



COURSE CATALOGUE

GROUP 1 (VETS) Girls Inc. Staff Leader: Hilary Pollan

Tuesday, July 7, 2015

Instructor: Li-Jun Ma, Kathryn Vescio, Yong Zhang

STEM: Biochemistry & Molecular Biology, Genomics

Location: On campus

Course: What Is Wrong With Cancer Cells? DAY 1

Description: The concept of genomics will be introduced through this workshop. The girls will translate DNA to protein using an online program and the concept of errors in DNA will be introduced. There will be a field trip to the MGHPCC in Holyoke, and the size of the human genome will be introduced.

Wednesday, July 8, 2015

Instructor: Li-Jun Ma, Kathryn Vescio, Yong Zhang

STEM: Biochemistry & Molecular Biology, Genomics

Location: Holyoke, MGHPCC

Course: What Is Wrong With Cancer Cells? DAY 2

Description: Continue your investigation of cancer cells with a visit to the computing center that makes it possible for us to learn so much about them, right here in Holyoke! You will join your professor and the other Vets group for a FULL DAY at the Massachusetts Green High Performance Computing Center. The morning will consist of a tour of the center and activities related to your workshop the day before. After a pizza party lunch, you will spend the afternoon getting down with Lego Robotics!

Thursday, July 9, 2015

Instructor: Kelly Allen, Michelle DaCosta, Elisha Allen

STEM: Plant, Soil & Insect Sciences, Stockbridge School of Agriculture

Location: On campus

Course: You Are The Plant Detectives!

Description: Plants are constantly under attack from the same types of organisms that make humans and animals sick, and they also endure stressful conditions from their environment. In this workshop, we will learn about the different ways plants can become sick. The students will work as groups to diagnose a sick plant using a variety of laboratory techniques that plant pathologists (or "plant doctors") use every day. We will also talk about what researchers are working on to keep plants from becoming sick and the impacts that these problems have on society.

Monday, July 13, 2015

Instructor: Isla Casteneda, Elizabeth Thomas, Molly Patterson, Helen Habicht

STEM: Geosciences

Location: On campus

Course: Forensic Geology: The Sands Of Crime

Description: Forensic geology is the study of evidence based on materials found in the Earth (for example, minerals, oil, coal, organic matter, fossils and microfossils, pollen) to address legal questions. In this workshop, a murder mystery will be investigated using physical and chemical geological evidence collected from several different suspects.

Tuesday, July 14, 2015**Instructor:** Ira Male, Rolf Karlstrom**STEM:** Molecular & Cellular Biology**Location:** On Campus**Course:** Exploring Zebrafish!

Description: An introduction to developmental biology using zebrafish. Girls will learn to identify zebrafish in different stages of development, and identify the fish that look different from how we think they should look to demonstrate the concept of evolution. A simulation of embryonic development will be used to demonstrate how the zebrafish develop from one cell to an entire organism. Different stages of zebrafish will also be shown under a microscope to identify different organs.

Wednesday, July 15, 2015**Instructor:** US Fish & Wildlife Services Staff**STEM:** Environmental Conservation

Location: FIELD TRIP! Your group will need to leave straight from Holyoke to drive to the Richard Cronin National Salmon Station in Sunderland, MA. Address: 51 East Plumtree Road, Sunderland, MA 01375

Course: A Fish Tale

Description: Girls will explore the vernal pools and natural surroundings at the station. They will also fish in the stocked pond and have a chance to put on some waders and get into the water to help clear out the pond. Instructors will guide and lead the girls in all the activities.

Thursday, July 16, 2015 (THIS IS A TOUR DAY)**Instructor:** Desiree DeJong, Rebecca Spencer, Bethany Jones, Amanda Cremone, Carolina Campanella**STEM:** Psychological & Brain Sciences**Location:** On Campus**Course:** Sleep Smarts

Description: This workshop will educate about the importance of sleep, why we sleep, how to promote healthy sleep, the importance of sleep in learning, memory, emotional regulation and decision making. You will see HOW sleep is studied in a lab setting, and get a hands on polysomnography demonstration (measuring brain waves and sleep).

