2018 Day and Residential Camps for Students Entering Grades 2–12

SCIENCE-U

Penn State Summer Science Camps

2018 REGISTRATION OPENS FEB. 5 10:00 A.M.

www.ScienceCamps.psu.edu

DISCOVERY HAPPENS HERE!
Dear Science-U Campers and Parents,

Welcome to the 2018 Science-U camp season! The Penn State Science-U camps are designed to develop critical thinking skills in every camper and encourage participants to pursue their personal interests in science, technology, engineering, and math (STEM). Our camp experiences are designed and taught by faculty members, teachers, and students who love STEM and are passionate about sparking STEM interest and excitement in young minds!

Each Science-U camp will take campers through a one-week journey that investigates an area of science in a novel, fascinating, and meaningful way. Science-U campers are encouraged to ask questions and explore new ideas for how science can make a difference in their everyday lives. Our sincere hope is that every camper continues to grow and that their time at Science-U leaves them enriched and empowered to keep on learning. We look forward to seeing you this summer!

— The Staff at Penn State Science Outreach

SCIENCE OUTREACH STAFF CENTRAL

Program Goals
1. To create exciting and engaging science experiences for all participants to promote the pursuit of personal interests in the STEM fields
2. To increase campers’ confidence in their ability to succeed in STEM as well as their interest in and understanding of educational/career pathways in STEM
3. To increase campers’ science literacy, which includes STEM content and an understanding of the scientific process
4. To improve campers’ scientific thinking (including creativity, critical thinking, problem solving, and leadership)
5. To deepen campers’ understanding of the relevance of science and scientists to their everyday lives

Science-U Mission Statement
Science-U is dedicated to advancing science literacy in youth through the sharing and discovery of scientific knowledge within the intellectual foundations at Penn State. Our chief goals are to educate and inspire students, encourage their critical thinking, and prepare them to become responsible, skilled, and caring scientists and citizens when faced with tomorrow’s challenges.

About Our Program
Penn State University’s Eberly College of Science encourages students to pursue their personal interests and the intellectual excitement that science offers. Science-U (formerly Action Potential Science Experience) began in 1999 as an outreach initiative run by the Penn State Eberly College of Science’s Office of Science Outreach. Science-U builds on the notion of intellectual freedom, encouraging students to let their imaginations soar with endless scientific possibilities. Through the camps, students are pushed to think critically and explore science freely while holding fast to Science-U’s guiding belief that students who learn what they love will invest deeply in their futures as scientists and be inspired to pursue academic success!

Camps for kids entering grades 2-5 in fall 2018

**Nature Explorers: Cycles Galore!**
**JUNE 18–22 • 9:00 A.M.–4:00 P.M. • GRADES 2-4**

*Why do bears hibernate? Why do only some plants have flowers? How do caterpillars turn into butterflies? By exploring the cycles of nature, your camper will unlock mysteries of the world around them. Campers will get the chance to dive into lab experiments to discover the science behind natural phenomena, and they’ll also get hands-on experience as they search for these phenomena in the great outdoors. Come and explore with us!*

**Designing the Future**
**JUNE 25–29 • 9:00 A.M.–4:00 P.M. • GRADES 4-5**

*Come help us design the car of the future! Together, we’ll discover the physics concepts that we’ll need for the car of the future, learn how to take an idea that’s in your head and put it into a Computer-Aided Design (CAD) program, test your design ideas, and then use a 3D printer to turn your design into an actual object you can hold in your hand! We’ll also look at how scientists, engineers, and even artists combine physics concepts with design and additive manufacturing techniques, such as 3D printing, to design and build the future! If you have lots of ideas for cool objects and want to learn how to make them a reality, this is the camp for you!*
Something mysterious is happening on campus! An inventor on the brink of a scientific breakthrough needs your child’s help. The scientist has heard mysterious noises in the middle of the night and thinks their lab equipment has been sabotaged! Who is causing the chaos? We need your junior crime scene investigator to help solve the mystery! As a member of an investigative team, your child will search for clues and gather evidence. The forensic scientists-in-training will then analyze their evidence, interview the suspects to get more information, and conduct experiments in a Penn State laboratory to learn more about the inventor’s scientific research. Will all the clues point to the same person as the perpetrator? Your child, together with Penn State forensic scientists and their new friends, will be the one to find out!

