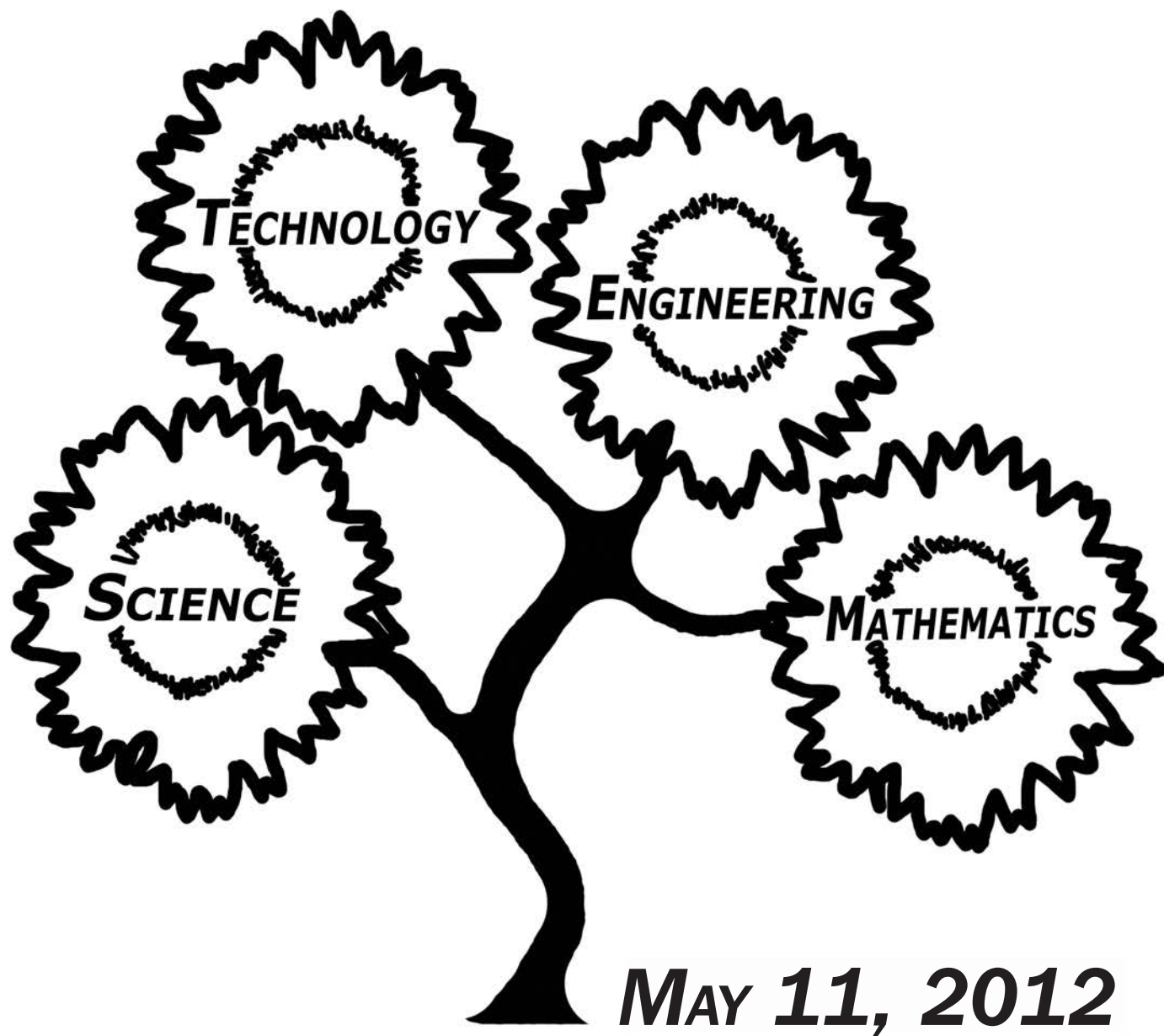


PATHWAYS TO YOUR FUTURE

EXPLORING STEM CAREERS



PENNSTATE



York

**LOGO DESIGN BY
NATHAN HAKE**

PATHWAYS TO YOUR FUTURE EXPLORING STEM CAREERS

Friday, May 11, 2012 – 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)
8:45–9:10 a.m.	Welcome (Conference Center)	11:55 a.m.–12:40 p.m.	Workshop III
9:20–10:10 a.m.	Ice Breaker/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 That “Add-up”

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 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 form and return it to your teacher as soon as possible. Each participant will rank the workshop blocks with a (1) for most wanted to (5) for least desirable. Participants will be assigned to a block of workshops on a space available basis. Teachers should return the completed forms no later than Friday, April 6, 2012. Six students, one parent, and one teacher from each school will be accepted.

Workshop Descriptions

BE A MODERN DAY GALILEO

Repeat Galileo's famous inclined plane experiments using a modern day motion sensor connected to a computer and then graphically analyze the data to reveal the relationships between different physical quantities. What if Galileo's assumptions had failed?

Dr. Manel Wijesinha
Associate Professor of Mathematics
Penn State York

Kip Trout B.S., M.S.
Director of Discipleship Development
Chapel Church

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
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 for the day and see how much fun it can be.

York Hospital Laboratory Science Program Faculty and Students

DAZZLING DATABASES

How does Google locate your search results within a fraction of a second? What allows Amazon to search millions of CDs or movies and deliver information to you instantaneously? How do Internet shopping sites like American Eagle Outfitters or Hollister Co. dynamically retrieve products, prices, and availability upon request? The answer is databases. Learn the power of databases while searching through the York Fair's database of animals. Not only will you learn about databases, you will get the opportunity to discover new and interesting things about the different animals, from cavies to rabbits. You'll go home with a CD of your own database and exciting information about the furry friends at the York Fair.