Monday, July 20, 2015**Instructor:** Ben Deming**STEM:** Chemistry & Food Science**Location:** On Campus**Course:** Food & Proteins: Making Your Own Cottage Cheese

Description: This workshop focuses on the discussion of food and proteins. What are the basics of these large complex molecules and what are the functions they perform in living things? We will then test some foods and possibly other materials for the presence of proteins. We will also talk about factors that affect how proteins function, leading into precipitating protein out of milk and soy milk (making cottage cheese, cheese and tofu).

Tuesday, July 21, 2015 AND Thursday, July 23, 2015 *Note that this is two days, not back to back.**Instructor:** US Fish & Wildlife Service Staff**STEM:** Environmental Conservation

Location: This is a field trip- you will leave directly from Holyoke a little early in a van to the US Fish & Wildlife Silvio O. Conte Fort River Site, to arrive at 9:15. The address is: 69 Moody Bridge Road, Hadley, MA 01035

Course: Field Trip to Fort River

Description: Students will explore the outdoors at a National Wildlife Refuge. They will take a guided walk along the accessible boardwalk, observing and learning about the different habitats and ecosystems that occur on the refuge. They will also take some time to “get their hands dirty” as they help remove some invasive species flora that is found on the refuge. Instructors will explain the purpose behind needing to remove these plants and how the girls help will benefit the broader ecological balance of the natural area. Girls will be introduced to the outdoors in a fun and educational way.

Wednesday, July 22nd, 2015

Instructor: Min Chen

STEM: Biochemistry & Biophysics

Location: On Campus

Course: Extracting DNA from Fruits

Description: What is DNA? What is the importance of DNA in life? Why do we need to obtain DNA? How do you extract DNA out of cells? All these questions and more will be answered as students extract the DNA out of strawberries and bananas.

Monday, July 27, 2015

Instructor: Rosie Cowell, Merika Wilson

STEM: Psychological & Brain Sciences

Location: On Campus

Course: The Science of Memory

Description: Psychologists study memory: the things we remember and the reasons why we forget. One very interesting question is what gives rise to "false memories"? In this workshop, you will experience a demonstration in which your own eyewitness memories are distorted by misleading questions. Next you will make your own attempt at implanting your own "false memory" in someone's mind. Did your trick work?

Tuesday, July 28, 2015

FULL DAY FIELD TRIP TO GOOGLE in CAMBRIDGE WITH ALL OTHER VETS & EXTERNS

Wednesday, July 29, 2015

Instructor: Christie Cutting

STEM: Chemistry

Location: On Campus

Course: Build Your Own Solar Cell

Description: Learn about how solar cells work and why they are an important research topic for the future of sustainable energy generation. Then, build a working solar cell made entirely of materials you can find in your own house and go outside to test how efficiently your cell can convert sunlight into energy.

Thursday, July 30, 2015

Instructor: Cansu Gumus, Jen Komaiko, Kanyasiri (Nok) Rakariyatham, William Dixon

STEM: Food Science

Course: Exploring the Science of Food

Description: Can you taste without your nose? What are emulsions? How do you form Boba (like in bubble tea)? All these questions will be explored in this fun, energetic workshop!



COURSE CATALOGUE

GROUP 2 (VETS) Girls Inc. Staff Leader: Caroll Alvarado

Tuesday, July 7, 2015 AND Wednesday, July 8, 2015

Instructor: Hans Johnston

STEM: Mathematics, Statistics

Location: Day one, on campus. Day two you will stay in Holyoke all day and head over to the MGHPCC with Hilary's group. You will have part 2 of Hans' workshop in the morning, followed by a pizza party and fun with Lego Robotics in the afternoon. You will NOT be heading to UMass on this day.

Course: Random Samples and Big Computers

Description: A great deal of modern computer modeling of our world is based on methods that randomly sample, or grab data from a lot of diverse places. Girls will be taught basic probability, and how these ideas can be used to devise random methods to answer what seems like impossible questions!

Thursday, July 9, 2015

Instructor: Joel Sarapas, Ryan Hayward

STEM: Polymer Science, Engineering

Location: On campus

Course: Life in the World of Polymers

Description: Take a look around you, what do you see? Your skin? The tires on your car? How about the shirt you are wearing? All of these things are made from a particular type of material--polymers.