CSI: The Case of the Kidnapped Criminalist
JULY 9–13 • 9:00 A.M.–4:00 P.M. • GRADES 5-7

There’s been a spill! We’re not sure how, but State College’s water supply is contaminated. We need Water Heroes like you to find a creative solution to this problem and prevent it from happening in the future. In this camp, you will learn about where our water comes from, investigate the different types of water pollution, and use cutting-edge technology to purify water. Join Penn State faculty and students in this adventure that will include laboratory experiments that you design, field investigations of real water sources, interviews with water treatment experts, and detective work to solve the mystery. This is a four-day camp (no camp on Wednesday, July 4th).

Water Heroes
JULY 2–3, 5–6 • 9:00 A.M.–4:00 P.M. • GRADES 5-6

Finding Your Roots
JULY 8–13 • 9:00 A.M.–4:00 P.M. • GRADES 6-8

This camp is designed to get campers up close and personal with their own DNA so that they can explore the questions of where they come from and what makes them who they are. Campers will complete a DNA test before camp (DNA kits from a CLIA-certified testing company will be sent from Science-U) and will use information from their DNA test to talk about their traits like hair/eye/skin color, smell/taste perception, lactose intolerance, and caffeine metabolism with other campers. During camp, campers will discuss several topics, including inherited traits, evolution, and anthropology. Campers will also conduct genealogical research to learn about family members, their traits, and traditions. This camp is a place where the science is all about you — register today! (Note: The first full day of camp is Monday, July 9th, but all campers will check in for an opening ceremony the evening of Sunday, July 8th.) Residential option available!

Falling in Love
JULY 2–3, 5–6 • 9:00 A.M.–4:00 P.M. • GRADES 5-6

Infection!
JUNE 17–22 • 9:00 A.M.–4:00 P.M. • GRADES 9-12

There is no shortage of new, captivating, and often scary things to learn about the world of infectious diseases! Join Penn State disease experts and learn the shocking truths of how parasites and pathogens impact you and all living organisms on the planet! Through hands-on activities, simulations, and visits to real research labs and field sites, campers will get a whirlwind introduction to what we know — and don’t know — about infectious diseases. By the end of camp, campers will be challenged to put their new knowledge to the test by solving a mysterious disease outbreak. Join us and get infected with a hunger to learn more! (Note: The first full day of camp is Monday, June 18th, but all campers will check in for an opening ceremony the evening of Sunday, June 17th.) Residential option available!

Immunity
JULY 15–20 • 9:00 A.M.–4:00 P.M. • GRADES 9-12

Forensic Science Files: The Mysterious Case of the Missing Professor
JULY 15–20 • 9:00 A.M.–4:00 P.M. • GRADES 9-12

Professor Phair has gone missing. Detective Soto suspects foul play, but she has no eye-witnesses, no suspects, and no leads. How do you solve a crime when you can’t even prove that one has been committed? You use science! In this immersive forensic science experience, campers will become part of a Crime Scene Investigation and Reconstruction (CSI&R) team that uses scientific principles to discover, analyze, and interpret evidence uncovered at the suspected scene of the crime. In the crime lab, campers will perform experiments on the evidence they unear — with each new analysis providing campers another piece of the puzzle. Can your CSI&R team put the pieces together to solve the mystery of what really happened the night Professor Phair disappeared? Join us to find out, if you’re up to the challenge! (Note: The first full day of camp is Monday, July 16th, but all campers will check in for an opening ceremony the evening of Sunday, July 15th.) Residential option available!

(continued on next page)
Make It Matter
JULY 16–20  •  9:00 A.M.–4:00 P.M.  •  GRADES 9-12
This camp is your gateway to the fascinating world of materials science! Materials scientists have brought us amazing new technologies, such as flexible screens, nanoscale sensors, and self-folding materials—in this camp you’ll explore how researchers take new technologies such as these from initial concept all the way to actual implementation. Through lab visits to meet researchers, demonstrations of cutting-edge tools, and a hands-on challenge to design and prototype your own solution to a pressing societal problem, this camp will bring the research process alive and inspire you to think about the world-changing possibilities of science and engineering in entirely new ways!