William P. Cantor, P.E.
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
Associate Professor of Biology
Penn State York

Sharon A. Shoop, A.S., B.S.
Microbiologist
Food Safety and Laboratory Services
Pennsylvania Department of Agriculture

GADGETS, GIZMOS, AND GIGABYTES: CLASSROOMS OF THE 21st CENTURY

What will learning be like in the 21st Century? Manipulate virtual 3D objects, learn from professors in the cloud, use gadgets and gizmos to participate during class! Come and explore the possibilities of learning in a new cloud-based world!

Suzanne C. Shaffer, A.S., B.A., M.Ed., M.S.Ed.
e-Learning Support Specialist
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

Pam Krise, OT
Hanover Rehab Centers
Pediatric Specialty Therapy Services

Julia Lehman, PTA
Hanover Rehab Centers

IT'S WHAT'S ON THE INSIDES 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.

Anne M. Vardo-Zalik, Ph.D.
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!

Jackie Smith
BIM Technician
Carney Engineering Group, Inc.

MAKIN' TRACKS

Hit records are now being produced in homes all over the world. Take this journey to creating music with your 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. Michael L. Marcus, A.A.S., B.S.E.E., M.S.E.E.
Developer Associate Professor of Engineering
Computer Aid, Inc. 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
Senior Operations Training Instructor
Exelon Nuclear
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 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 CD with your own Web page on it and lots of references to helpful websites where you can get more images and information...for free!

Emily C. Wenk, B.S., M.S.
Instructor in Information Sciences and Technology
Penn State York

Sean Breach, B.S.
Dentsply International
Programmer/Analyst

TAKING STOCK IN YOUR FUTURE

American Eagle, Nike, McDonalds, etc. Discover how your favorite brands can help pay for your college funding. Try your hand at financial planning as you determine your own college funding needs to pay for the career you desire. Design a custom investment portfolio and track its performance using various forms of mathematical analysis.

Diana L. Mohn, CFP
The Financial Advisory Group

Damien Lynch
The Financial Advisory Group

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

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 white is really white? Pigments color the world around us! Discover the science behind the special effects. Through the use of mathematics, participants will have an opportunity to practice their formulation skills and make their own nail polish. Then, they will use the mathematical description of color to analyze the products they made.

Dr. Fulgentius Lugenwa
Assistant Professor of Chemistry
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.
Software Test Engineer/R&D
BD Diagnostics

Magdalena Czyzykowski, B.S.
Technical Order Handling Engineer
GEA PHE Systems

TIED UP IN KNOTS

Tie your friends in knots with string and t-shirts while we explore mathematics through games. The key is to transform shapes without connecting or disconnecting any points! No special training is needed, only a willingness to try new things and the ability to laugh with friends.

Jenna Farkus
Department of Mathematics
2012 Graduate Shippensburg University

Nicole E. Warner
Department of Mathematics
2012 Graduate Shippensburg University

Samantha Feaster
Department of Mathematics
2012 Graduate Shippensburg University

Traveling to Penn State York

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:

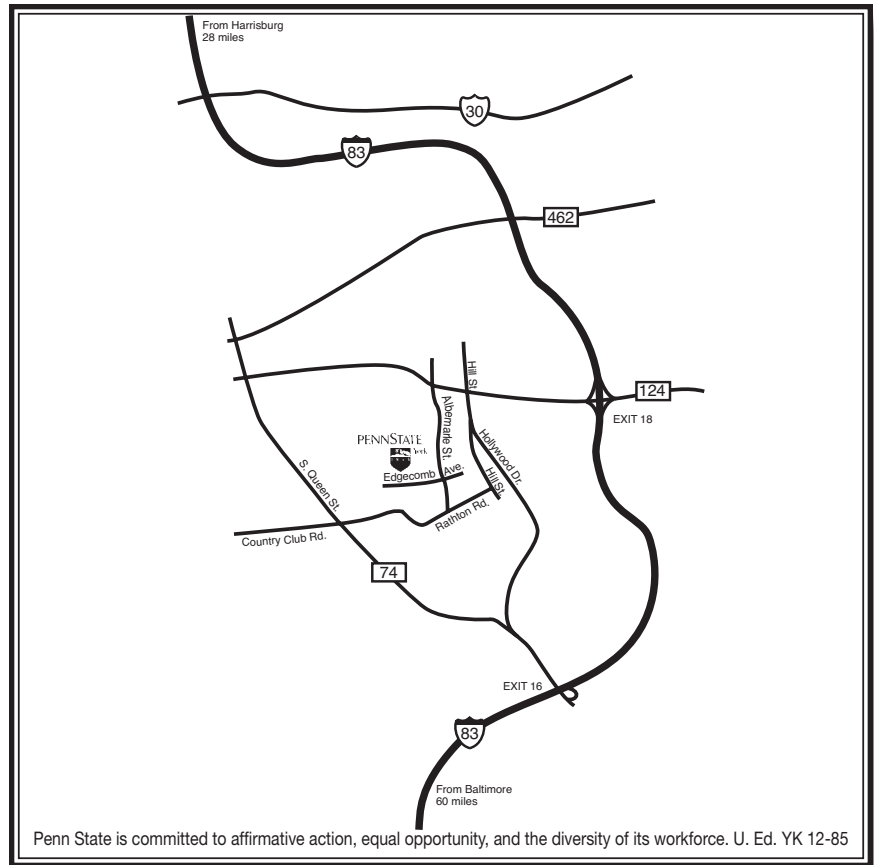
Take Route 30 to I-83 South to Exit 18. See directions from Exit 18 below.

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.

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