Polymers All Around Us is an interactive presentation that educates students on the role of polymers in everyday lives and conveys the excitement of scientific research in this interdisciplinary field.

Participants will take part in a variety of hands-on experimental demonstrations that illuminate the basic principles of polymer science and the underlying concepts of chemistry, physics, and engineering.

Monday, July 13, 2015

Instructor: Chef Simon Stevenson & Jenny Ross

STEM: Chemistry, Physics

Location: On Campus, UMass Bake Shop (the building next to and behind Hampshire Dining). On this day, skip morning warm ups to head down to the bake shop super early.

Course: The Chemistry of Baking

Description: Did you know that cooking is a science? Learn all about the chemistry behind baking, and how a well-run kitchen needs to function like a science lab. You will work together to bake loaves of bread with a dash of science magic.

Tuesday, July 14, Wednesday, July 15, AND Thursday, July 16, 2015

Instructor: Jenny Ross, Anne Gershenson, Sarah Perry, Maria Kilfoil

STEM: Physics

Location: On Campus

Course: The Physics of Liquids & Projectiles

Description: Students will explore fluids quantitatively. We will discuss diffusion, viscosity, non-Newtonian fluids, and reversibility of fluids. This involves making "oobleck" and silly putty! The oobleck

will be used to perform an egg drop at variable heights and then the data collected from the experiment will be analyzed.

Monday, July 20, 2015

Instructor: Tina McPherson, US Fish & Wildlife

STEM: Law enforcement, environmental conservation

Location: On Campus (computer science building- Tina is NOT a UMass faculty so we need to grab space for her)

Course: Catching Wildlife Traffickers

Description: Tina McPherson, with the U.S. Fish and Wildlife Service - Office of Law Enforcement (OLE), will present a program about the global trade in wildlife and their products. She is a Legal Assistant / Outreach Coordinator for the OLE and will display skins, feathers, mounts, and products that were illegally brought into the U.S. and seized by OLE. She will discuss the role that OLE plays to combat poaching and wildlife trafficking and speak about career opportunities with the OLE such as Wildlife Inspectors, Special Agents, forensics scientists and administrative support positions.

Tuesday, July 21, 2015 (THIS IS A TOUR DATE)

Instructor: Jennifer Martin MacDermott, Sarah Jo Torgrimson, Chaia Flegenheimer, Adaeze Egwuatu

STEM: Psychological & Brain Sciences

Location: On Campus

Course: Brain Power!

Description: Learn about how a brain is constructed, what it can do for you and test it in action! Get hands-on experience measuring brain waves (EEG) and track your progress while playing games that work your mind.

Wednesday, July 22 and Thursday July 23, 2015

Instructor: Susannah Lerman

STEM: Wildlife biology (birds)

Location: Holyoke, Heritage State Park. You will skip morning warmups and head over to the park when the Eureka! bus leaves both days.

Course: Birds In the Neighborhood

Description: This workshop will build off of the Neighborhood Nestwatch program, whereby scientists visit private yards and transform these spaces into living laboratories. Girls will travel to a park in Holyoke and be introduced to concepts in ecology and wildlife biology. This will include bird banding, using nets to safely catch birds around the park, and observing the birds that are banded. It will also include a bird walk, which will focus on observing different birds and their habitat.

Monday, July 27, 2015

Instructor: Alicia Timme-Laragy

STEM: Public Health

Location: On Campus

Course: How does Pollution Affect Our Health?

Description: This workshop will highlight the importance of embryonic development in establishing health at later life stages and how it can be altered by early life exposure to pollutants. We will use microscopes to examine fish embryos that have been exposed to pollutants. Students will identify normal vs. abnormal development, and we will discuss the principles of toxicology, pollution and environmental stewardship.

Tuesday, July 28, 2015

ALL DAY FIELD TRIP TO GOOGLE IN CAMBRIDGE WITH THE OTHER VETS AND THIRD YEAR EXTERNS

Wednesday, July 29, 2015

Instructor: US Fish & Wildlife Service

STEM: Wildlife biology (birds again!)

