

Iowa State University

OF SCIENCE AND TECHNOLOGY

Program for Women in Science and Engineering

Spring 2024 Go Further (Mar 26, 2024)

Registration Period: Feb 26, 2024 - Mar 20, 2024

(Session SESSION 1) 9:50 AM - 10:35 AM

Tag	Presentation	Materials	Description
A	How Computers Learn to Make Cool Airplanes!		We will make a few paper airplanes together. I will use them as examples to illustrate how we can use artificial intelligence (AI) to make great engineering products. My student will also show how she uses AI in her Master's research.
B	Energizing Electricity - Nuclear Power in Your Everyday Life		(RECOMMENDED FOR GRADE: 9,10) Come learn about how we use nuclear power to energize our everyday lives! We will use a hands-on activity to demonstrate a basic nuclear energy principle as well as how to "dress-out" to complete field work at a nuclear power plant. We'll then dive into how we use nuclear power to generate energy to help our communities accomplish their everyday lives!
C	Candy Quest: Unlock your Inner Industrial Engineer		Industrial Engineers improve processes to HELP PEOPLE in every industry imaginable, from Disney to John Deere to the Mayo Clinic by designing tools and workstations, analyzing data, and reducing waste. Enjoy being an IE in this hands-on candy factory simulation and get to eat your product when we're done!
D	Changing the Atmosphere in Atmospheric Science		First, a presentation on basic weather concepts and career opportunities in the meteorology community will be given. This will be followed by a forecasting activity relating to the December 15, 2021 derecho that impacted most of Iowa.
E	*Candy Lab with Pella Corporations		"Candy Lab combines elements of engineering including R&D, Product Design, and Quality Assurance with candy, and will also relate each segment to applications at Pella. Before each of the three segments, we will have an introduction explaining the purpose of each type of engineering.
F	Fisher Flow Fundamentals		Do you like hands-on learning experiences? Are you curious about how a community leverages engineering to keep their water circulating through town? Join us for the Fisher Flow Fundamentals course where you will learn about engineering controls used to regulate water and collaborate in teams to increase system efficiency!
G	Discovering Enzymes with Potatoes		(GRADE RECOMMENDATION: 9,10) The structure and function of enzymes is a central theme in biology, as they act as catalysts in cells, building things up or breaking things down. Hydrogen peroxide is a toxic chemical that is produced in many organisms during metabolism. During this session, students will learn how cells are able to protect themselves using enzymatic processes.

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H	Somethings Fishy...Where Did All The Healthy Rivers Go?		Learning about the impact of human development on rivers and fish populations. A hands-on exploration of the differences between healthy rivers systems, and those which have been negatively impacted by human presence.
I	Archimedes Principle, Buoyancy, and Ideal Gases		We will explore buoyancy with Archimedes Principle, and test how objects with various masses and volumes interact with water. We will also make a simple cartesian diver to show the Ideal Gas Law, and relate it to buoyancy.
K	*Plant Your Future: Science and Engineering in Horticulture		Participants will tour the greenhouse and lab facilities at Horticulture hall. Students will observe course experiments, controlled environment agriculture, and blue/green infrastructure to address sustainability issues and take home a free plant!
L	*Only Murders on the Campus		In this murder mystery, you will join our forensic team as we solve a murder on campus. We will use polymerase chain reaction (PCR) to identify the killer's DNA and thin-layer chromatography (TLC) to identify the lipstick found at the crime scene.
N	*Eco-Heroes: Saving the Planet with Biotech		Dive into an exciting journey where science meets saving the environment! In this action-packed session, you'll uncover how to use biotechnology to clean up water and protect our planet. It's your chance to become a young eco-hero, using awesome science tools to solve real-world challenges!

(Session SESSION 2) 10:40 AM - 11:25 AM

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A	Construction Engineering		The session will begin with a presentation explaining structural engineering and the principles behind designing structures and bridges. Following the presentation, there will be an activity where students will get to create their own bridge. They will apply the concepts learned in the presentation to create a bridge that withstands weight.
B	Energizing Electricity - Nuclear Power in Your Everyday Life		(RECOMMENDED FOR GRADE: 9,10) Come learn about how we use nuclear power to energize our everyday lives! We will use a hands-on activity to demonstrate a basic nuclear energy principle as well as how to "dress-out" to complete field work at a nuclear power plant. We'll then dive into how we use nuclear power to generate energy to help our communities accomplish their everyday lives!
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M	WiSE 101		Come learn about the opportunities and experiences with WiSE here at Iowa State.
N	*Eco-Heroes: Saving the Planet with Biotech		Dive into an exciting journey where science meets saving the environment! In this action-packed session, you'll uncover how to use biotechnology to clean up water and protect our planet. It's your chance to become a young eco-hero, using awesome science tools to solve real-world challenges!

