Pathways to Your Future
Exploring STEM Careers

May 7, 2010
PATHWAYS TO YOUR FUTURE
EXPLORING STEM CAREERS
Friday, May 7, 2010 – 8:00 a.m. - 2:00 p.m.
Penn State York – Pullo Family Performing Arts Center

Program

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<th>Time</th>
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<td>8:00 – 8:45 a.m.</td>
<td>Registration</td>
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<td>8:45 – 9:15 a.m.</td>
<td>Welcome</td>
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<td>9:25 – 10:15 a.m.</td>
<td>Workshop I</td>
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<td>10:15 – 10:25 a.m.</td>
<td>Break</td>
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<td>10:25 a.m. – 11:15 a.m.</td>
<td>Workshop II</td>
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<td>11:20 a.m. – 12:35 p.m.</td>
<td>Lunch/Visit Bookstore/</td>
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<td>Campus Tour</td>
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<tr>
<td>12:40 p.m. – 1:30 p.m.</td>
<td>Workshop III</td>
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<td>1:40 p.m. – 2:00 p.m.</td>
<td>Wrap-Up/Prize Drawings</td>
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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.

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.
Senior Instructor in Physics
Penn State York

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
Assistant Professor of Computer Science
McDaniel College

CAREER CHOICES AND DECISIONS
What's the best career for you? Will it be related to math or science? The key to effective career decision-making is knowledge of yourself and your options. Learn more about your interests, values, abilities, and personality and how to match those attributes to certain career fields. Careers implementing technology, engineering, and the sciences will be emphasized. Participants will complete a career inventory and will identify occupations to consider.
Dina Wulinsky, B.S., M.S., NCC
Career Counselor
Penn State York

DAZZLING DATABASE
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 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.

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 deoxynucleobonic 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.
Laboratory Technologist
Pennsylvania Veterinary Laboratory

GETTING “PHYSICAL” WITH MATH AND SCIENCE
Which math and science courses should I take in high school to prepare for a career as 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, balance, and ability to maneuver a manual wheelchair.
Shannon Kern, PT
Lincoln Intermediate Unit No.12
Julie Lehman, PTA
Hanover Rehab Centers
Pediatric Specialty Therapy Services
GIRLS GO GRAPHIC!
Who says you can't have a career that utilizes both the left and the right sides of your brain? Creative types with a knack for the technical can "have it all" with careers in graphic design, electronic pre-press, or advertising. All of these fields require computer skills and mathematical aptitude while being intensely creative and highly varied. During this workshop, students will participate in a hands-on demonstration of Adobe Illustrator, a powerful drawing program used by designers to create images for print.
Melanie Hady, B.A., President
Yorktowne Graphics - Imprinted Garments and Promotional Products

IT'S 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 when they begin to fail.
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

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!
Jennifer L. Kanuck, E.I.T.
Structural Designer
Carney Engineering Group, Inc.
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 computer.
Marcia L. Englar, A.S., B.M.E., B.M.U., M.M.
Instructor of Music
Millersville University

PALM READING: A LOOK INTO THE FUTURE OF HANDHELD COMPUTING
Handheld computers currently boast features such as expandable memory, powerful applications, and wireless technologies. Discover the unlimited use of Palm Pilot handholds and how they can be utilized in the workplace, specifically in the health care field. Various other types of handhelds will be discussed, including Blackberries and Apple iPhones.
Karen Bumbaugh, B.S., MBA
Computer Support Team Leader
York College of Pennsylvania

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.
Michael L. Marcus, A.A.S., B.S.E.E., M.S.E.E.
Associate Professor of Engineering
Penn State York
Frances M. Hopple, A.S., B.S.
Developer
Computer Aid, Inc.

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!
Jenna Lichtenwalner
Predictive Supervisor
Exelon Nuclear
Peach Bottom Atomic Power Station

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 Web sites where you can get more images and information... for free!
Amanda Hoover, A.S., B.S.
Member Services Specialist
Belco Community Credit Union

TASTE TOWERS
Try your structural aptitude by designing and building a freestanding tower that's good enough to eat. Along the way we will learn about engineering concepts such as strength and flexibility. We will also discuss career choices in engineering with a focus on civil engineering.
Ellen Mouring-Johnson, P.E.
Adjunct Professor in Mathematics
York College of Pennsylvania
Greg Johnson, P.E.
Chief Financial Officer
US Army Corps of Engineers, Baltimore District

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 if 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. Marsha S. Bischel
Senior Research Scientist (Materials Science)
Armstrong World Industries
Dean L. Putt, B.S.
Research Scientist (Chemistry)
Armstrong World Industries
Amy A. Costello, M.S.
Senior Research Scientist (Environmental Science)
Armstrong World Industries

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.
Dr. Deborah L. Gochenaur
Department of Mathematics
Shippensburg University

VIDEO HAIKU
Would you like to learn how to make a movie using a hand-held digital video camera and save your movie to a DVD to take home? Digital media projects are a new way to reflect on a topic and express ideas in a visual way. Using the poetic form of Haiku, participants will work with a partner to reflect on their talents and interests and connect them to a possible STEM career. Using digital camera and editing software, participants will then create a visual expression of their reflections using the form of Haiku to tell their stories in a short video.
e-Learning Support Specialist
Penn State York

WOW! WHAT'S THE CHANCE OF THAT?
What are the chances you can toss 10 coins and get all heads? How easy is it to guess a number between 1 and 30? What if there are two different colors of numbers and you have to pick the color and the number? How likely is it that two people in a room have the same birthday? These are simple questions with some very surprising answers! Using basic math, you can calculate the likelihood of all these things, and many more. We will also determine the answers experimentally, so you can see for yourself. Using probability, you can know exactly what the chances are.
Jennifer C. Diver B.S. EMET
Dr. Dion D. Franket
Engineer, Kaplan Group
C.E.O.
Voth Hydro Inc.
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 one mile to Albemarle Street. Turn left on Albemarle for two blocks to campus entrances on the left.

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

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