Location: On campus, Computer Science Building

Course: The Great Migration Challenge

Description: In the Great Migration Challenge, students take on the role of a bird, and explore the "helps" and "hazards" birds encounter during migration. Instructors will lead the girls through the activity and discuss with them what they learned and experienced throughout the program. Instructors will also talk about how the US Fish and Wildlife Service works to help and protect birds as they migrate and survive in today's changing environment. Lastly, the instructors will talk with the girls about ways they (the girls) can also help birds, right from their own backyards.

Thursday, July 30, 2015

Instructor: Madelaine Bartlett

STEM: Plant Biology

Location: On campus

Course: The Secret Life of Plants

Description: This workshop will be focused on revealing the secrets of plants growing in our backyards. The girls will do DNA extractions, make epidermal leaf peels, and make and view microscope slides from the plant that they choose to work with. We will have a selection of plants in the front of the lab for the girls to choose from. Although each girl can pick her own plant to study, they will work in pairs as they move through the activities.



COURSE CATALOGUE

GROUP 3 (ROOKIES) Girls Inc. Staff Leaders: Dana Lipper & Kaeli Mathias

Tuesday, July 7, AND Thursday, July 9, 2015 *Note that this workshop is two days that are NOT back to back.

Instructor: US Fish & Wildlife Service Staff

STEM: Environmental Conservation

Location: This is a field trip- you will leave directly from Holyoke a little early in a van to the US Fish & Wildlife Silvio O. Conte Fort River Site, to arrive at 9:15. The address is: 69 Moody Bridge Road, Hadley, MA 01035

Course: Field Trip to Fort River

Description: Students will explore the outdoors at a National Wildlife Refuge. They will take a guided walk along the accessible boardwalk, observing and learning about the different habitats and ecosystems that occur on the refuge. They will also take some time to “get their hands dirty” as they help remove some invasive species flora that is found on the refuge. Instructors will explain the purpose behind needing to remove these plants and how the girls help will benefit the broader ecological balance of the natural area. Girls will be introduced to the outdoors in a fun and educational way.

Wednesday, July 8, 2015

Instructor: Lena Fletcher, Jay Aylward, Stephanie Brown, Samantha Gay

STEM: Ecology, Environmental Conservation

Location: On Campus

Course: Seeing the Forest for the Trees

Description: In this workshop, we will explore the amazing forests on the UMass campus. These forests have many of the native species found in Massachusetts, some over 250 years old! We will walk to the campus forest near the Sylvan dorm area, teach students to identify some of the native species, consider the ecology of trees and why they grow in specific places and make observations of the forest ecosystem.

Monday, July 13th – Tuesday July 14th, 2015

Instructor: Raina Kittilstved

STEM: Forensic Science

Location: On Campus

Course: Forensic Serology: Using Blood to Solve Crimes

Description: This workshop will feature discussion on the different ways blood is used to solve crimes. We will talk about the different kinds of spatter patterns and see how math is used to determine the origin of a blood source. How do forensic scientists detect blood? Components of blood will be discussed as well as different ways to test for blood at crime scenes.

Wednesday, July 15th, - Thursday July 16th, 2015 (*THURSDAY JULY 16 IS A TOUR DATE)

Instructor: Dennis Spencer

STEM: Computer science

Location: On Campus, Digital Media Lab on 3rd floor of W.E.B. DuBois Library

Course: 3D Printing: Making Your World

Description: This introduces the girls to 3D printing production. They will have hands-on experience with 3D capture devices, 3D printers and guided lessons in 3D modeling. The lessons include safety procedures, environmental issues, aspects of engineering, chemistry and polymer science. Girls will be encouraged to work with their peers for some activities.

Monday, July 20th, 2015

Instructor: Christine Hatch, Alfred Venn

STEM: Geosciences

Location: Amherst College Beneski Natural History Museum

Course: In a Dinosaur's Shoes

Description: Take a walk in a dinosaur's shoes, or, more specifically, tracks! We'll learn how to "track" a dinosaur at the Amherst College Beneski Natural History Museum: how big was it? how fast was it moving when it made the tracks? what else can we learn about it from its tracks? In order to learn from tracks in the past, we'll have to observe some track-making in action with live specimens. The area around the museum building will give us plenty of space to explore and measure our own tracks before we go inside to see how we "measure up" to the giant lizards of the past.