(Session SESSION 3) 12:20 PM - 1:05 PM

Tag	Presentation	Materials	Description
A	Cybersecurity - Choose Your Own Adventure with John Deere		"Learn how YOU can protect yourself, your family, or your future employer from cyber criminals. Come learn about the adventures that you can choose in the field of cybersecurity."
B	*Building Bridges Competition		The students will be building a prototype bridge out of Legos. They will be given money to buy their materials and they will be given requirements that they have to meet. They will then compete for prizes.
C	Flexin' Females: Pumpin' Power and Science Swagger!		Join us as we explore the world of strength training and science swagger. Get ready for some real talk about the amazing benefits and potential barriers facing women in both worlds. From building confidence to breaking down stereotypes, we'll explore how resistance training and science go hand in hand to strengthen us all.
D	Smelling Parkinson's		Joy Milne of Perth, UK, claims she is able to smell whether or not someone has Parkinson's Disease. We will be doing a hands-on activity and statistical simulation to discover if Joy really can smell Parkinson's Disease.

Tag	Presentation	Materials	Description
E	Molecular spaghetti: from gummy bears to body armor		Ever wonder what polymers are? This session will focus on one of the three main classes of materials: polymers - long-chain molecules that can be designed for many purposes, their applications spanning from food industry to surgical implants to structural parts. You will experience hands-on demonstrations of various polymer-based materials and will be able to answer questions such as: Can you identify polymers that you see every day? How can you make something waterproof? What happens when a polymer freezes? Join us in exploring this unique class of materials and its many applications.
F	Materials Girls: Living in a Materials World		A hands-on introduction to the exciting world of materials engineering. From making slime to testing material hardness, this session will have students rotate through the three main materials classes; metals, ceramics, and polymers!
G	Make Your Own Microbial House Plant		Using different minerals and nutrients, everyone will get to make their own microbial house plant in the form of a Winogradsky column. With time the microbes in the column will start to grow, forming different colored layers.
I	Backpack Escape Room Challenge!		A zombie themed escape room kit that will keep you on your toes as you navigate through challenges. This escape room contains an engineering twist as you complete puzzles related to Civil, Mechanical, Electrical, and Chemical engineering disciplines
J	*Solving the Structure of RNA		In this activity, you're a researcher who has just discovered a new non-coding RNA which seems to be important! Students will learn to use computational tools to predict and visualize RNA structure, and search databases for known structures.
K	*Science + Art! A Perfect Combination in STEAM!		Did you know you can combine Science and Art in a career? Yes! Come find out how and learn some strategies for drawing animal skulls, insects, and feathers while learning about anatomy and amazing adaptations.
L	*Glassblowing Demo		Have you ever wanted to look into a volcano? The glass furnace in the glassblowing studio is as close as you can find in Iowa. Watch molten glass transformed into artistic and functional objects. Gain an appreciation of the intersection of science and art. Check out a student organization that you may join as an ISU student!
N	*MicroMarvels: A Hands-On Journey into the Microbial World		Join us for a hands-on exploration of the fascinating world of microbiology, where you'll dive deep into the realm of microscopic organisms. In this workshop, you will have the opportunity to actively engage in bacterial identification, biochemical tests, and microscopic observations. Participants will delve into real-life case studies, gaining valuable insights into the role of microorganisms in various environments and diseases. We will also unravel the scope of bacteria and the intricate world of fungi from environmental impacts to industrial applications. This workshop will showcase the vast potential and importance of microorganisms.

(Session SESSION 4) 1:10 PM - 1:55 PM

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A	Cybersecurity - Choose Your Own Adventure with John Deere		"Learn how YOU can protect yourself, your family, or your future employer from cyber criminals. Come learn about the adventures that you can choose in the field of cybersecurity."
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F	Materials Girls: Living in a Materials World		A hands-on introduction to the exciting world of materials engineering. From making slime to testing material hardness, this session will have students rotate through the three main materials classes; metals, ceramics, and polymers!
G	Disease Detectives		Public health is the discipline that helps prevent and protect the community and individuals from diseases. As a society, we rely on these scientists to let us know if new emerging diseases might cause imminent health and economic issues. Through representatives of the Global Resource Systems major, participants will learn about public health disciplines and the One Health approach.
I	Backpack Escape Room Challenge!		A zombie themed escape room kit that will keep you on your toes as you navigate through challenges. This escape room contains an engineering twist as you complete puzzles related to Civil, Mechanical, Electrical, and Chemical engineering disciplines
J	*Solving the Structure of RNA		In this activity, you're a researcher who has just discovered a new non-coding RNA which seems to be important! Students will learn to use computational tools to predict and visualize RNA structure, and search databases for known structures.
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X	Leaving Early		Group is leaving the conference early at 1pm.