recreational facilities. The best routes to the campus are listed as follows:

From the Pennsylvania Turnpike:

Exit the Harrisburg/York interchange (Exit 18/242) and follow I-83 South. Exit I-83 at Exit 18 and follow directions below.

From the east or west via Route 30:

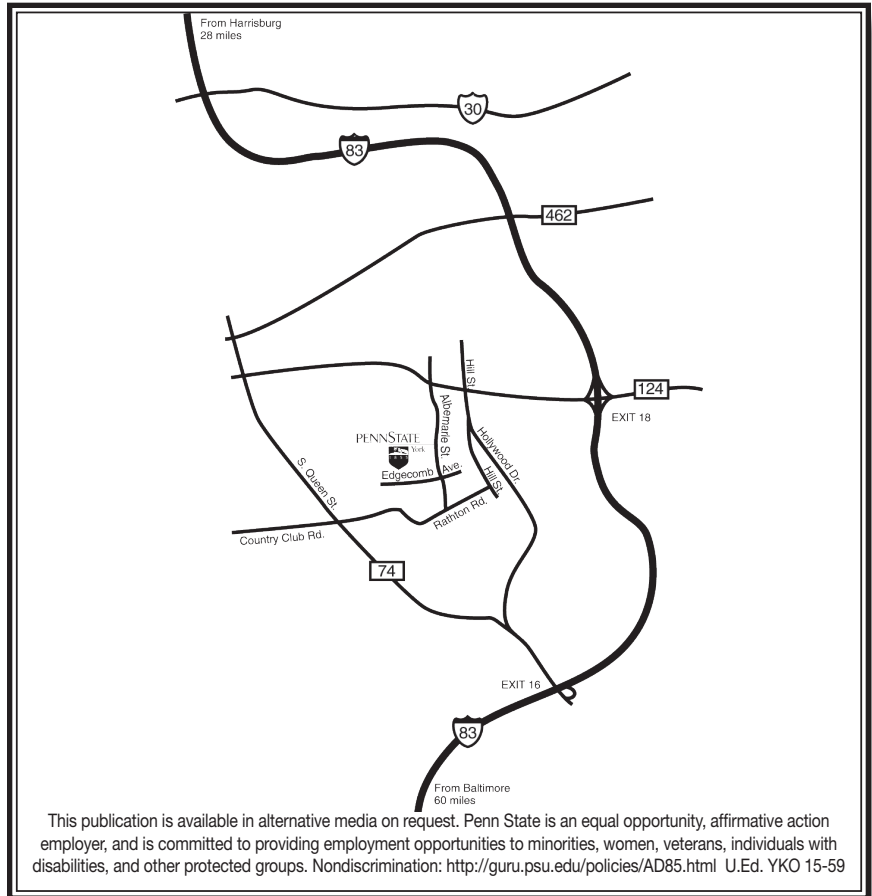
Take Route 30 to I-83 South to Exit 18. See directions from Exit 18 below.

From Exit 18 of I-83:

Proceed west on Route 124 for about 1 mile. Turn left on Albemarle Street. Follow Albemarle Street for five blocks to campus entrances on the right.

From the City of York:

Travel south on Queen Street to Rathton Road. Turn left on Rathton Road for approximately 1/2 mile and turn left at the campus entrance, there is an electronic sign for the campus. Follow the road and signs for parking for the Pullo Family Performing Arts Center.



The Pennsylvania State University encourages qualified persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact Kathy Landis at 717-718-6721 in advance of your participation or visit.

All participants receive a specially designed
Pathways tote bag and T-shirt.

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