Tuesday, July 21st – Thursday, July 23rd (ALSO NEXT WEEK, Monday July 27- Tuesday July 28th)

Instructor: Ben Marlin, Deepak Ganesan

STEM: Computer Science

Location: On Campus, Computer Science building

Course: Creative Computing with Scratch

Description: This workshop will introduce computing concepts using Scratch, such as animation, creating a simple game and sensors (the first three days of the workshop). Mobile phones will be used as a sensing platform to create a final project integrating sensors from phones into games and animations (the last two days).

Wednesday, July 29th, 2015

Instructor: US Fish & Wildlife Services Staff

STEM: Environmental Conservation

Location: FIELD TRIP! Your group will need to leave straight from Holyoke to drive to the Richard Cronin National Salmon Station in Sunderland, MA. Address: 51 East Plumtree Road, Sunderland, MA 01375

Course: A Fish Tale

Description: Girls will explore the vernal pools and natural surroundings at the station. They will also fish in the stocked pond and have a chance to put on some waders and get into the water to help clear out the pond. Instructors will guide and lead the girls in all the activities.

Thursday, July 30th, 2015

Instructor: Courtney Babbitt, Trisha Zintel, Jason Pizzollo

STEM: Biology

Location: On campus

Course: Exploring Your Human Genome

Description: Students will gain an understanding that they have a genome, that it's big and that there are lots of differences between normal genomes. They will understand that in some point in their life, someone will ask to sequence their genome. We will look at cheek swab DNA, see the machines on campus that sequence genomes, and more!



COURSE CATALOGUE

GROUP 4 (ROOKIES) Girls Inc. Staff Leader: Sahira Vazquez

Tuesday, July 7 – Wednesday July 8th, 2015

Instructor: Ruthanne Paradise, Ricardo Metz

STEM: Chemistry

Location: On Campus, ISB 355

Course: Light Up Your Life!

Description: Girls will be introduced to the ideas of absorption and reflection using ropes to also identify wavelength and frequency. They will build their own spectrometers to further explore these ideas, and will be asked to identify changes while looking at a variety of different materials. The topic of emissions will also be explored, through both natural and synthetic sources.

Thursday, July 9th, 2015

Instructor: Lynn Adler, Sara June Connon

STEM: Wildlife biology, bees

Location: On campus, (Fernald Hall)

Course: The Buzz About Bumble Bees: Pollination and Bee Disease

Description: We will talk about what pollination is, why it matters, and bee disease as one issue affecting pollinators. We will look at flowers to identify reproductive parts and live bumble bee colonies, identifying different kinds of bees and colony structures. Each student will then have the opportunity to learn some of our research methods for studying bumble bee disease, including bee dissection, counting disease cells under a microscope and inoculating bees.

Monday, July 13th – Tuesday July 14th, 2015

Instructor: Kevin Kittilstved, Swamy Pittala, Fumi Kato

STEM: Chemistry

Location: On Campus (ISB)

Course: Harnessing Sunlight with Nanomaterials

Description: This workshop will bring existing technologies that convert sunlight to electricity to current trends in research in the area. It will include hands-on demonstrations that focus on light absorption and emission processes in nanoscale semiconductors and how light-to-energy conversion happens in nature (for example, photosynthesis).

Wednesday, July 15th, 2015

Instructor: Paige Warren, Dave King, Melanie Klein

STEM: Wildlife biology (birds)

Location: This is a field trip- you will leave directly from Holyoke a little early in a van to the Silvio O. Conte Fort River Site, to arrive at 9:15. The address is: 69 Moody Bridge Road, Hadley, MA 01035

Course: A Bird's Eye View of Life

Description: Most people in the world now live in cities or suburbs. Thus, most of us experience nature in the daily green spaces we encounter in our years, parks, playgrounds and trees along the street. A surprisingly variety of wild animals and plants can be found in these urban places.. Who are these

creatures? What effect does urbanization have on them? What can we do to improve conditions for both wildlife and people in the city? We will explore all these questions!