Science Leadership
JULY 22–27  •  9:00 A.M.–5:00 P.M.  •  GRADES 10-12
Do you think the world needs more leaders in science? The Science Leadership Camp is designed to prepare participants to successfully build futures that combine science with their desire to make a difference. During this experience, campers will be challenged to think about issues in their communities and articulate a vision for how they can make a difference with their leadership and scientific abilities. They will also learn from the leadership experiences of Penn State science students and faculty, explore cutting-edge scientific research, and engage in activities that will challenge them to think innovatively and creatively. Come join us at University Park for an experience you can take with you through high school, college, and beyond! (Note: The first full day of camp is Monday, July 23rd, but all campers will check in for an opening ceremony the evening of Sunday, July 22nd. Please also note that the camp includes a moderately strenuous hiking experience and a 3.7 mile canoe trip on Bald Eagle Creek.) Residential option available!

Kinesiology: Exploring the Human Machine
JULY 23–27  •  9:00 A.M.–4:00 P.M.  •  GRADES 9-12
This is a camp that will get you moving! In order to learn about the different body systems that impact human athletic performance, campers will challenge themselves with tests that are used on real athletes to measure flexibility, agility, speed, power, strength, muscular and cardiovascular endurance, and more! Campers will learn about the anatomical and physiological underpinnings of each test and compare their results to the norms for their age group. Campers will also learn about the prevention and treatment of athletic injuries. If you’re a student-athlete or a budding scientist with a curiosity about how humans can do what they do, don’t miss this chance to explore the human machine!

2018 Fee Schedule

<table>
<thead>
<tr>
<th>CAMP</th>
<th>DATES/TIMES</th>
<th>Pre</th>
<th>March 19th</th>
<th>After</th>
<th>March 20th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection!</td>
<td>June 17–22</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>$815</td>
<td>$395</td>
</tr>
<tr>
<td>Nature Explorers: Cycles Galore!</td>
<td>June 18–22</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Penn State Pre-Med Experience</td>
<td>June 25–29</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Designing the Future</td>
<td>June 25–29</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Water Heroes (4-Day Camp)</td>
<td>July 2–3, 5–6</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$295</td>
<td>N/A</td>
<td>$325</td>
</tr>
<tr>
<td>Jr. Science Sleuths (4-Day Camp)</td>
<td>July 2–3, 5–6</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$295</td>
<td>N/A</td>
<td>$325</td>
</tr>
<tr>
<td>Finding Your Roots</td>
<td>July 8–13</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$425</td>
<td>$850</td>
<td>$455</td>
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<tr>
<td>CSI: The Case of the Kidnapped Criminalist</td>
<td>July 9–13</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Ecology Camp: The Wild Wonders of Your Own Backyard</td>
<td>July 9–13</td>
<td>8:30 A.M.–4:30 P.M.</td>
<td>$440</td>
<td>N/A</td>
<td>$470</td>
</tr>
<tr>
<td>Forensic Science Files: The Mysterious Case of the Missing Professor</td>
<td>July 15–20</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>$815</td>
<td>$395</td>
</tr>
<tr>
<td>NittanyBots: LEGO Robotics – The Journey to Master Builder</td>
<td>July 16–20</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Make It Matter</td>
<td>July 16–20</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
</tr>
<tr>
<td>Science Leadership</td>
<td>July 22–27</td>
<td>9:00 A.M.–5:00 P.M.</td>
<td>$410</td>
<td>$815</td>
<td>$440</td>
</tr>
<tr>
<td>Kinesiology: Exploring the Human Machine</td>
<td>July 23–27</td>
<td>9:00 A.M.–4:00 P.M.</td>
<td>$365</td>
<td>N/A</td>
<td>$395</td>
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</table>

Registration Guideline
An Eberly College of Science guideline for Science-U camps authorizes only students attending school in the United States to register for camps. As in previous years, parents/guardians are required to identify their child’s school/school district during registration. Registrations that do not identify a U.S. school or school district will not be accepted.

