PATHWAYS TO YOUR FUTURE

EXPLORING STEM CAREERS

MAY 15, 2015

PENN STATE
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

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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 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
eMarly College of Science Representative
Penn State York

BRAND NAME BUSINESS
Have you ever played the “Igo game” where you use visual recognition to identify a company or brand? Chances are, you have 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 simple design to make it recognizable and visually appealing. Cara Bonadio Casillo, B.F.A.
Managing Partner
duckpin Design

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 learned 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 the laboratory science: clinical chemistry, immunology, microbiology, immunohematology, and hematology.
Cara Bonadio Casillo, B.F.A.
Managing Partner
duckpin Design

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.

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 relate, 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

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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. We will find out how something simple like an egg can help meteorologists understand the atmosphere and will make their own thermometer.

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

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 physiology 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  
Julia Lehman, PTA  
Lincoln Intermediate Unit No.12  
Hanover Rehab Centers

Penn State York

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, beige-colored protozoa. This exercise will include a termite dissection to find the hairy little protists in the termites’ gut.

Dr. Anne M. Vento-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 Pavlko, EIT  
Structural Designer  
Carney Engineering Group, Inc.

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

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 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. Fulgerius Lugermwa  
Assistant Professor of Chemistry  
Penn State York

THE SCIENCE OF WEDDING PHOTOGRAPHY

How do you create a photo that will 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 Lugermwa has applied to her photography business to consistently deliver beautiful photos.

Petronella Lugermwa  
Owner and Principal Photographer  
Petronella Photography

THE SCIENCE OF SPORTS AND PERFORMANCE

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!

Kim Gross, A.S.  
Development Coordinator  
AccuWeather.com

STARTING FROM SCRATCH - LEARN TO CODE!

Writing computer programs teaches skills in computational thinking and problem solving that are essential skills for all professionals! 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  
Penn State York

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, trash, nebulizer, oxygen mask, peak flowmeter, and incentive spirometer.

Justine Galiot  
Registered Respiratory Therapist  
Memorial Hospital

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.  
Kim Gross, A.S.  
Development Coordinator  
AccuWeather.com

To learn more about STEAM (Science, Technology, Engineering, Arts and Math) education opportunities at Penn State York, please visit us at:

http://sites.psu.edu/pathways

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 ½ 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.

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

### SPONSORS

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