Thursday, July 16, 2015 (*THIS IS A TOUR DATE)

Instructor: Haiying Gao

STEM: Geosciences

Location: On campus

Course: Earthquakes! Journey Through the Earth

Description: This workshop will include a tour of the UMass Geosciences Department Mineral Gallery, as well as an introduction to seismic hazards, a group animation of how different waves propagate through the Earth and hands-on experimentation with Earth materials

Monday, July 20th, 2015

Instructor: Jana Lembke

STEM: Psychological & Brain Sciences

Location: On campus, Computer Science building

Course: The Science of Stress and Social Connection

Description: How we connect with others has a big impact on how we feel: a good friendship can make us feel happy and secure, but sometimes our friendships cause feelings of stress. Explore the science behind what makes a friendship work well and what to do when friends bring about stress. We'll learn about how stress hormones affect the body and science-supported ways of reducing stress. We'll end with a hands-on activity to learn how scientists measure stress by analyzing saliva samples...this workshop is sure to leave you "drooling" for more!

Tuesday, July 21st, 2015

Instructor: Amy Ryan

STEM: Animal Behavior

Location: On campus

Course: Playing With Pillbugs: Experimental Design & Animal Behavior

Description: In this exercise, students learn about pillbugs (aka roly polys)- a land dwelling crustacean. Students begin by observing pillbug behavior and then create hypotheses about habitat and food preference. Using two connected petri dishes, students will create different conditions in the two dishes and observe pillbugs for 10 minutes to determine which conditions the pillbugs prefer to inhabit.

Wednesday, July 22nd, 2015

Instructor: Zana Cranmer, Mo Kaikai

STEM: Engineering & Environment (Wind energy)

Location: On Campus

Course: The Power of Wind Energy

Description: Students will learn about wind energy, related terms and how to design simple wind turbine structure. They will calculate power and energy generated by the turbine and the load carried by the turbine.

Thursday, July 23rd, 2015

Instructor: Amir Houmansadr

STEM: Computer Science

Location: On campus, Computer science building

Course: Protecting Your Privacy on the Internet

Description: The risks of losing private information on the internet will be discussed, through several different types of scenarios, including the various types of social media, apps, email and more. True

stories will be disclosed and safety practices for online activities. We will also discuss how to protect your identity on the Internet from other parties, like websites and advertisers.

Monday, July 27, 2015

Instructor: Carl Fiocchi, Soroush Farzinmoghadam, Nariman Mostafavi

STEM: Engineering

Location: On Campus

Course: Why Buildings Don't Fall Down

Description: This workshop will focus on how the weights of different loads are calculated to see if buildings can withstand certain weights. Students will work in teams of two using macaroni, wood, skewers and hot glue to create a structure and then see if it stands up to loading!

Tuesday, July 28, 2015

Instructor: Rick Pilsner

STEM: Biology, Public Health

Location: On campus

Course: Got DNA? Visualize Your Genome

Description: In this lab module, you will be extracting genomic DNA from your cheek cells. Using a mouthwash of Gatorade you will collect buccal epithelial (cheek) cells, which are then lysed to release their contents. Next you will remove proteins by a protease enzyme, proteinase K. Finally you will precipitate your DNA with isopropanol, a type of alcohol, which will allow you to see the strands of your DNA.

Wednesday, July 29th-Thursday, July 30th

Instructor: Bev Woolf, Danielle Alessio

STEM: Computer Science, Mathematics

Location: On Campus

Course: MathSpring: Personalizing Math

Description: Explore mathematics through interactive games on the computer design to improve math understanding! The facilitators will also be collecting data used during the workshop to market the program to schools.



COURSE CATALOGUE

GROUP 5 (ROOKIES) Girls Inc. Staff Leader: Marisa Titone

Tuesday, July 7 – Thursday, July 9th, 2015

Instructor: Alex Pope, Stella Offner, Katie Grasha

STEM: Astronomy

Location: On Campus. *Note that one day, either Wed. or Thurs, will involve a trip to the UMass sun wheel. This is dependent on the weather for that day, and will necessitate use of a 15 passenger van to get girls down to the other side of campus.