Residential Program Information
Students entering grades 5-12 may choose to stay at Penn State for any camp that has a designated residential component. Campers stay in the University Residence Halls on campus from Sunday evening until Friday when camp closes (camp schedules vary). Evening mentors supervise activities and outings.

Extended Care Option
Two sessions of extended care are offered for campers entering grades 2-8, and the cost is $30/week for the morning session, $35/week for the afternoon session, or $50/week for both morning and afternoon extended care. Morning care is available Tuesday–Friday with drop-off as early as 7:45 a.m., and afternoon extended care is available Monday–Thursday with pick-up as late as 5:15 p.m.

*Extended care will not be provided on Monday mornings or Friday afternoons. Week-long camps begin with an opening ceremony on Monday and conclude with camp-specific closing ceremonies on Friday afternoons. Campers will be dismissed immediately after the closing ceremonies.
Financial Aid
Financial aid applications will be accepted on a first-come, first-served basis, and aid will be awarded until funds are exhausted. Because of limited funds, a child can receive financial aid for only one camp each summer; however, more than one child in a family may receive a financial aid award each summer. If you are applying for financial aid, you are not required to submit payment at the time of registration. For more information on how to apply for financial aid, please visit https://www.sciencecamps.psu.edu/registration.

Scholarships
In partnership with Science-U, Penn State’s Center for Nanoscale Science has created the Science Leadership Scholarship, which is designed for motivated high school students (grades 10-12) from diverse backgrounds who have a sincere interest in learning about science, technology, engineering, or math (STEM). Applicants must demonstrate leadership potential, a positive attitude, and strength of character. For more information on how to apply for a Science Leadership Scholarship, please visit http://www.sciencecamps.psu.edu/registration/science-leadership-camp-scholarship-process.

In partnership with Science-U, the AAUW State College Branch has created the AAUW Merit-Based STEM Scholarship for Girls in Centre County. Girls entering grades 6-12 who reside in or attend a school district within Centre County, including the State College, Bellefonte, Bald Eagle, Penns Valley, and Philipsburg-Osceola area school districts, are encouraged to apply. Applicants must have sincere interest in science, technology, engineering, or math (STEM), and demonstrate a positive attitude and strength of character. For more information on how to apply for AAUW STEM Scholarship for Girls in Centre County, please visit http://www.sciencecamps.psu.edu/registration/aauw-scholarship.

Information for Parents
The Pennsylvania State University is committed to providing a safe environment for all youth participating in activities offered through the University. All Penn State youth programs have policies in place to ensure the safety of youth participating in our programs and to ensure safety is not compromised. All camp staff are trained in emergency protocols and all relevant internal, external and parental requirements.

Parents are encouraged to notify the Eberly College of Science Outreach staff immediately at outreach@science.psu.edu / 814-865-0083 if they, or their child, are experiencing problems, difficulties, or concerns with the camp, other youth in the camp and/or camp staff. You may also contact Sandy Weaver, youth programs compliance specialist at stw126@psu.edu / 814-865-8785 or call the University’s Ethics Hotline at 1-800-560-1637.

Do It Yourself ONLINE ACTIVITY RESOURCE CENTER
Science-U, the Eberly College of Science, and WPSU-TV have teamed up to help bring exciting science experiments straight to your home! Get a parent and go online together to check out some of the activities and see for yourself. Share the fun of discovering new things with family and friends, and be sure to follow all the guidelines and safety measures that good scientists require to experiment successfully. You’ll never know what you can discover until you try!

What parents are saying about Science-U:
“Science U was so well-organized, fun and inspiring! My child talked at length about the material she learned, the experiments she ran and the friends she made.”

“The Science-U Program is amazing! We will be back every year to participate in these wonderful, fundamental camps! All the staff were so knowledgeable and patient - they were always giving good direction and guidance. Can’t say enough good things about Science-U! We love it!!

Science-U is an outreach program of the Eberly College of Science at Penn State
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The Pennsylvania State University encourages qualified persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please call 814-865-0083 in advance of your participation or visit.