Course: We Are All Made of Stars

Description: From the Big Bang to the formation of the first stars and galaxies to our solar system, we will explore how and when the atoms and molecules we are made of were created and give the students an appreciation of the size and layout of our Universe. We will integrate lessons with hands-on activities and field trips, which include trips to the UMass Astronomy Observatory and the UMass Sun Wheel.

Monday, July 13th – Tuesday July 14th, 2015

Instructor: Brian Kane, Kelly Allen

STEM: Environmental Conservation

Location: On campus

Course: Climbing to the Top!

Description: This workshop will involve basic tree climbing skills, incorporating trigonometry, vectors, friction and other concepts from Newtonian mechanics. Girls will get the chance to perform math and physics with their bodies as we practice climbing trees and calculating the process.

Wednesday, July 15th – Thursday, July 16th, 2015 (*July 16th is a TOUR DATE)

Instructor: Isabel Huff, Beth Cavannaugh

STEM: Engineering, Computer Science

Location: On Campus

Course: Engineering Intelligence: Could Robots Replace Our Brains?

Description: In this workshop, we'll explore the growing engineering field of Artificial Intelligence. We'll learn about Rio, a fictional character whose brain has been removed from his head-and researchers plan to destroy it! Can YOU help Rio and his best friend Sadina create an artificial brain to save him before it's too late? This workshop includes online games, videos, discussion and more!

Monday, July 20 – Tuesday, July 21st (*JULY 21st is a TOUR DATE)

Instructor: Scott Auerbach

STEM: Chemistry

Location: On campus, ISB

Course: Energy: Where's It All Coming From?

Description: We will be learning about Energy: (1) Energy magnitudes, (2) Energy transfer, (3) Energy efficiency using the renowned College of Natural Sciences iCons (Integrated Concentration in Science)

model, which is about investigation and presentation. You will work in groups to pose, research and present energy-related experiments.

Wednesday, July 22nd, 2015

Instructor: Pallavi Pant, Amy Ryan

STEM: Atmospheric Chemistry, Public Health

Location: On Campus

Course: The Air Pollution Doctor

Description: The scholars will be given a brief introduction to the science of air pollution, such as the causes and effects of air pollution and how it's measured. This will be followed by an activity where groups of students will prepare a passive air sampler in the laboratory. They will then use air pollution sensors to determine the air quality in the lab and the amount of air pollution, dust and other sources can cause. The workshop will conclude with discussion about important sources of air pollution and how to control and reduce air pollution.

Thursday, July 23rd, 2015

Instructor: Lilly Israel

STEM: horticulture, agricultural science

Location: On Campus

Course: Permaculture: Growing Edible Ecosystems

Description: Permaculture is a designing science that draws upon patterns found in healthy natural ecosystems and applies them to human-made systems. This allows us to create resilient and self-reliant communities, economies, and agricultural systems. In this workshop, we will spend time in a permaculture garden. Participants will also get to learn the ways in which permaculture has influenced the design and function of the garden and will also get a chance to get their hands dirty and taste new things!

Monday, July 20th- Wednesday, July 29th

Instructor: Michelle DaCosta, Elisha Allen

STEM: Agricultural science, plant and soil science

Location: On campus for July 27th – July 28th, FIELD TRIP on July 29th

Course: T-Shirts & Bubblegum: Growing Plants for Food and Life

Description: The goal of this workshop is to introduce the girls to the importance of plants in our everyday lives. We will explore science-based career opportunities and future challenges related to growing plants for food and other uses, such as bioenergy, medicines and environmental improvement. As part of the workshop, we hope to broaden perspectives on "agriculture", particularly in urban environments.

Thursday, July 30, 2015

Instructor: Ezra Wood

STEM: Chemistry, Public Health

Location: On campus, Computer Science Building

Course: CO₂: Where is it?

Description: We will learn about the sources of carbon dioxide in the world, and measure its concentrations in real time. We will also study phase transitions (solid to gas, solid to liquid, etc.) and have a good time with dry ice fog.